

libquentier

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# Chapter 1

## libquentier

Set of Qt/C++ APIs for feature rich desktop clients for Evernote service

### 1.1 What's this

This library presents a set of Qt/C++ APIs useful for applications working as feature rich desktop clients for Evernote service. The most important and useful components of the library are the following:

- Local storage - persistence of data downloaded from Evernote service in a local SQLite database
- Synchronization - the logics of exchanging new and/or modified data with Evernote service
- Note editor - the UI component capable for notes displaying and editing

The library is based on the lower level functionality provided by `QEverCloud` library. It also serves as the functional core of `Quentier` application.

**1.1.1 WARNING: libquentier is in alpha state right now, neither API nor ABI can be considered stable yet!**

### 1.2 How to build/install

Please see the building/installation guide.

### 1.3 How to contribute

Please see the contribution guide for detailed info.



## Chapter 2

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## Chapter 3

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## Chapter 5

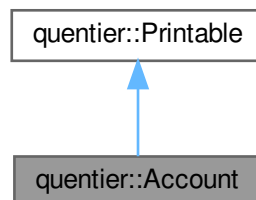
# Class Documentation

### 5.1 `quentier::Account` Class Reference

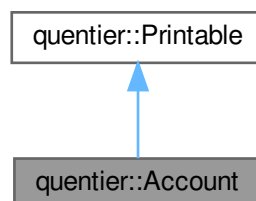
The `Account` class encapsulates some details about the account: its name, whether it is local or synchronized to Evernote and for the latter case - some additional details like upload limit etc.

```
#include <Account.h>
```

Inheritance diagram for `quentier::Account`:



Collaboration diagram for `quentier::Account`:



## Public Types

- enum class **Type** { **Local** , **Evernote** }
- enum class **EvernoteAccountType** { **Free** , **Plus** , **Premium** , **Business** }

## Public Member Functions

- **Account** (**QString** name, Type type, qevercloud::UserID userId=-1, EvernoteAccountType evernoteAccountType=EvernoteAccountType::Free, **QString** evernoteHost={}, **QString** shardId={})
- **Account** (const **Account** &other)
- **Account** (**Account** &&other) noexcept
- **Account** & **operator=** (const **Account** &other)
- **Account** & **operator=** (**Account** &&other) noexcept
- **bool** **operator==** (const **Account** &other) const noexcept
- **bool** **operator!=** (const **Account** &other) const noexcept
- **bool** isEmpty () const
- **QString** name () const
- **void** setName (**QString** name)  
*setName sets the username to the account*
- **QString** displayName () const
- **void** setDisplayName (**QString** displayName)
- Type type () const
- qevercloud::UserID id () const
- EvernoteAccountType evernoteAccountType () const
- **QString** evernoteHost () const
- **QString** shardId () const
- **void** setEvernoteAccountType (EvernoteAccountType evernoteAccountType)
- **void** setEvernoteHost (**QString** evernoteHost)
- **void** setShardId (**QString** shardId)
- **qint32** mailLimitDaily () const
- **qint64** noteSizeMax () const
- **qint64** resourceSizeMax () const
- **qint32** linkedNotebookMax () const
- **qint32** noteCountMax () const
- **qint32** notebookCountMax () const
- **qint32** tagCountMax () const
- **qint32** noteTagCountMax () const
- **qint32** savedSearchCountMax () const
- **qint32** noteResourceCountMax () const
- **void** setEvernoteAccountLimits (const qevercloud::AccountLimits &limits)
- **QTextStream** & print (**QTextStream** &strm) const override

## Public Member Functions inherited from **quentier::Printable**

- **QString** toString () const

## Friends

- **QUENTIER\_EXPORT** **QTextStream** & **operator**<< (**QTextStream** &strm, Type type)
- **QUENTIER\_EXPORT** **QDebug** & **operator**<< (**QDebug** &dbg, Type type)
- **QUENTIER\_EXPORT** **QTextStream** & **operator**<< (**QTextStream** &strm, EvernoteAccountType type)
- **QUENTIER\_EXPORT** **QDebug** & **operator**<< (**QDebug** &dbg, EvernoteAccountType type)



### 5.1.1 Detailed Description

The [Account](#) class encapsulates some details about the account: its name, whether it is local or synchronized to Evernote and for the latter case - some additional details like upload limit etc.

### 5.1.2 Member Function Documentation

#### 5.1.2.1 displayName()

```
QString quotientier::Account::displayName ( ) const
```

##### Returns

[Printable](#) user's name that is not used to uniquely identify the account, so this name may repeat across different local and Evernote accounts

#### 5.1.2.2 evernoteAccountType()

```
EvernoteAccountType quotientier::Account::evernoteAccountType ( ) const
```

##### Returns

The type of the Evernote account; if applied to free account, returns "Free"

#### 5.1.2.3 evernoteHost()

```
QString quotientier::Account::evernoteHost ( ) const
```

##### Returns

The Evernote server host with which the account is associated

#### 5.1.2.4 id()

```
qevercloud::UserID quotientier::Account::id ( ) const
```

##### Returns

User id for Evernote accounts, -1 for local accounts (as the concept of user id is not defined for local accounts)

#### 5.1.2.5 isEmpty()

```
bool quotientier::Account::isEmpty ( ) const
```

##### Returns

True if either the account is local but the name is empty or if the account is Evernote but user id is negative; in all other cases return false

#### 5.1.2.6 name()

```
QString quentier::Account::name ( ) const
```

##### Returns

Username for either local or Evernote account

#### 5.1.2.7 print()

```
QTextStream & quentier::Account::print (
    QTextStream & strm ) const [override], [virtual]
```

Implements [quentier::Printable](#).

#### 5.1.2.8 setDisplayName()

```
void quentier::Account::setDisplayName (
    QString displayName )
```

Set the printable name of the account

#### 5.1.2.9 shardId()

```
QString quentier::Account::shardId ( ) const
```

##### Returns

Shard id for Evernote accounts, empty string for local accounts (as the concept of shard id is not defined for local accounts)

#### 5.1.2.10 type()

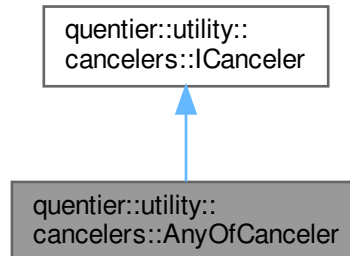
```
Type quentier::Account::type ( ) const
```

##### Returns

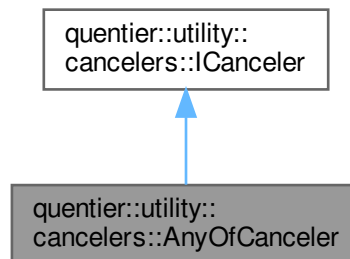
The type of the account: either local or Evernote

## 5.2 quantier::utility::cancelers::AnyOfCanceler Class Reference

Inheritance diagram for quantier::utility::cancelers::AnyOfCanceler:



Collaboration diagram for quantier::utility::cancelers::AnyOfCanceler:



### Public Member Functions

- **AnyOfCanceler** ([QList](#)< [ICancelerPtr](#) > cancelers)
- **AnyOfCanceler** ([AnyOfCanceler](#) &&other) **noexcept**
- [AnyOfCanceler](#) & **operator=** ([AnyOfCanceler](#) &&other) **noexcept**
- **bool isCanceled** () **const noexcept override**

### 5.2.1 Member Function Documentation

#### 5.2.1.1 isCanceled()

```
bool quantier::utility::cancelers::AnyOfCanceler::isCanceled ( ) const [override], [virtual],
[noexcept]
```

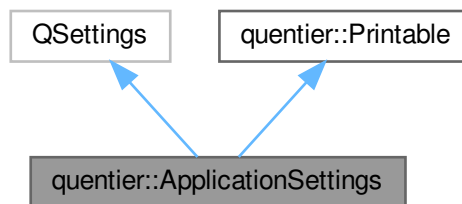
Implements [quantier::utility::cancelers::ICanceler](#).

### 5.3 quantier::ApplicationSettings Class Reference

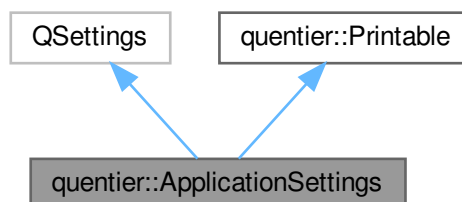
The [ApplicationSettings](#) class enhances the functionality of `QSettings`, in particular it simplifies the way of working with either application-wide or account-specific settings.

```
#include <ApplicationSettings.h>
```

Inheritance diagram for `quantier::ApplicationSettings`:



Collaboration diagram for `quantier::ApplicationSettings`:



#### Classes

- struct [ArrayCloser](#)
- struct [GroupCloser](#)

#### Public Member Functions

- [ApplicationSettings](#) (`const QString &settingsName={}`)
- [ApplicationSettings](#) (`const Account &account, const QString &settingsName={}`)
- [ApplicationSettings](#) (`const Account &account, const char *settingsName, int settingsNameSize=-1`)
- [ApplicationSettings](#) (`const Account &account, std::string_view settingsName`)
- [~ApplicationSettings](#) () *override*
- [void beginGroup](#) (`const QString &prefix`)

- `void beginGroup (const char *prefix, int size=-1)`
- `void beginGroup (std::string_view prefix)`
- `int beginReadArray (const QString &prefix)`
- `int beginReadArray (const char *prefix, int size=-1)`
- `int beginReadArray (std::string_view prefix)`
- `void beginWriteArray (const QString &prefix, int arraySize=-1)`
- `void beginWriteArray (const char *prefix, int arraySize=-1, int prefixSize=-1)`
- `void beginWriteArray (std::string_view prefix, int arraySize=-1)`
- `bool contains (const QString &key) const`
- `bool contains (const char *key, int size=-1) const`
- `bool contains (std::string_view key) const`
- `void remove (const QString &key)`
- `void remove (const char *key, int size=-1)`
- `void remove (std::string_view key)`
- `void setValue (const QString &key, const QVariant &value)`
- `void setValue (const char *key, const QVariant &value, int keySize=-1)`
- `void setValue (std::string_view key, const QVariant &value)`
- `QVariant value (const QString &key, const QVariant &defaultValue={}) const`
- `QVariant value (const char *key, const QVariant &defaultValue={}, int keySize=-1) const`
- `QVariant value (std::string_view key, const QVariant &defaultValue={}) const`
- `QDataStream & print (QDataStream &strm) const` override

### Public Member Functions inherited from `quentier::Printable`

- `QString toString () const`

#### 5.3.1 Detailed Description

The `ApplicationSettings` class enhances the functionality of `QSettings`, in particular it simplifies the way of working with either application-wide or account-specific settings.

#### 5.3.2 Constructor & Destructor Documentation

##### 5.3.2.1 `ApplicationSettings()` [1/4]

```
quentier::ApplicationSettings::ApplicationSettings (
    const QString & settingsName = {} ) [explicit]
```

Constructor for application settings not being account-specific

##### Parameters

<i>settingsName</i>	If not empty, the created application settings would manage the settings stored in a file with a specific name within the common settings storage; otherwise they would be stored in the default settings file for the account
---------------------	--

### 5.3.2.2 ApplicationSettings() [2/4]

```
quentier::ApplicationSettings::ApplicationSettings (
    const Account & account,
    const QString & settingsName = {} ) [explicit]
```

Constructor for application settings specific to the account

#### Parameters

<i>account</i>	The account for which the settings are to be stored or read
<i>settingsName</i>	If not empty, the created application settings would manage the settings stored in a file with a specific name within the account's settings storage; otherwise they would be stored in the default settings file for the account

### 5.3.2.3 ApplicationSettings() [3/4]

```
quentier::ApplicationSettings::ApplicationSettings (
    const Account & account,
    const char * settingsName,
    int settingsNameSize = -1 )
```

Constructor for application settings specific to the account

#### Parameters

<i>account</i>	The account for which the settings are to be stored or read
<i>settingsName</i>	If not nullptr, the created application settings would manage the settings stored in a file with a specific name within the account's settings storage; otherwise they would be stored in the default settings file for the account. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
<i>settingsNameSize</i>	Size of the settingsName string. If negative (the default), the settingsName size is taken to be strlen(settingsName)

### 5.3.2.4 ApplicationSettings() [4/4]

```
quentier::ApplicationSettings::ApplicationSettings (
    const Account & account,
    std::string_view settingsName )
```

Constructor for application settings specific to the account

#### Parameters

<i>account</i>	The account for which the settings are to be stored or read
<i>settingsName</i>	If not empty, the created application settings would manage the settings stored in a file with a specific name within the account's settings storage; otherwise they would be stored in the default settings file for the account. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8

### 5.3.2.5 ~ApplicationSettings()

```
quentier::ApplicationSettings::~~ApplicationSettings ( ) [override]
```

Destructor

## 5.3.3 Member Function Documentation

### 5.3.3.1 beginGroup() [1/3]

```
void quentier::ApplicationSettings::beginGroup (
    const char * prefix,
    int size = -1 )
```

Appends prefix to the current group. Overload of beginGroup accepting const char \* and optionally the size of the string

Parameters

<i>prefix</i>	String containing the prefix name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
<i>size</i>	Size of the prefix string. If negative (the default), the prefix size is taken to be strlen(prefix).

### 5.3.3.2 beginGroup() [2/3]

```
void quentier::ApplicationSettings::beginGroup (
    const QString & prefix )
```

Appends prefix to the current group. The call is redirected to QSettings::beginGroup. It is required in this class only to workaround hiding QSettings method due to overloads

Parameters

<i>prefix</i>	String containing the prefix name
---------------	-----------------------------------

### 5.3.3.3 beginGroup() [3/3]

```
void quentier::ApplicationSettings::beginGroup (
    std::string_view prefix )
```

Appends prefix to the current group. Overload of beginGroup accepting std::string\_view

Parameters

<i>prefix</i>	String containing the prefix name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
<i>size</i>	Size of the prefix string. If negative (the default), the prefix size is taken to be strlen(prefix).

#### 5.3.3.4 beginReadArray() [1/3]

```
int quentier::ApplicationSettings::beginReadArray (
    const char * prefix,
    int size = -1 )
```

Adds prefix to the current group and starts reading from an array. Overload of beginReadArray accepting const char \* and optionally the size of the string

##### Parameters

<i>prefix</i>	String containing the prefix name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
<i>size</i>	Size of the prefix string. If negative (the default), the prefix size is taken to be strlen(prefix)

#### 5.3.3.5 beginReadArray() [2/3]

```
int quentier::ApplicationSettings::beginReadArray (
    const QString & prefix )
```

Adds prefix to the current group and starts reading from an array. The call is redirected to QSettings::beginReadArray. It is required in this class only to workaround hiding QSettings method due to overloads

##### Parameters

<i>prefix</i>	String containing the prefix name
---------------	-----------------------------------

##### Returns

The size of the array

#### 5.3.3.6 beginReadArray() [3/3]

```
int quentier::ApplicationSettings::beginReadArray (
    std::string_view prefix )
```

Adds prefix to the current group and starts reading from an array. Overload of beginReadArray accepting std::string\_view

##### Parameters

<i>prefix</i>	String containing the prefix name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
---------------	---

#### 5.3.3.7 beginWriteArray() [1/3]

```
void quentier::ApplicationSettings::beginWriteArray (
    const char * prefix,
```



```
int arraySize = -1,
int prefixSize = -1 )
```

Adds prefix to the current group and starts writing an array of size arraySize. Overload of beginWriteArray accepting const char \* and optionally the size of the string

#### Parameters

<i>prefix</i>	String containing the prefix name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
<i>arraySize</i>	Size of the array to be written. If negative (the default), it is automatically determined based on the indexes of the entries written.
<i>prefixSize</i>	Size of the prefix string. If negative (the default), the prefix size is taken to be strlen(prefix)

#### 5.3.3.8 beginWriteArray() [2/3]

```
void quentier::ApplicationSettings::beginWriteArray (
    const QString & prefix,
    int arraySize = -1 )
```

Adds prefix to the current group and starts writing an array of size arraySize. The call is redirected to QSettings::beginWriteArray. It is required in this class only to workaround hiding QSettings method due to overloads

#### Parameters

<i>prefix</i>	String containing the prefix name
<i>arraySize</i>	Size of the array to be written. If negative (the default), it is automatically determined based on the indexes of the entries written.

#### 5.3.3.9 beginWriteArray() [3/3]

```
void quentier::ApplicationSettings::beginWriteArray (
    std::string_view prefix,
    int arraySize = -1 )
```

Adds prefix to the current group and starts writing an array of size arraySize. Overload of beginWriteArray accepting std::string\_view

#### Parameters

<i>prefix</i>	String containing the prefix name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
<i>arraySize</i>	Size of the array to be written. If negative (the default), it is automatically determined based on the indexes of the entries written.

#### 5.3.3.10 contains() [1/3]

```
bool quentier::ApplicationSettings::contains (
```

```
const char * key,
int size = -1 ) const
```

Overload of contains accepting const char \* and optionally the size of the string

#### Parameters

<i>key</i>	String containing the setting name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
<i>size</i>	Size of the key string. If negative (the default), the key size is taken to be strlen(key)

#### Returns

True if there exists a setting called key; false otherwise

#### 5.3.3.11 contains() [2/3]

```
bool quantier::ApplicationSettings::contains (
    const QString & key ) const
```

The call is redirected to QSettings::contains. It is required in this class only to workaround hiding QSettings method due to overloads

#### Parameters

<i>key</i>	The key being checked for presence
------------	------------------------------------

#### Returns

True if there exists a setting called key; false otherwise

#### 5.3.3.12 contains() [3/3]

```
bool quantier::ApplicationSettings::contains (
    std::string_view key ) const
```

Overload of contains accepting std::string\_view

#### Parameters

<i>key</i>	String containing the setting name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
------------	--

#### Returns

True if there exists a setting called key; false otherwise

### 5.3.3.13 print()

```
QTextStream & quentier::ApplicationSettings::print (
    QTextStream & strm ) const [override], [virtual]
```

Implements [quentier::Printable](#).

### 5.3.3.14 remove() [1/3]

```
void quentier::ApplicationSettings::remove (
    const char * key,
    int size = -1 )
```

Removes the setting key and any sub-settings of key. Overload of remove accepting const char \* and optionally the size of the string

#### Parameters

key	String containing the setting name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
size	Size of the key string. If negative (the default), the key size is taken to be strlen(key).

### 5.3.3.15 remove() [2/3]

```
void quentier::ApplicationSettings::remove (
    const QString & key )
```

Removes the setting key and any sub-settings of key. The call is redirected to QSettings::remove. It is required in this class only to workaround hiding QSettings method due to overloads

#### Parameters

key	String containing the setting name
-----	------------------------------------

### 5.3.3.16 remove() [3/3]

```
void quentier::ApplicationSettings::remove (
    std::string_view key )
```

Removes the setting key and any sub-settings of key. Overload of remove accepting std::string\_view

#### Parameters

key	String containing the setting name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
-----	--

**5.3.3.17 setValue()** [1/3]

```
void quentier::ApplicationSettings::setValue (
    const char * key,
    const QVariant & value,
    int keySize = -1 )
```

Sets the value of setting. Overload of setValue accepting const char \* and optionally the size of the string

**Parameters**

<i>key</i>	String containing the setting name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
<i>value</i>	Value for setting key
<i>keySize</i>	Size of the key string. If negative (the default), the key size is taken to be strlen(key).

**5.3.3.18 setValue()** [2/3]

```
void quentier::ApplicationSettings::setValue (
    const QString & key,
    const QVariant & value )
```

Sets the value of setting. The call is redirected to QSettings::setValue. It is required in this class only to workaround hiding QSettings method due to overloads

**Parameters**

<i>key</i>	String containing the setting name
<i>value</i>	Value for setting key

**5.3.3.19 setValue()** [3/3]

```
void quentier::ApplicationSettings::setValue (
    std::string_view key,
    const QVariant & value )
```

Sets the value of setting. Overload of setValue accepting std::string\_view

**Parameters**

<i>key</i>	String containing the setting name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
<i>value</i>	Value for setting key

**5.3.3.20 value()** [1/3]

```
QVariant quentier::ApplicationSettings::value (
    const char * key,
```

```
const QVariant & defaultValue = {},
int keySize = -1 ) const
```

Fetches the value of setting. Overload of value accepting const char \* and optionally the size of the string

#### Parameters

<i>key</i>	String containing the setting name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
<i>defaultValue</i>	Default value returned if the setting doesn't exist
<i>keySize</i>	Size of the key string. If negative (the default), the key size is taken to be strlen(key)

#### Returns

The value for setting key. If the setting doesn't exist, returns defaultValue. If no default value is specified, a default QVariant is returned.

#### 5.3.3.21 value() [2/3]

```
QVariant quantier::ApplicationSettings::value (
    const QString & key,
    const QVariant & defaultValue = {} ) const
```

Fetches the value of setting. The call is redirected to QSettings::value. It is required in this class only to workaround hiding QSettings method due to overloads

#### Parameters

<i>key</i>	String containing the setting name
<i>defaultValue</i>	Default value returned if the setting doesn't exist

#### Returns

The value for setting key. If the setting doesn't exist, returns defaultValue. If no default value is specified, a default QVariant is returned.

#### 5.3.3.22 value() [3/3]

```
QVariant quantier::ApplicationSettings::value (
    std::string_view key,
    const QVariant & defaultValue = {} ) const
```

Fetches the value of setting. Overload of value accepting std::string\_view

#### Parameters

<i>key</i>	String containing the setting name. Must be UTF-8 encoded as internally it is converted to QString via QString::fromUtf8
<i>defaultValue</i>	Default value returned if the setting doesn't exist

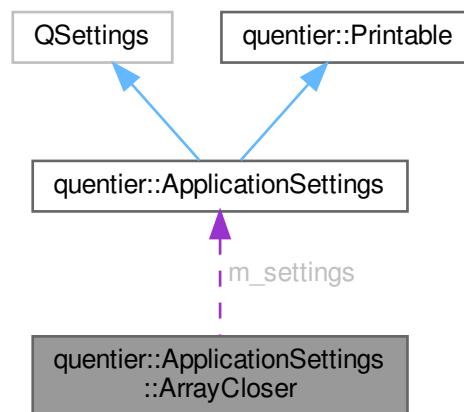
**Returns**

The value for setting key. If the setting doesn't exist, returns defaultValue. If no default value is specified, a default QVariant is returned.

## 5.4 quentier::ApplicationSettings::ArrayCloser Struct Reference

```
#include <ApplicationSettings.h>
```

Collaboration diagram for quentier::ApplicationSettings::ArrayCloser:

**Public Member Functions**

- **ArrayCloser** ([ApplicationSettings](#) &[settings](#))

**Public Attributes**

- [ApplicationSettings](#) & **m\_settings**

### 5.4.1 Detailed Description

Helper struct for RAII style of ensuring the array once began would be closed even if exception is thrown after beginning the array

## 5.5 quentier::synchronization::AuthenticationExpiredError Struct Reference

```
#include <Errors.h>
```

### 5.5.1 Detailed Description

Authentication expired error indicates that used authentication token has expired so authentication should be repeated before the next attempt to run synchronization.

## 5.6 `quentier::synchronization::ISyncConflictResolver::ConflictResolution` Struct Reference

The `ConflictResolution` struct is a namespace inside which several other structs determining actual conflict resolutions.

```
#include <ISyncConflictResolver.h>
```

### Classes

- struct `IgnoreMine`  
*The `IgnoreMine` conflict resolution means "use theirs version and ignore mine version as it doesn't really conflict with theirs version".*
- struct `MoveMine`  
*The `MoveMine` conflict resolution means "before using theirs version change mine version as specified". Note: the data item inside this conflict resolution might refer to something different than mine version passed to the conflict resolution function. It can be that way because the actual conflict might be with another local data item instead of the passed one.*
- struct `UseMine`  
*The `UseMine` conflict resolution means "override theirs version with mine version".*
- struct `UseTheirs`  
*The `UseTheirs` conflict resolution means "override mine version with theirs version".*

### 5.6.1 Detailed Description

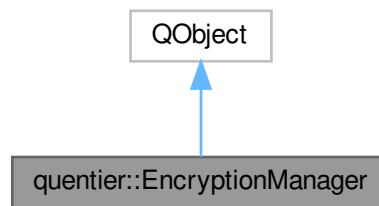
The `ConflictResolution` struct is a namespace inside which several other structs determining actual conflict resolutions.

## 5.7 `quentier::EncryptionManager` Class Reference

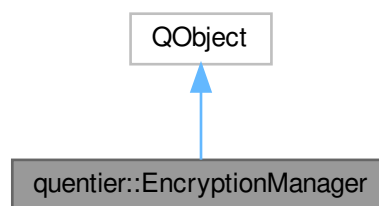
The `EncryptionManager` class provides both synchronous methods to encrypt or decrypt given text with password, cipher and key length and their signal-slot based potentially asynchronous counterparts.

```
#include <EncryptionManager.h>
```

Inheritance diagram for `quentier::EncryptionManager`:



Collaboration diagram for `quentier::EncryptionManager`:



### Public Slots

- `void onDecryptTextRequest` ([QString](#) encryptedText, [QString](#) passphrase, [QString](#) cipher, [size\\_t](#) keyLength, [QUuid](#) requestId)
- `void onEncryptTextRequest` ([QString](#) textToEncrypt, [QString](#) passphrase, [QString](#) cipher, [size\\_t](#) keyLength, [QUuid](#) requestId)

### Signals

- `void decryptedText` ([QString](#) text, [bool](#) success, [ErrorString](#) errorDescription, [QUuid](#) requestId)
- `void encryptedText` ([QString](#) encryptedText, [bool](#) success, [ErrorString](#) errorDescription, [QUuid](#) requestId)

### Public Member Functions

- `EncryptionManager` ([QObject](#) \*parent=nullptr)
- `bool decrypt` ([const QString](#) &encryptedText, [const QString](#) &passphrase, [const QString](#) &cipher, [size\\_t](#) keyLength, [QString](#) &decryptedText, [ErrorString](#) &errorDescription)
- `bool encrypt` ([const QString](#) &textToEncrypt, [const QString](#) &passphrase, [QString](#) &cipher, [size\\_t](#) &keyLength, [QString](#) &encryptedText, [ErrorString](#) &errorDescription)



### 5.7.1 Detailed Description

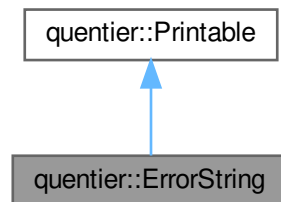
The [EncryptionManager](#) class provides both synchronous methods to encrypt or decrypt given text with password, cipher and key length and their signal-slot based potentially asynchronous counterparts.

## 5.8 quantier::ErrorString Class Reference

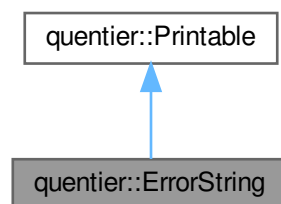
The [ErrorString](#) class encapsulates two (or more) strings which are meant to contain translatable (base) and non-translatable (details) parts of the error description.

```
#include <ErrorString.h>
```

Inheritance diagram for quantier::ErrorString:



Collaboration diagram for quantier::ErrorString:



### Public Member Functions

- **ErrorString** ([const char](#) \*error=[nullptr](#))
- **ErrorString** ([const QString](#) &error)
- **ErrorString** ([const ErrorString](#) &other)
- **ErrorString** ([ErrorString](#) &&other) [noexcept](#)
- **ErrorString** & **operator=** ([const ErrorString](#) &other)

- [ErrorString](#) & **operator=** ([ErrorString](#) &&[other](#)) **noexcept**
- **const** [QString](#) & **base** () **const noexcept**
- [QString](#) & **base** ()
- **const** [QStringList](#) & **additionalBases** () **const noexcept**
- [QStringList](#) & **additionalBases** ()
- **const** [QString](#) & **details** () **const noexcept**
- [QString](#) & **details** ()
- **void** **setBase** ([QString](#) error)
- **void** **setBase** (**const** [char](#) \*error)
- **void** **appendBase** (**const** [QString](#) &error)
- **void** **appendBase** (**const** [QStringList](#) &errors)
- **void** **appendBase** (**const** [char](#) \*error)
- **void** **setDetails** (**const** [QString](#) &error)
- **void** **setDetails** (**const** [char](#) \*error)
- **bool** **isEmpty** () **const**
- **void** **clear** ()
- [QString](#) **localizedString** () **const**
- [QString](#) **nonLocalizedString** () **const**
- [QTextStream](#) & **print** ([QTextStream](#) &strm) **const override**

## Public Member Functions inherited from [quentier::Printable](#)

- [QString](#) **toString** () **const**

### 5.8.1 Detailed Description

The [ErrorString](#) class encapsulates two (or more) strings which are meant to contain translatable (base) and non-translatable (details) parts of the error description.

1. `base()` methods return `const` and non-`const` links to the primary translatable string
2. `details()` methods return `const` and non-`const` links to non-translatable string (coming from some third party library etc)
3. `additionalBases()` methods return `const` and non-`const` links to additional translatable strings; one translatable string is not always enough because the error message might be composed from different parts

### 5.8.2 Member Function Documentation

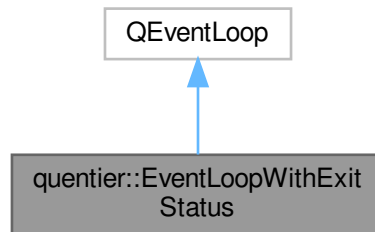
#### 5.8.2.1 `print()`

```
QTextStream & quentier::ErrorString::print (
    QTextStream & strm ) const [override], [virtual]
```

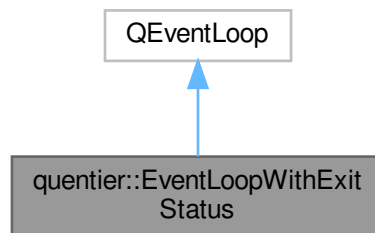
Implements [quentier::Printable](#).

## 5.9 `quentier::EventLoopWithExitStatus` Class Reference

Inheritance diagram for `quentier::EventLoopWithExitStatus`:



Collaboration diagram for `quentier::EventLoopWithExitStatus`:



### Public Types

- enum class **ExitStatus** { **Success** , **Failure** , **Timeout** }

### Public Slots

- `void exitAsSuccess ()`
- `void exitAsFailure ()`
- `void exitAsFailureWithError (QString errorDescription)`
- `void exitAsFailureWithErrorString (ErrorString errorDescription)`
- `void exitAsTimeout ()`

### Public Member Functions

- **EventLoopWithExitStatus** (QObject \*parent=nullptr)
- ExitStatus **exitStatus** () `const`
- `const ErrorString & errorDescription` () `const`

**Friends**

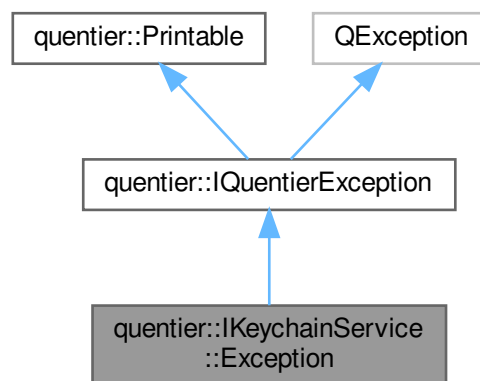
- [QDebug](#) & `operator<<` ([QDebug](#) &`dbg`, `ExitStatus` [status](#))
- [QTextStream](#) & `operator<<` ([QTextStream](#) &`strm`, `ExitStatus` [status](#))

**5.10 quentier::IKeychainService::Exception Class Reference**

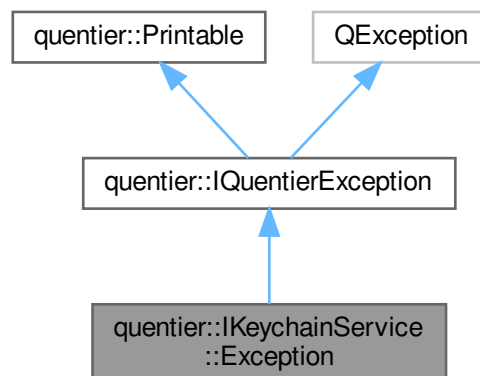
The [IKeychainService::Exception](#) class is the base class for exceptions returned inside QFutures from methods of [IKeychainService](#).

```
#include <IKeychainService.h>
```

Inheritance diagram for quentier::IKeychainService::Exception:



Collaboration diagram for quentier::IKeychainService::Exception:



### Public Member Functions

- **Exception** ([ErrorCode](#) errorCode) `noexcept`
- **Exception** ([ErrorCode](#) errorCode, [ErrorString](#) errorDescription) `noexcept`
- [ErrorCode](#) **errorCode** () `const noexcept`
- [QString](#) **exceptionDisplayName** () `const override`
- `void` **raise** () `const override`
- [Exception](#) \* **clone** () `const override`

### Public Member Functions inherited from [quentier::IQuentierException](#)

- [ErrorString](#) **errorMessage** () `const`
- [QString](#) **localizedErrorMessage** () `const`
- [QString](#) **nonLocalizedErrorMessage** () `const`
- `const char` \* **what** () `const noexcept override`
- [QTextStream](#) & **print** ([QTextStream](#) &strm) `const override`

### Public Member Functions inherited from [quentier::Printable](#)

- [QString](#) **toString** () `const`

### Additional Inherited Members

### Protected Member Functions inherited from [quentier::IQuentierException](#)

- [IQuentierException](#) ([ErrorString](#) message)
- [IQuentierException](#) (`const` [IQuentierException](#) &other)
- [IQuentierException](#) & **operator=** (`const` [IQuentierException](#) &other)

## 5.10.1 Detailed Description

The [IKeychainService::Exception](#) class is the base class for exceptions returned inside `QFutures` from methods of [IKeychainService](#).

## 5.10.2 Member Function Documentation

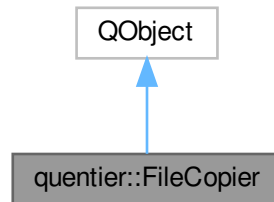
### 5.10.2.1 `exceptionDisplayName()`

```
QString quentier::IKeychainService::Exception::exceptionDisplayName ( ) const [override],
[virtual]
```

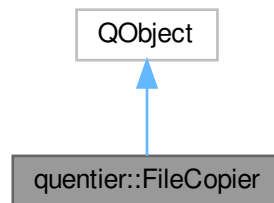
Implements [quentier::IQuentierException](#).

## 5.11 quantier::FileCopier Class Reference

Inheritance diagram for quantier::FileCopier:



Collaboration diagram for quantier::FileCopier:



### Public Types

- enum class **State** { **Idle** = 0 , **Copying** , **Cancelling** }

### Public Slots

- [void copyFile](#) ([QString](#) sourcePath, [QString](#) destPath)
- [void cancel](#) ()

### Signals

- [void progressUpdate](#) ([double](#) progress)
- [void finished](#) ([QString](#) sourcePath, [QString](#) destPath)
- [void cancelled](#) ([QString](#) sourcePath, [QString](#) destPath)
- [void notifyError](#) ([ErrorString](#) error)

### Public Member Functions

- **FileCopier** (QObject \*parent=nullptr)
- State **state** () const
- QString **sourceFilePath** () const
- QString **destinationFilePath** () const
- double **currentProgress** () const

### Friends

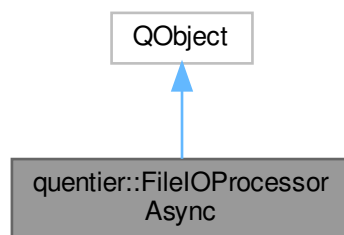
- QDebug & **operator**<< (QDebug &dbg, State state)
- QTextStream & **operator**<< (QTextStream &strm, State state)

## 5.12 quantier::FileIOProcessorAsync Class Reference

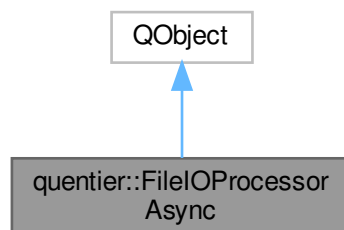
The [FileIOProcessorAsync](#) class is a wrapper under simple file IO operations, it is meant to be used for simple asynchronous IO.

```
#include <FileIOProcessorAsync.h>
```

Inheritance diagram for quantier::FileIOProcessorAsync:



Collaboration diagram for quantier::FileIOProcessorAsync:



## Public Slots

- [void onWriteFileRequest](#) ([QString](#) absoluteFilePath, [QByteArray](#) data, [QUuid](#) requestId, [bool](#) append)  
*onWriteFileRequest slot processes file write requests with given request ids*
- [void onReadFileRequest](#) ([QString](#) absoluteFilePath, [QUuid](#) requestId)  
*onReadFileRequest slot processes file read requests with given request ids*

## Signals

- [void readyForIO](#) ()  
*readyForIO signal is emitted when the queue for file IO is empty for some time (30 seconds by default, can also be configured via [setIdleTimePeriod](#) method) after the last IO event to signal listeners that they can perform some IO via the [FileIOProcessorAsync](#)*
- [void writeFileRequestProcessed](#) ([bool](#) success, [ErrorString](#) errorDescription, [QUuid](#) requestId)  
*writeFileRequestProcessed signal is emitted when the file write request with given id is finished*
- [void readFileRequestProcessed](#) ([bool](#) success, [ErrorString](#) errorDescription, [QByteArray](#) data, [QUuid](#) requestId)  
*readFileRequestProcessed signal is emitted when the file read request with given id is finished*

## Public Member Functions

- [FileIOProcessorAsync](#) ([QObject](#) \*parent=[nullptr](#))
- [void setIdleTimePeriod](#) ([qint32](#) seconds)  
*setIdleTimePeriod sets time period defining the idle state of [FileIOProcessorAsync](#): once the time measured since the last IO operation is over the specified number of seconds, the class emits [readyForIO](#) signal to any interested listeners of this event. If this method is not called ever, the default idle time period would be 30 seconds.*

### 5.12.1 Detailed Description

The [FileIOProcessorAsync](#) class is a wrapper under simple file IO operations, it is meant to be used for simple asynchronous IO.

### 5.12.2 Member Function Documentation

#### 5.12.2.1 onReadFileRequest

```
void quentier::FileIOProcessorAsync::onReadFileRequest (
    QString absoluteFilePath,
    QUuid requestId ) [slot]
```

onReadFileRequest slot processes file read requests with given request ids

#### Parameters

<i>absoluteFilePath</i>	Absolute file path to be read
<i>requestId</i>	Unique identifier of the file read request



### 5.12.2.2 onWriteFileRequest

```
void quotientier::FileIOProcessorAsync::onWriteFileRequest (
    QString absoluteFilePath,
    QByteArray data,
    QUuid requestId,
    bool append ) [slot]
```

onWriteFileRequest slot processes file write requests with given request ids

#### Parameters

<i>absoluteFilePath</i>	Absolute file path to be written
<i>data</i>	Data to be written to the file
<i>requestId</i>	Unique identifier of the file write request
<i>append</i>	If true, the data would be appended to file, otherwise the entire file would be erased before with the data is written

### 5.12.2.3 readFileRequestProcessed

```
void quotientier::FileIOProcessorAsync::readFileRequestProcessed (
    bool success,
    ErrorString errorDescription,
    QByteArray data,
    QUuid requestId ) [signal]
```

readFileRequestProcessed signal is emitted when the file read request with given id is finished

#### Parameters

<i>success</i>	True if read operation was successful, false otherwise
<i>errorDescription</i>	Textual description of the error
<i>data</i>	Data read from file
<i>requestId</i>	Unique identifier of the file read request

### 5.12.2.4 setIdleTimePeriod()

```
void quotientier::FileIOProcessorAsync::setIdleTimePeriod (
    quint32 seconds )
```

setIdleTimePeriod sets time period defining the idle state of [FileIOProcessorAsync](#): once the time measured since the last IO operation is over the specified number of seconds, the class emits readyForIO signal to any interested listeners of this event. If this method is not called ever, the default idle time period would be 30 seconds.

#### Parameters

<i>seconds</i>	Number of seconds for idle time period
----------------	--

### 5.12.2.5 writeFileRequestProcessed

```
void quantier::FileIOProcessorAsync::writeFileRequestProcessed (
    bool success,
    QString errorDescription,
    QUuid requestId ) [signal]
```

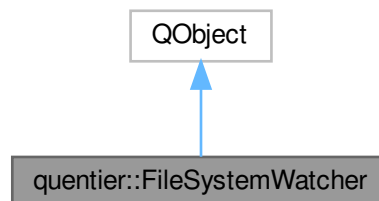
writeFileRequestProcessed signal is emitted when the file write request with given id is finished

#### Parameters

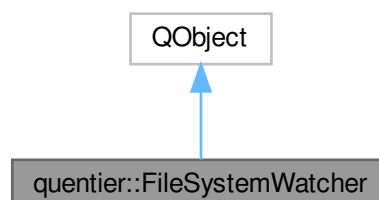
<i>success</i>	True if write operation was successful, false otherwise
<i>errorDescription</i>	Textual description of the error
<i>requestId</i>	Unique identifier of the file write request

## 5.13 quantier::FileSystemWatcher Class Reference

Inheritance diagram for quantier::FileSystemWatcher:



Collaboration diagram for quantier::FileSystemWatcher:



## Signals

- `void directoryChanged (const QString &path)`
- `void directoryRemoved (const QString &path)`
- `void fileChanged (const QString &path)`
- `void fileRemoved (const QString &path)`

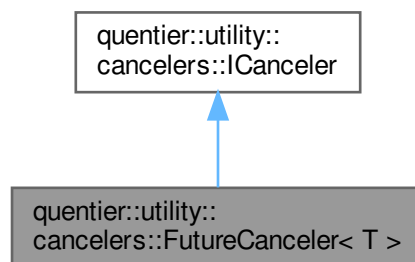
## Public Member Functions

- `FileSystemWatcher (int removalTimeoutMSec=FILE_SYSTEM_WATCHER_DEFAULT_REMOVAL_TIMEOUT_MSEC, QObject *parent=nullptr)`
- `FileSystemWatcher (const QStringList &paths, int removalTimeoutMSec=FILE_SYSTEM_WATCHER_DEFAULT_REMOVAL_TIMEOUT_MSEC, QObject *parent=nullptr)`
- `void addPath (const QString &path)`
- `void addPaths (const QStringList &paths)`
- `QStringList directories () const`
- `QStringList files () const`
- `void removePath (const QString &path)`
- `void removePaths (const QStringList &paths)`

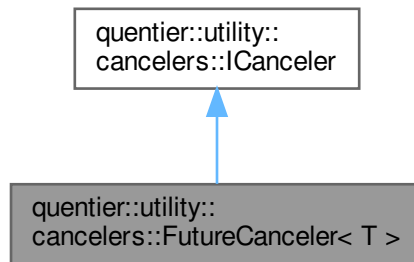
## 5.14 quantier::utility::cancelers::FutureCanceler< T > Class Template Reference

```
#include <FutureCanceler.h>
```

Inheritance diagram for quantier::utility::cancelers::FutureCanceler< T >:



Collaboration diagram for `quentier::utility::cancelers::FutureCanceler< T >`:



## Public Member Functions

- **FutureCanceler** (`QFuture< T >` future)
- `bool isCanceled () const noexcept override`

### 5.14.1 Detailed Description

```
template<class T>
class quentier::utility::cancelers::FutureCanceler< T >
```

`ICanceler` implementation which tracks the canceled status of a future.

### 5.14.2 Member Function Documentation

#### 5.14.2.1 isCanceled()

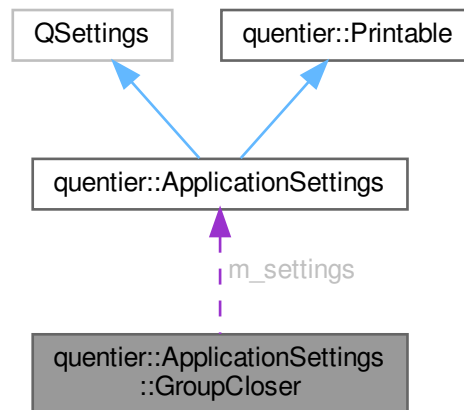
```
template<class T>
bool quentier::utility::cancelers::FutureCanceler< T >::isCanceled ( ) const [inline], [override],
[virtual], [noexcept]
```

Implements `quentier::utility::cancelers::ICanceler`.

## 5.15 `quentier::ApplicationSettings::GroupCloser` Struct Reference

```
#include <ApplicationSettings.h>
```

Collaboration diagram for `quentier::ApplicationSettings::GroupCloser`:



### Public Member Functions

- `GroupCloser` ([ApplicationSettings](#) &[settings](#))

### Public Attributes

- [ApplicationSettings](#) & `m_settings`

#### 5.15.1 Detailed Description

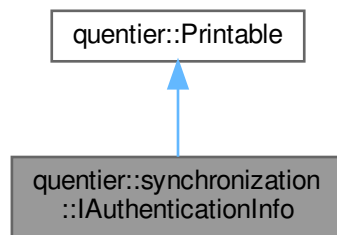
Helper struct for RAIL style of ensuring the group once opened would be closed even if exception is thrown after beginning the group

## 5.16 `quentier::synchronization::IAuthenticationInfo` Class Reference

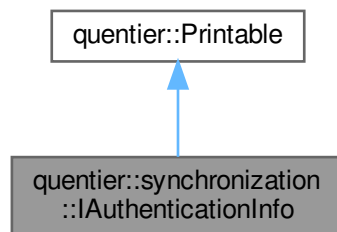
The [IAuthenticationInfo](#) interface represents the information obtained through OAuth and necessary to access Evernote API.

```
#include <IAuthenticationInfo.h>
```

Inheritance diagram for `quentier::synchronization::IAuthenticationInfo`:



Collaboration diagram for `quentier::synchronization::IAuthenticationInfo`:



### Public Member Functions

- `virtual` `qevercloud::UserID` `userId` () `const` =0
- `virtual` `QString` `authToken` () `const` =0
- `virtual` `qevercloud::Timestamp` `authTokenExpirationTime` () `const` =0
- `virtual` `qevercloud::Timestamp` `authenticationTime` () `const` =0
- `virtual` `QString` `shardId` () `const` =0
- `virtual` `QString` `noteStoreUrl` () `const` =0
- `virtual` `QString` `webApiUrlPrefix` () `const` =0
- `virtual` `QList< QNetworkCookie >` `userStoreCookies` () `const` =0

### Public Member Functions inherited from `quentier::Printable`

- `virtual` `QTextStream` & `print` (`QTextStream` &`strm`) `const` =0
- `QString` `toString` () `const`

### 5.16.1 Detailed Description

The [IAuthenticationInfo](#) interface represents the information obtained through OAuth and necessary to access Evernote API.

### 5.16.2 Member Function Documentation

#### 5.16.2.1 authenticationTime()

```
virtual qevercloud::Timestamp quantier::synchronization::IAuthenticationInfo::authentication←  
Time ( ) const [pure virtual]
```

Timestamp at which authentication info was received from Evernote

#### 5.16.2.2 authToken()

```
virtual QString quantier::synchronization::IAuthenticationInfo::authToken ( ) const [pure  
virtual]
```

Authentication token which needs to be used for access to Evernote API

#### 5.16.2.3 authTokenExpirationTime()

```
virtual qevercloud::Timestamp quantier::synchronization::IAuthenticationInfo::authToken←  
ExpirationTime ( ) const [pure virtual]
```

Expiration timestamp for the authentication token

#### 5.16.2.4 noteStoreUrl()

```
virtual QString quantier::synchronization::IAuthenticationInfo::noteStoreUrl ( ) const [pure  
virtual]
```

Url of the note store service for this user

#### 5.16.2.5 shardId()

```
virtual QString quantier::synchronization::IAuthenticationInfo::shardId ( ) const [pure virtual]
```

Shard identifier which needs to be used for access to Evernote API along with the authentication token

#### 5.16.2.6 userId()

```
virtual qevercloud::UserID quantier::synchronization::IAuthenticationInfo::userId ( ) const  
[pure virtual]
```

Identifier of the authenticated user

### 5.16.2.7 userStoreCookies()

```
virtual QList< QNetworkCookie > quantier::synchronization::IAuthenticationInfo::userStore←
Cookies ( ) const [pure virtual]
```

The list of network cookies received during OAuth procedure. Although is is not mentioned anywhere in Evernote docs, these cookies might have to be used for access to user store. See this discussion for reference: <https://discussion.evernote.com/forums/topic/124257-calls-to-userstore-from-evernote-api-stop>

### 5.16.2.8 webApiUrlPrefix()

```
virtual QString quantier::synchronization::IAuthenticationInfo::webApiUrlPrefix ( ) const
[pure virtual]
```

Url prefix for Evernote Web API.

See also

`qevercloud::PublicUserInfo::webApiUrlPrefix`

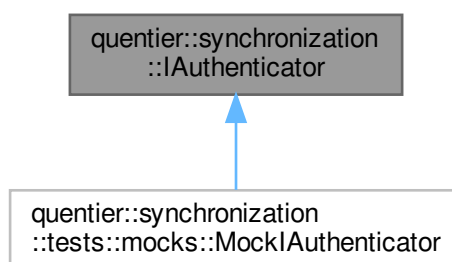
## 5.17 quantier::synchronization::IAuthenticationInfoBuilder Class Reference

### Public Member Functions

- `virtual IAuthenticationInfoBuilder & setUserId (qevercloud::UserID userId)=0`
- `virtual IAuthenticationInfoBuilder & setAuthToken (QString token)=0`
- `virtual IAuthenticationInfoBuilder & setAuthTokenExpirationTime (qevercloud::Timestamp expirationTime)=0`
- `virtual IAuthenticationInfoBuilder & setAuthenticationTime (qevercloud::Timestamp authenticationTime)=0`
- `virtual IAuthenticationInfoBuilder & setShardId (QString shardId)=0`
- `virtual IAuthenticationInfoBuilder & setNoteStoreUrl (QString noteStoreUrl)=0`
- `virtual IAuthenticationInfoBuilder & setWebApiUrlPrefix (QString webApiUrlPrefix)=0`
- `virtual IAuthenticationInfoBuilder & setUserStoreCookies (QList< QNetworkCookie > cookies)=0`
- `virtual IAuthenticationInfoPtr build ()=0`

## 5.18 quantier::synchronization::IAuthenticator Class Reference

Inheritance diagram for `quantier::synchronization::IAuthenticator`:





**Public Member Functions**

- [virtual QFuture](#)< IAuthenticationInfoPtr > **authenticateNewAccount** ()=0
- [virtual QFuture](#)< IAuthenticationInfoPtr > **authenticateAccount** ([Account](#) account)=0

## 5.19 quantier::ResourceRecognitionIndexItem::IBarcodeItem Struct Reference

**Public Member Functions**

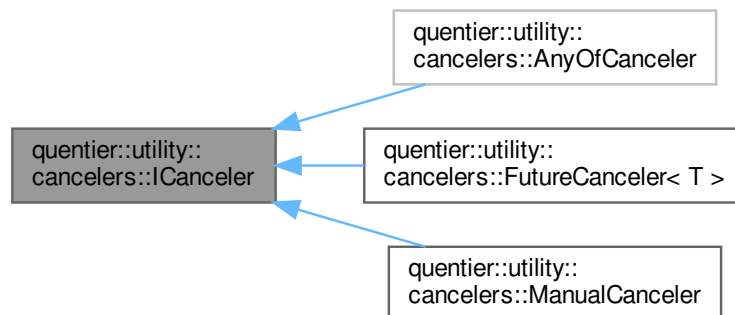
- [virtual QString](#) **barcode** () [const](#) =0
- [virtual int](#) **weight** () [const](#) =0

## 5.20 quantier::utility::cancelers::ICanceler Class Reference

The [ICanceler](#) interface provides isCanceled method which can be used to check whether some processing can be skipped because it was canceled.

```
#include <ICanceler.h>
```

Inheritance diagram for quantier::utility::cancelers::ICanceler:

**Public Member Functions**

- [virtual bool](#) **isCanceled** () [const](#) =0

### 5.20.1 Detailed Description

The [ICanceler](#) interface provides isCanceled method which can be used to check whether some processing can be skipped because it was canceled.

## 5.21 quotient::enml::IConverter Class Reference

The [IConverter](#) interface encapsulates a set of methods performing conversions between ENML and other note content formats, namely HTML.

```
#include <IConverter.h>
```

### Public Types

- enum class [EnexExportTags](#) { **Yes** = 0 , **No** }

*The EnexExportTags enum allows to specify whether export of note(s) to ENEX should include the names of note's tags or not.*

### Public Member Functions

- virtual [Result](#)< [QString](#), [ErrorString](#) > [convertHtmlToEnml](#) (const [QString](#) &html, [IDecryptedTextCache](#) &decryptedTextCache, const [QList](#)< [conversion\\_rules::ISkipRulePtr](#) > &skipRules={}) const =0
- virtual [Result](#)< void, [ErrorString](#) > [convertHtmlToDoc](#) (const [QString](#) &html, [QTextDocument](#) &doc, const [QList](#)< [conversion\\_rules::ISkipRulePtr](#) > &skipRules={}) const =0
- virtual [Result](#)< [QString](#), [ErrorString](#) > [convertHtmlToXml](#) (const [QString](#) &html) const =0
- virtual [Result](#)< [QString](#), [ErrorString](#) > [convertHtmlToXhtml](#) (const [QString](#) &html) const =0
- virtual [Result](#)< [IHtmlDataPtr](#), [ErrorString](#) > [convertEnmlToHtml](#) (const [QString](#) &enml, [IDecryptedTextCache](#) &decryptedTextCache) const =0
- virtual [Result](#)< [QString](#), [ErrorString](#) > [convertEnmlToPlainText](#) (const [QString](#) &enml) const =0
- virtual [Result](#)< [QStringList](#), [ErrorString](#) > [convertEnmlToWordsList](#) (const [QString](#) &enml) const =0
- virtual [QStringList](#) [convertPlainTextToWordsList](#) (const [QString](#) &plainText) const =0
- virtual [Result](#)< void, [ErrorString](#) > [validateEnml](#) (const [QString](#) &enml) const =0
- virtual [Result](#)< [QString](#), [ErrorString](#) > [validateAndFixupEnml](#) (const [QString](#) &enml) const =0
- virtual [Result](#)< [QString](#), [ErrorString](#) > [exportNotesToEnex](#) (const [QList](#)< [qevercloud::Note](#) > &notes, const [QHash](#)< [QString](#), [QString](#) > &tagNamesByTagLocalIds, [EnexExportTags](#) exportTagsOption, const [QString](#) &version={}) const =0
- virtual [Result](#)< [QList](#)< [qevercloud::Note](#) >, [ErrorString](#) > [importEnex](#) (const [QString](#) &enex) const =0

### 5.21.1 Detailed Description

The [IConverter](#) interface encapsulates a set of methods performing conversions between ENML and other note content formats, namely HTML.

### 5.21.2 Member Function Documentation

#### 5.21.2.1 convertEnmlToHtml()

```
virtual Result< IHtmlDataPtr, ErrorString > quotient::enml::IConverter::convertEnmlToHtml (
    const QString & enml,
    IDecryptedTextCache & decryptedTextCache ) const [pure virtual]
```

Converts ENML into HTML representation of note content

## Parameters

<i>enml</i>	ENML representation of note content
<i>decryptedTextCache</i>	cache of decrypted text fragments

## Returns

[Result](#) with HTML data in case of success or error string in case of failure

**5.21.2.2 convertEnmlToPlainText()**

```
virtual Result< QString, ErrorString > quantier::enml::IConverter::convertEnmlToPlainText (  
    const QString & enml ) const [pure virtual]
```

Converts ENML into plain text representation of note content

## Parameters

<i>enml</i>	ENML representation of note content
-------------	-------------------------------------

## Returns

[Result](#) with plain text representation of note content in case of success or error string in case of failure

**5.21.2.3 convertEnmlToWordsList()**

```
virtual Result< QStringList, ErrorString > quantier::enml::IConverter::convertEnmlToWordsList (  
    const QString & enml ) const [pure virtual]
```

Converts ENML into a list of words

## Parameters

<i>enml</i>	ENML representation of note content
-------------	-------------------------------------

## Returns

[Result](#) with list of words in case of success or error string in case of failure

**5.21.2.4 convertHtmlToDoc()**

```
virtual Result< void, ErrorString > quantier::enml::IConverter::convertHtmlToDoc (  
    const QString & html,  
    QTextDocument & doc,
```

```
        const QList< conversion_rules::ISkipRulePtr > & skipRules = {} ) const [pure  
virtual]
```

Convert HTML representation of note content into QTextDocument

## Parameters

<i>html</i>	HTML representation of note content
<i>doc</i>	QTextDocument into which the converted note content is put
<i>skipRules</i>	skip rules to be used during the conversion

## Returns

Valid result in case of success or error string in case of failure

## 5.21.2.5 convertHtmlToEnml()

```
virtual Result< QString, ErrorString > quantier::enml::IConverter::convertHtmlToEnml (
    const QString & html,
    IDecryptedTextCache & decryptedTextCache,
    const QList< conversion_rules::ISkipRulePtr > & skipRules = {} ) const [pure
virtual]
```

Converts HTML representation of note content into ENML

## Parameters

<i>html</i>	HTML representation of note content
<i>decryptedTextCache</i>	cache of decrypted text fragments
<i>skipRules</i>	skip rules to be used during the conversion

## Returns

[Result](#) with ENML in case of success or error string in case of failure

## 5.21.2.6 convertHtmlToXhtml()

```
virtual Result< QString, ErrorString > quantier::enml::IConverter::convertHtmlToXhtml (
    const QString & html ) const [pure virtual]
```

Convert HTML representation of note content into a valid XHTML document

## Parameters

<i>html</i>	HTML representation of note content
-------------	-------------------------------------

## Returns

[Result](#) with XHTML in case of success or error string in case of failure

### 5.21.2.7 convertHtmlToXml()

```
virtual Result< QString, ErrorString > quentier::enml::IConverter::convertHtmlToXml (
    const QString & html ) const [pure virtual]
```

Convert HTML representation of note content into a valid XML document

#### Parameters

<i>html</i>	HTML representation of note content
-------------	-------------------------------------

#### Returns

[Result](#) with XML in case of success of error string in case of failure

### 5.21.2.8 convertPlainTextToWordsList()

```
virtual QStringList quentier::enml::IConverter::convertPlainTextToWordsList (
    const QString & plainText ) const [pure virtual]
```

Converts plain text into a list of words

#### Parameters

<i>plainText</i>	plain text representation of note content
------------------	---

#### Returns

list of words

### 5.21.2.9 exportNotesToEnex()

```
virtual Result< QString, ErrorString > quentier::enml::IConverter::exportNotesToEnex (
    const QList< qevercloud::Note > & notes,
    const QHash< QString, QString > & tagNameByTagLocalIds,
    EnexExportTags exportTagsOption,
    const QString & version = {} ) const [pure virtual]
```

Exports a list of notes into ENEX

#### Parameters

<i>notes</i>	notes to be exported into ENEX
<i>tagNameByTagLocalIds</i>	mapper from tag local ids into tag names
<i>exportTagsOption</i>	option controlling the export of tag names
<i>version</i>	optional version tag for ENEX, omitted if not set

**Returns**

[Result](#) with ENEX in case of success or error string in case of failure

**5.21.2.10 importEnex()**

```
virtual Result< QList< qevercloud::Note >, ErrorString > quantier::enml::IConverter::importEnex (
    const QString & enex ) const [pure virtual]
```

Import notes from ENEX

**Parameters**

<i>enex</i>	ENEX to be used for import
-------------	----------------------------

**Returns**

[Result](#) with list of notes in case of success or error string in case of failure

**Note**

if tag names are present in ENEX, corresponding notes would have their tagName field filled

**5.21.2.11 validateAndFixupEnml()**

```
virtual Result< QString, ErrorString > quantier::enml::IConverter::validateAndFixupEnml (
    const QString & enml ) const [pure virtual]
```

Validates ENML and attempts to fix it automatically if it's not valid

**Parameters**

<i>enml</i>	ENML representation of note content
-------------	-------------------------------------

**Returns**

[Result](#) with either unchanged or fixed up ENML in case of success or error string in case of failure

**5.21.2.12 validateEnml()**

```
virtual Result< void, ErrorString > quantier::enml::IConverter::validateEnml (
    const QString & enml ) const [pure virtual]
```

Validates ENML against rules

## Parameters

<i>enml</i>	ENML representation of note content
-------------	-------------------------------------

## Returns

valid [Result](#) in case of success or error string in case of failure

## 5.22 quantier::enml::IDecryptedTextCache Class Reference

## Public Types

- enum class **RememberForSession** { **Yes** , **No** }

## Public Member Functions

- virtual void addDecryptexTextInfo** (const [QString](#) &encryptedText, const [QString](#) &decryptedText, const [QString](#) &passphrase, const [QString](#) &cipher, std::size\_t keyLength, RememberForSession rememberForSession)=0
- virtual** std::optional< std::pair< [QString](#), RememberForSession > > **findDecryptedTextInfo** (const [QString](#) &encryptedText) const =0
- virtual** std::optional< [QString](#) > **updateDecryptedTextInfo** (const [QString](#) &originalEncryptedText, const [QString](#) &newDecryptedText)=0
- virtual void removeDecryptedTextInfo** (const [QString](#) &encryptedText)=0
- virtual void clearNonRememberedForSessionEntries** ()=0

## Friends

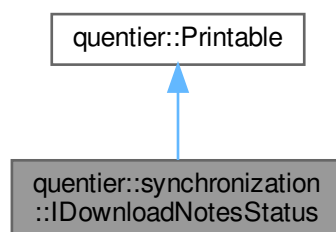
- [QUENTIER\\_EXPORT](#) [QDebug](#) & **operator<<** ([QDebug](#) &dbg, RememberForSession rememberForSession)
- [QUENTIER\\_EXPORT](#) [QTextStream](#) & **operator<<** ([QTextStream](#) &strm, RememberForSession rememberForSession)

## 5.23 quantier::synchronization::IDownloadNotesStatus Class Reference

The [IDownloadNotesStatus](#) interface presents information about the status of notes downloading process.

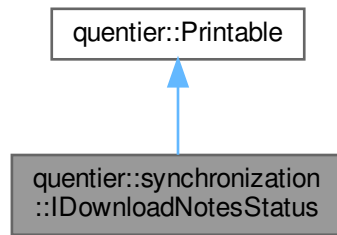
```
#include <IDownloadNotesStatus.h>
```

Inheritance diagram for quantier::synchronization::IDownloadNotesStatus:





Collaboration diagram for `quentier::synchronization::IDownloadNotesStatus`:



### Public Types

- `using QExceptionPtr` = `std::shared_ptr< QException >`
- `using NoteWithException` = `std::pair< qevercloud::Note, QExceptionPtr >`
- `using GuidWithException` = `std::pair< qevercloud::Guid, QExceptionPtr >`
- `using UpdateSequenceNumbersByGuid` = `QHash< qevercloud::Guid, quint32 >`

### Public Member Functions

- `virtual quint64 totalNewNotes () const` =0
- `virtual quint64 totalUpdatedNotes () const` =0
- `virtual quint64 totalExpungedNotes () const` =0
- `virtual QList< NoteWithException > notesWhichFailedToDownload () const` =0
- `virtual QList< NoteWithException > notesWhichFailedToProcess () const` =0
- `virtual QList< GuidWithException > noteGuidsWhichFailedToExpunge () const` =0
- `virtual UpdateSequenceNumbersByGuid processedNoteGuidsAndUsns () const` =0
- `virtual UpdateSequenceNumbersByGuid cancelledNoteGuidsAndUsns () const` =0
- `virtual QList< qevercloud::Guid > expungedNoteGuids () const` =0
- `virtual StopSynchronizationError stopSynchronizationError () const` =0

### Public Member Functions inherited from `quentier::Printable`

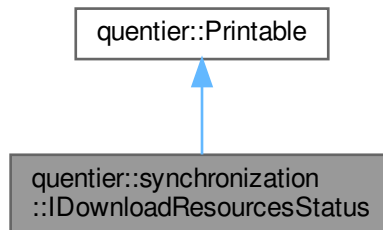
- `virtual QTextStream & print (QTextStream &strm) const` =0
- `QString toString () const`

#### 5.23.1 Detailed Description

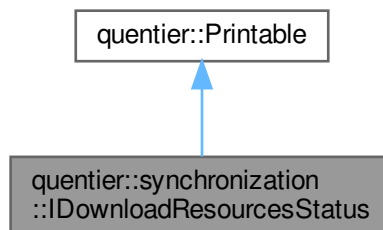
The `IDownloadNotesStatus` interface presents information about the status of notes downloading process.

## 5.24 quantier::synchronization::IDownloadResourcesStatus Class Reference

Inheritance diagram for quantier::synchronization::IDownloadResourcesStatus:



Collaboration diagram for quantier::synchronization::IDownloadResourcesStatus:



### Public Types

- `using QExceptionPtr = std::shared_ptr< QException >`
- `using ResourceWithException = std::pair< qevercloud::Resource, QExceptionPtr >`
- `using UpdateSequenceNumbersByGuid = QHash< qevercloud::Guid, qint32 >`

### Public Member Functions

- `virtual quint64 totalNewResources () const =0`
- `virtual quint64 totalUpdatedResources () const =0`
- `virtual QList< ResourceWithException > resourcesWhichFailedToDownload () const =0`
- `virtual QList< ResourceWithException > resourcesWhichFailedToProcess () const =0`
- `virtual UpdateSequenceNumbersByGuid processedResourceGuidsAndUsns () const =0`
- `virtual UpdateSequenceNumbersByGuid cancelledResourceGuidsAndUsns () const =0`
- `virtual StopSynchronizationError stopSynchronizationError () const =0`

## Public Member Functions inherited from [quantier::Printable](#)

- [virtual QTextStream & print \(QTextStream &strm\) const](#) =0
- [QString toString \(\) const](#)

## 5.25 quantier::enml::IENMLTagsConverter Class Reference

The [IENMLTagsConverter](#) interfaces provides methods which convert Evernote-specific markup tags such as en-crypt, en-media etc. into their counterparts which should be used in the HTML representation of note content.

```
#include <IENMLTagsConverter.h>
```

### Public Member Functions

- [virtual QString convertEnToDo \(bool checked, quint32 index\) const](#) =0
- [virtual QString convertEncryptedText \(const QString &encryptedText, const QString &hint, const QString &cipher, std::size\\_t keyLength, quint32 index\) const](#) =0
- [virtual QString convertDecryptedText \(const QString &decryptedText, const QString &encryptedText, const QString &hint, const QString &cipher, std::size\\_t keyLength, quint32 index\) const](#) =0
- [virtual Result< QString, ErrorString > convertResource \(const qevercloud::Resource &resource\) const](#) =0

### 5.25.1 Detailed Description

The [IENMLTagsConverter](#) interfaces provides methods which convert Evernote-specific markup tags such as en-crypt, en-media etc. into their counterparts which should be used in the HTML representation of note content.

## 5.25.2 Member Function Documentation

### 5.25.2.1 convertDecryptedText()

```
virtual QString quantier::enml::IENMLTagsConverter::convertDecryptedText (
    const QString & decryptedText,
    const QString & encryptedText,
    const QString & hint,
    const QString & cipher,
    std::size_t keyLength,
    quint32 index ) const [pure virtual]
```

Converts already decrypted en-crypt tag into its HTML counterpart

#### Parameters

<i>decryptedText</i>	decrypted text from en-crypt tag
<i>encryptedText</i>	encrypted text contained within en-crypt tag
<i>hint</i>	hint to be displayed when user tries to decrypt the text
<i>cipher</i>	cipher used to ecrypt the text
<i>keyLength</i>	length of the key used to encrypt the text
<i>index</i>	index of particular en-crypt tag within the note content so that different en-crypt tags can be differentiated

**Returns**

HTML representation of decrypted en-crypt tag

**5.25.2.2 convertEncryptedText()**

```
virtual QString quentier::enml::IENMLTagsConverter::convertEncryptedText (
    const QString & encryptedText,
    const QString & hint,
    const QString & cipher,
    std::size_t keyLength,
    quint32 index ) const [pure virtual]
```

Converts en-crypt tag into its HTML counterpart

**Parameters**

<i>encryptedText</i>	encrypted text contained within en-crypt tag
<i>hint</i>	hint to be displayed when user tries to decrypt the text
<i>cipher</i>	cipher used to ecrypt the text
<i>keyLength</i>	length of the key used to encrypt the text
<i>index</i>	index of particular en-crypt tag within the note content so that different en-crypt tags can be differentiated

**Returns**

HTML representation of en-crypt tag

**5.25.2.3 convertEnToDo()**

```
virtual QString quentier::enml::IENMLTagsConverter::convertEnToDo (
    bool checked,
    quint32 index ) const [pure virtual]
```

Converts en-todo tag into its HTML counterpart

**Parameters**

<i>checked</i>	indicates whether this todo is checked or not
<i>index</i>	index of particular en-todo tag within the note content so that different todo tags can be differentiated

**Returns**

HTML representation of en-todo tag

**5.25.2.4 convertResource()**

```
virtual Result< QString, ErrorString > quentier::enml::IENMLTagsConverter::convertResource (
    const qevercloud::Resource & resource ) const [pure virtual]
```

Converts en-media tag representing a resource into its HTML counterpart

## Parameters

<i>resource</i>	resource corresponding to en-media tag
-----------------	--

## Returns

[Result](#) with valid HTML representing the resource/en-media tag in case of success or error string in case of failure

## 5.26 `quentier::synchronization::ISyncConflictResolver::ConflictResolution::IgnoreMine` Struct Reference

The [IgnoreMine](#) conflict resolution means "use theirs version and ignore mine version as it doesn't really conflict with theirs version".

```
#include <ISyncConflictResolver.h>
```

### 5.26.1 Detailed Description

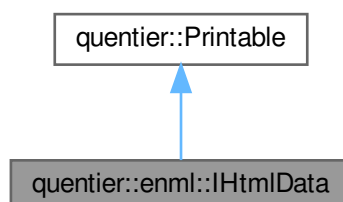
The [IgnoreMine](#) conflict resolution means "use theirs version and ignore mine version as it doesn't really conflict with theirs version".

## 5.27 `quentier::enml::IHtmlData` Struct Reference

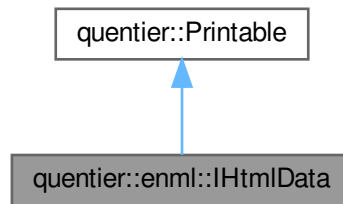
The [IHtmlData](#) represents the result of ENML to HTML conversion: HTML itself plus some metadata.

```
#include <IHtmlData.h>
```

Inheritance diagram for `quentier::enml::IHtmlData`:



Collaboration diagram for quantier::enml::IHtmlData:



### Public Member Functions

- `virtual QString html () const =0`
- `virtual quint32 numEnToDoNodes () const =0`
- `virtual quint32 numHyperlinkNodes () const =0`
- `virtual quint32 numEnCryptNodes () const =0`
- `virtual quint32 numEnDecryptedNodes () const =0`
- `QTextStream & print (QTextStream &strm) const override`

### Public Member Functions inherited from `quantier::Printable`

- `QString toString () const`

#### 5.27.1 Detailed Description

The `IHtmlData` represents the result of ENML to HTML conversion: HTML itself plus some metadata.

#### 5.27.2 Member Function Documentation

##### 5.27.2.1 `html()`

```
virtual QString quantier::enml::IHtmlData::html ( ) const [pure virtual]
```

HTML representation of note content

##### 5.27.2.2 `numEnCryptNodes()`

```
virtual quint32 quantier::enml::IHtmlData::numEnCryptNodes ( ) const [pure virtual]
```

Number of en-crypt nodes within note HTML

### 5.27.2.3 numEnDecryptedNodes()

```
virtual quint32 quentier::enml::IHtmlData::numEnDecryptedNodes ( ) const [pure virtual]
```

Number of decrypted en-crypt nodes within note HTML

### 5.27.2.4 numEnToDoNodes()

```
virtual quint32 quentier::enml::IHtmlData::numEnToDoNodes ( ) const [pure virtual]
```

Number of ToDo nodes within note HTML

### 5.27.2.5 numHyperlinkNodes()

```
virtual quint32 quentier::enml::IHtmlData::numHyperlinkNodes ( ) const [pure virtual]
```

Number of hyperlink nodes within note HTML

### 5.27.2.6 print()

```
QTextStream & quentier::enml::IHtmlData::print (
    QTextStream & strm ) const [override], [virtual]
```

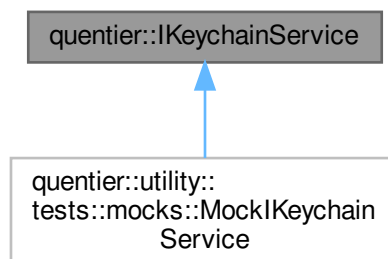
Implements [quentier::Printable](#).

## 5.28 quentier::IKeychainService Class Reference

The [IKeychainService](#) interface provides the ability to interact with the storage of sensitive data - read, write and delete it.

```
#include <IKeychainService.h>
```

Inheritance diagram for quentier::IKeychainService:





## Classes

- class [Exception](#)

The *[IKeychainService::Exception](#)* class is the base class for exceptions returned inside *QFutures* from methods of *IKeychainService*.

## Public Types

- enum class [ErrorCode](#) {  
[NoError](#) , [EntryNotFound](#) , [CouldNotDeleteEntry](#) , [AccessDeniedByUser](#) ,  
[AccessDenied](#) , [NoBackendAvailable](#) , [NotImplemented](#) , [OtherError](#) }

## Public Member Functions

- virtual [QFuture< void >](#) [writePassword](#) ([QString](#) service, [QString](#) key, [QString](#) password)=0
- virtual [QFuture< QString >](#) [readPassword](#) ([QString](#) service, [QString](#) key) const =0
- virtual [QFuture< void >](#) [deletePassword](#) ([QString](#) service, [QString](#) key)=0

## Friends

- [QUENTIER\\_EXPORT](#) [QTextStream](#) & [operator<<](#) ([QTextStream](#) &strm, [ErrorCode](#) errorCode)
- [QUENTIER\\_EXPORT](#) [QDebug](#) & [operator<<](#) ([QDebug](#) &dbg, [ErrorCode](#) errorCode)

### 5.28.1 Detailed Description

The [IKeychainService](#) interface provides the ability to interact with the storage of sensitive data - read, write and delete it.

### 5.28.2 Member Enumeration Documentation

#### 5.28.2.1 ErrorCode

```
enum class quentier::IKeychainService::ErrorCode [strong]
```

Error codes for results of operations with the keychain service

#### Enumerator

<a href="#">NoError</a>	No error occurred, operation was successful
<a href="#">EntryNotFound</a>	For the given key no data was found
<a href="#">CouldNotDeleteEntry</a>	Could not delete existing secret data
<a href="#">AccessDeniedByUser</a>	User denied access to keychain
<a href="#">AccessDenied</a>	Access denied for some reason
<a href="#">NoBackendAvailable</a>	No platform-specific keychain service available
<a href="#">NotImplemented</a>	Not implemented on platform
<a href="#">OtherError</a>	Something else went wrong, the error description specifies what

## 5.28.3 Member Function Documentation

### 5.28.3.1 deletePassword()

```
virtual QFuture< void > quantier::IKeychainService::deletePassword (
    QString service,
    QString key ) [pure virtual]
```

deletePassword potentially asynchronously deletes password from the keychain.

#### Parameters

<i>service</i>	Name of service within the keychain
<i>key</i>	Key under which the password is stored

#### Returns

Future which becomes finished when the operation is complete. If the operation fails, the future would contain an exception.

### 5.28.3.2 readPassword()

```
virtual QFuture< QString > quantier::IKeychainService::readPassword (
    QString service,
    QString key ) const [pure virtual]
```

readPassword method potentially asynchronously reads password from the keychain.

#### Parameters

<i>service</i>	Name of service within the keychain
<i>key</i>	Key under which the password is stored

#### Returns

Future which becomes finished when the operation is complete. The value inside the future would be the read password. If the operation fails, the future would contain an exception.

### 5.28.3.3 writePassword()

```
virtual QFuture< void > quantier::IKeychainService::writePassword (
    QString service,
    QString key,
    QString password ) [pure virtual]
```

writePassword method potentially asynchronously writes password to the keychain.

## Parameters

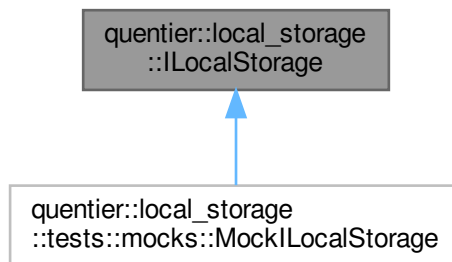
<i>service</i>	Name of service within the keychain
<i>key</i>	Key to store the password under
<i>password</i>	Password to store in the keychain

## Returns

Future which becomes finished when the operation is complete. If the operation fails, the future would contain an exception.

## 5.29 quantier::local\_storage::ILocalStorage Class Reference

Inheritance diagram for quantier::local\_storage::ILocalStorage:



## Classes

- struct [ListGuidsFilters](#)
- struct [ListLinkedNotebooksOptions](#)
- struct [ListNotebooksOptions](#)
- struct [ListNotesOptions](#)
- struct [ListObjectsFilters](#)
- struct [ListOptionsBase](#)
- struct [ListSavedSearchesOptions](#)
- struct [ListTagsOptions](#)

## Public Types

- enum class **StartupOption** { **ClearDatabase** = 1 << 1 , **OverrideLock** = 1 << 2 }
- enum class **ListObjectsFilter** { **Include** , **Exclude** }
- enum class **OrderDirection** { **Ascending** , **Descending** }
- enum class **ListNotebooksOrder** { **NoOrder** , **ByUpdateSequenceNumber** , **ByNotebookName** , **ByCreationTimestamp** , **ByModificationTimestamp** }

- enum class **ListLinkedNotebooksOrder** { **NoOrder** , **ByUpdateSequenceNumber** , **ByShareName** , **ByUsername** }
- enum class **ListTagsOrder** { **NoOrder** , **ByUpdateSequenceNumber** , **ByName** }
- enum class **ListNotesOrder** { **NoOrder** , **ByUpdateSequenceNumber** , **ByTitle** , **ByCreationTimestamp** , **ByModificationTimestamp** , **ByDeletionTimestamp** , **ByAuthor** , **BySource** , **BySourceApplication** , **ByReminderTime** , **ByPlaceName** }
- enum class **ListSavedSearchesOrder** { **NoOrder** , **ByUpdateSequenceNumber** , **ByName** , **ByFormat** }
- enum class **Affiliation** { **Any** , **User** , **AnyLinkedNotebook** , **ParticularLinkedNotebooks** }
- enum class **TagNotesRelation** { **Any** , **WithNotes** , **WithoutNotes** }
- enum class **NoteCountOption** { **IncludeNonDeletedNotes** = 1 << 1 , **IncludeDeletedNotes** = 1 << 2 }
- enum class **UpdateNoteOption** { **UpdateResourceMetadata** = 1 << 1 , **UpdateResourceBinaryData** = 1 << 2 , **UpdateTags** = 1 << 3 }
- enum class **FetchNoteOption** { **WithResourceMetadata** = 1 << 1 , **WithResourceBinaryData** = 1 << 2 }
- enum class **FetchResourceOption** { **WithBinaryData** = 1 << 1 }
- enum class **HighestUsnOption** { **WithinUserOwnContent** , **WithinUserOwnContentAndLinkedNotebooks** }

## Public Member Functions

- **Q\_DECLARE\_FLAGS** ([StartupOptions](#), [StartupOption](#))
- **virtual QFuture< bool > isVersionTooHigh () const** =0
- **virtual QFuture< bool > requiresUpgrade () const** =0
- **virtual QFuture< QList< IPatchPtr > > requiredPatches () const** =0
- **virtual QFuture< qint32 > version () const** =0
- **virtual QFuture< qint32 > highestSupportedVersion () const** =0
- **virtual QFuture< quint32 > userCount () const** =0
- **virtual QFuture< void > putUser (qevercloud::User user)=0**
- **virtual QFuture< std::optional< qevercloud::User > > findUserById (qevercloud::UserID userId) const** =0
- **virtual QFuture< void > expungeUserById (qevercloud::UserID userId)=0**
- **virtual QFuture< quint32 > notebookCount () const** =0
- **virtual QFuture< void > putNotebook (qevercloud::Notebook notebook)=0**
- **virtual QFuture< std::optional< qevercloud::Notebook > > findNotebookByLocalId (QString notebookLocalId) const** =0
- **virtual QFuture< std::optional< qevercloud::Notebook > > findNotebookByGuid (qevercloud::Guid guid) const** =0
- **virtual QFuture< std::optional< qevercloud::Notebook > > findNotebookByName (QString notebookName, std::optional< qevercloud::Guid > linkedNotebookGuid=std::nullopt) const** =0
- **virtual QFuture< std::optional< qevercloud::Notebook > > findDefaultNotebook () const** =0
- **virtual QFuture< void > expungeNotebookByLocalId (QString notebookLocalId)=0**
- **virtual QFuture< void > expungeNotebookByGuid (qevercloud::Guid notebookGuid)=0**
- **virtual QFuture< void > expungeNotebookByName (QString name, std::optional< qevercloud::Guid > linkedNotebookGuid=std::nullopt)=0**
- **virtual QFuture< QList< qevercloud::Notebook > > listNotebooks (ListNotebooksOptions options={}) const** =0
- **virtual QFuture< QList< qevercloud::SharedNotebook > > listSharedNotebooks (qevercloud::Guid notebookGuid={}) const** =0
- **virtual QFuture< QSet< qevercloud::Guid > > listNotebookGuids (ListGuidsFilters filters, std::optional< qevercloud::Guid > linkedNotebookGuid={}) const** =0
- **virtual QFuture< quint32 > linkedNotebookCount () const** =0
- **virtual QFuture< void > putLinkedNotebook (qevercloud::LinkedNotebook linkedNotebook)=0**
- **virtual QFuture< std::optional< qevercloud::LinkedNotebook > > findLinkedNotebookByGuid (qevercloud::Guid guid) const** =0
- **virtual QFuture< void > expungeLinkedNotebookByGuid (qevercloud::Guid guid)=0**

- `virtual QFuture< QList< qevercloud::LinkedNotebook > > listLinkedNotebooks (ListLinkedNotebooksOptions options={}) const =0`
- `virtual QFuture< quint32 > noteCount (NoteCountOptions options=NoteCountOptions(NoteCountOption::IncludeNonDeletedNotes)) const =0`
- `virtual QFuture< quint32 > noteCountPerNotebookLocalId (QString notebookLocalId, NoteCountOptions options=NoteCountOptions(NoteCountOption::IncludeNonDeletedNotes)) const =0`
- `virtual QFuture< quint32 > noteCountPerTagLocalId (QString tagLocalId, NoteCountOptions options=NoteCountOptions(NoteCountOption::IncludeNonDeletedNotes)) const =0`
- `virtual QFuture< QHash< QString, quint32 > > noteCountsPerTags (ListTagsOptions listTagsOptions={}, NoteCountOptions options=NoteCountOptions(NoteCountOption::IncludeNonDeletedNotes)) const =0`
- `virtual QFuture< quint32 > noteCountPerNotebookAndTagLocalIds (QStringList notebookLocalIds, QStringList tagLocalIds, NoteCountOptions options=NoteCountOptions(NoteCountOption::IncludeNonDeletedNotes)) const =0`
- `virtual QFuture< void > putNote (qevercloud::Note note)=0`
- `virtual QFuture< void > updateNote (qevercloud::Note note, UpdateNoteOptions options)=0`
- `virtual QFuture< std::optional< qevercloud::Note > > findNoteByLocalId (QString noteLocalId, FetchNoteOptions options) const =0`
- `virtual QFuture< std::optional< qevercloud::Note > > findNoteByGuid (qevercloud::Guid noteGuid, FetchNoteOptions options) const =0`
- `virtual QFuture< QList< qevercloud::Note > > listNotes (FetchNoteOptions fetchOptions, ListNotesOptions listOptions={}) const =0`
- `virtual QFuture< QList< qevercloud::Note > > listNotesPerNotebookLocalId (QString notebookLocalId, FetchNoteOptions fetchOptions, ListNotesOptions listOptions={}) const =0`
- `virtual QFuture< QList< qevercloud::Note > > listNotesPerTagLocalId (QString tagLocalId, FetchNoteOptions fetchOptions, ListNotesOptions listOptions={}) const =0`
- `virtual QFuture< QList< qevercloud::Note > > listNotesPerNotebookAndTagLocalIds (QStringList notebookLocalIds, QStringList tagLocalIds, FetchNoteOptions fetchOptions, ListNotesOptions listOptions={}) const =0`
- `virtual QFuture< QList< qevercloud::Note > > listNotesByLocalIds (QStringList noteLocalIds, FetchNoteOptions fetchOptions, ListNotesOptions listOptions={}) const =0`
- `virtual QFuture< QSet< qevercloud::Guid > > listNoteGuids (ListGuidsFilters filters, std::optional< qevercloud::Guid > linkedNotebookGuid={}) const =0`
- `virtual QFuture< QList< qevercloud::Note > > queryNotes (NoteSearchQuery query, FetchNoteOptions fetchOptions) const =0`
- `virtual QFuture< QStringList > queryNoteLocalIds (NoteSearchQuery query) const =0`
- `virtual QFuture< void > expungeNoteByLocalId (QString noteLocalId)=0`
- `virtual QFuture< void > expungeNoteByGuid (qevercloud::Guid noteGuid)=0`
- `virtual QFuture< quint32 > tagCount () const =0`
- `virtual QFuture< void > putTag (qevercloud::Tag tag)=0`
- `virtual QFuture< std::optional< qevercloud::Tag > > findTagByLocalId (QString tagLocalId) const =0`
- `virtual QFuture< std::optional< qevercloud::Tag > > findTagByGuid (qevercloud::Guid tagGuid) const =0`
- `virtual QFuture< std::optional< qevercloud::Tag > > findTagByName (QString tagName, std::optional< qevercloud::Guid > linkedNotebookGuid=std::nullopt) const =0`
- `virtual QFuture< QList< qevercloud::Tag > > listTags (ListTagsOptions options={}) const =0`
- `virtual QFuture< QList< qevercloud::Tag > > listTagsPerNoteLocalId (QString noteLocalId, ListTagsOptions options={}) const =0`
- `virtual QFuture< QSet< qevercloud::Guid > > listTagGuids (ListGuidsFilters filters, std::optional< qevercloud::Guid > linkedNotebookGuid={}) const =0`
- `virtual QFuture< void > expungeTagByLocalId (QString tagLocalId)=0`
- `virtual QFuture< void > expungeTagByGuid (qevercloud::Guid tagGuid)=0`
- `virtual QFuture< void > expungeTagByName (QString name, std::optional< qevercloud::Guid > linkedNotebookGuid=std::nullopt)=0`
- `virtual QFuture< quint32 > resourceCount (NoteCountOptions options=NoteCountOptions(NoteCountOption::IncludeNonDeletedNotes)) const =0`
- `virtual QFuture< quint32 > resourceCountPerNoteLocalId (QString noteLocalId) const =0`
- `virtual QFuture< void > putResource (qevercloud::Resource resource)=0`

- `virtual QFuture< std::optional< qevercloud::Resource > > findResourceByLocalId (QString resourceLocalId, FetchResourceOptions options={}) const =0`
- `virtual QFuture< std::optional< qevercloud::Resource > > findResourceByGuid (qevercloud::Guid resourceGuid, FetchResourceOptions options={}) const =0`
- `virtual QFuture< void > expungeResourceByLocalId (QString resourceLocalId)=0`
- `virtual QFuture< void > expungeResourceByGuid (qevercloud::Guid resourceGuid)=0`
- `virtual QFuture< quint32 > savedSearchCount () const =0`
- `virtual QFuture< void > putSavedSearch (qevercloud::SavedSearch search)=0`
- `virtual QFuture< std::optional< qevercloud::SavedSearch > > findSavedSearchByLocalId (QString savedSearchLocalId) const =0`
- `virtual QFuture< std::optional< qevercloud::SavedSearch > > findSavedSearchByGuid (qevercloud::Guid guid) const =0`
- `virtual QFuture< std::optional< qevercloud::SavedSearch > > findSavedSearchByName (QString name) const =0`
- `virtual QFuture< QList< qevercloud::SavedSearch > > listSavedSearches (ListSavedSearchesOptions options={}) const =0`
- `virtual QFuture< QSet< qevercloud::Guid > > listSavedSearchGuids (ListGuidsFilters filters) const =0`
- `virtual QFuture< void > expungeSavedSearchByLocalId (QString savedSearchLocalId)=0`
- `virtual QFuture< void > expungeSavedSearchByGuid (qevercloud::Guid guid)=0`
- `virtual QFuture< qint32 > highestUpdateSequenceNumber (HighestUsnOption option) const =0`
- `virtual QFuture< qint32 > highestUpdateSequenceNumber (qevercloud::Guid linkedNotebookGuid) const =0`
- `virtual ILocalStorageNotifier * notifier () const =0`

## Friends

- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, StartupOption option)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, StartupOption option)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, StartupOptions options)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, StartupOptions options)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, ListObjectsFilter filter)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, ListObjectsFilter filter)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, const ListObjectsFilters &filters)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, const ListObjectsFilters &filters)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, const ListGuidsFilters &filters)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, const ListGuidsFilters &filters)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, OrderDirection orderDirection)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, OrderDirection orderDirection)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, ListNotebooksOrder order)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, ListNotebooksOrder order)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, ListLinkedNotebooksOrder order)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, ListLinkedNotebooksOrder order)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, ListTagsOrder order)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, ListTagsOrder order)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, ListNotesOrder order)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, ListNotesOrder order)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, ListSavedSearchesOrder order)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, ListSavedSearchesOrder order)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, Affiliation affiliation)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, Affiliation affiliation)`
- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, const ListNotebooksOptions &options)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, const ListNotebooksOptions &options)`

- [QUENTIER\\_EXPORT QTextStream & operator<< \(QTextStream &strm, const ListLinkedNotebooksOptions &options\)](#)
- [QUENTIER\\_EXPORT QDebug & operator<< \(QDebug &dbg, const ListLinkedNotebooksOptions &options\)](#)
- [QUENTIER\\_EXPORT QTextStream & operator<< \(QTextStream &strm, const ListSavedSearchesOptions &options\)](#)
- [QUENTIER\\_EXPORT QDebug & operator<< \(QDebug &dbg, const ListSavedSearchesOptions &options\)](#)
- [QUENTIER\\_EXPORT QTextStream & operator<< \(QTextStream &strm, const ListNotesOptions &options\)](#)
- [QUENTIER\\_EXPORT QDebug & operator<< \(QDebug &dbg, const ListNotesOptions &options\)](#)
- [QUENTIER\\_EXPORT QTextStream & operator<< \(QTextStream &strm, const ListTagsOptions &options\)](#)
- [QUENTIER\\_EXPORT QDebug & operator<< \(QDebug &dbg, const ListTagsOptions &options\)](#)
- [QUENTIER\\_EXPORT QTextStream & operator<< \(QTextStream &strm, NoteCountOption option\)](#)
- [QUENTIER\\_EXPORT QDebug & operator<< \(QDebug &dbg, NoteCountOption option\)](#)
- [QUENTIER\\_EXPORT QTextStream & operator<< \(QTextStream &strm, NoteCountOptions options\)](#)
- [QUENTIER\\_EXPORT QDebug & operator<< \(QDebug &dbg, NoteCountOptions options\)](#)
- [QUENTIER\\_EXPORT QTextStream & operator<< \(QTextStream &strm, UpdateNoteOption option\)](#)
- [QUENTIER\\_EXPORT QDebug & operator<< \(QDebug &dbg, UpdateNoteOption option\)](#)
- [QUENTIER\\_EXPORT QTextStream & operator<< \(QTextStream &strm, UpdateNoteOptions options\)](#)
- [QUENTIER\\_EXPORT QDebug & operator<< \(QDebug &dbg, UpdateNoteOptions options\)](#)
- [QUENTIER\\_EXPORT QTextStream & operator<< \(QTextStream &strm, FetchNoteOption option\)](#)
- [QUENTIER\\_EXPORT QDebug & operator<< \(QDebug &dbg, FetchNoteOption option\)](#)
- [QUENTIER\\_EXPORT QTextStream & operator<< \(QTextStream &strm, FetchNoteOptions options\)](#)
- [QUENTIER\\_EXPORT QDebug & operator<< \(QDebug &dbg, FetchNoteOptions options\)](#)
- [QUENTIER\\_EXPORT QTextStream & operator<< \(QTextStream &strm, FetchResourceOption option\)](#)
- [QUENTIER\\_EXPORT QDebug & operator<< \(QDebug &dbg, FetchResourceOption option\)](#)
- [QUENTIER\\_EXPORT QTextStream & operator<< \(QTextStream &strm, FetchResourceOptions options\)](#)
- [QUENTIER\\_EXPORT QDebug & operator<< \(QDebug &dbg, FetchResourceOptions options\)](#)
- [QUENTIER\\_EXPORT QTextStream & operator<< \(QTextStream &strm, HighestUsnOption option\)](#)
- [QUENTIER\\_EXPORT QDebug & operator<< \(QDebug &dbg, HighestUsnOption option\)](#)

## 5.29.1 Member Enumeration Documentation

### 5.29.1.1 Affiliation

```
enum class quantier::local_storage::ILocalStorage::Affiliation [strong]
```

Denotes whether some data item belongs to user's own account, any of linked notebooks or particular linked notebooks

### 5.29.1.2 TagNotesRelation

```
enum class quantier::local_storage::ILocalStorage::TagNotesRelation [strong]
```

Denotes the relation between tag and notes - whether any note is using the given tag

Enumerator

Any	The tag might be used by some notes or it might not be.
WithNotes	The tag is used by some notes.
WithoutNotes	The tag is not used by any note.

## 5.29.2 Member Function Documentation

### 5.29.2.1 notifier()

```
virtual ILocalStorageNotifier * quantier::local_storage::ILocalStorage::notifier ( ) const  
[pure virtual]
```

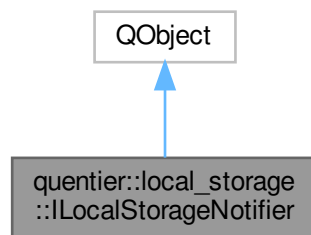
Notifications about the events occurring with the local storage are done via signals emitted by [ILocalStorageNotifier](#).

#### Returns

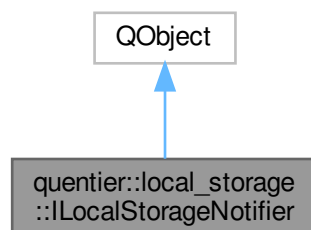
the pointer to [ILocalStorageNotifier](#) object which would be valid for at least as long as [ILocalStorage](#) object that returned it is alive.

## 5.30 quantier::local\_storage::ILocalStorageNotifier Class Reference

Inheritance diagram for quantier::local\_storage::ILocalStorageNotifier:



Collaboration diagram for quantier::local\_storage::ILocalStorageNotifier:





## Signals

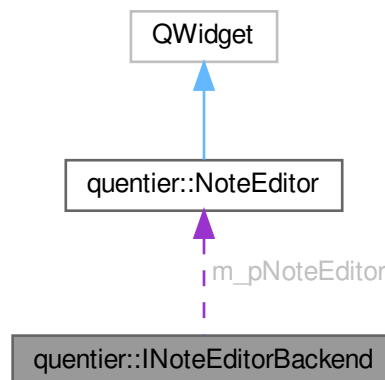
- **void userPut** (qevercloud::User [user](#))
- **void userExpunged** (qevercloud::UserID [userId](#))
- **void notebookPut** (qevercloud::Notebook [notebook](#))
- **void notebookExpunged** (QString [notebookLocalId](#))
- **void linkedNotebookPut** (qevercloud::LinkedNotebook [linkedNotebook](#))
- **void linkedNotebookExpunged** (qevercloud::Guid [linkedNotebookGuid](#))
- **void notePut** (qevercloud::Note [note](#))
- **void noteUpdated** (qevercloud::Note [note](#), ILocalStorage::UpdateNoteOptions [options](#))
- **void noteExpunged** (QString [noteLocalId](#))
- **void tagPut** (qevercloud::Tag [tag](#))
- **void tagExpunged** (QString [tagLocalId](#), QStringList [expungedChildTagLocalIds](#))
- **void resourcePut** (qevercloud::Resource [resource](#))
- **void resourceMetadataPut** (qevercloud::Resource [resource](#))
- **void resourceExpunged** (QString [resourceLocalId](#))
- **void savedSearchPut** (qevercloud::SavedSearch [savedSearch](#))
- **void savedSearchExpunged** (QString [savedSearchLocalId](#))

## Protected Member Functions

- **ILocalStorageNotifier** (QObject \*[parent](#)=nullptr)

## 5.31 quantier::INoteEditorBackend Class Reference

Collaboration diagram for quantier::INoteEditorBackend:



## Public Types

- enum class **Rotation** { **Clockwise** , **Counterclockwise** }

## Public Member Functions

- `virtual void initialize (local_storage::ILocalStoragePtr localStorage, SpellChecker &spellChecker, const Account &account, QThread *pBackgroundJobsThread)=0`
- `virtual QObject * object ()=0`
- `virtual QWidget * widget ()=0`
- `virtual void setAccount (const Account &account)=0`
- `virtual void setUndoStack (QUndoStack *pUndoStack)=0`
- `virtual void setInitialPageHtml (const QString &html)=0`
- `virtual void setNoteNotFoundPageHtml (const QString &html)=0`
- `virtual void setNoteDeletedPageHtml (const QString &html)=0`
- `virtual void setNoteLoadingPageHtml (const QString &html)=0`
- `virtual bool isNoteLoaded () const =0`
- `virtual qint64 idleTime () const =0`
- `virtual void convertToNote ()=0`
- `virtual void saveNoteToLocalStorage ()=0`
- `virtual void setNoteTitle (const QString &noteTitle)=0`
- `virtual void setTagIds (const QStringList &tagLocalUids, const QStringList &tagGuids)=0`
- `virtual void undo ()=0`
- `virtual void redo ()=0`
- `virtual void cut ()=0`
- `virtual void copy ()=0`
- `virtual void paste ()=0`
- `virtual void pasteUnformatted ()=0`
- `virtual void selectAll ()=0`
- `virtual void formatSelectionAsSourceCode ()=0`
- `virtual void fontMenu ()=0`
- `virtual void textBold ()=0`
- `virtual void textItalic ()=0`
- `virtual void textUnderline ()=0`
- `virtual void textStrikethrough ()=0`
- `virtual void textHighlight ()=0`
- `virtual void alignLeft ()=0`
- `virtual void alignCenter ()=0`
- `virtual void alignRight ()=0`
- `virtual void alignFull ()=0`
- `virtual QString selectedText () const =0`
- `virtual bool hasSelection () const =0`
- `virtual void findNext (const QString &text, bool matchCase) const =0`
- `virtual void findPrevious (const QString &text, bool matchCase) const =0`
- `virtual void replace (const QString &textToReplace, const QString &replacementText, bool matchCase)=0`
- `virtual void replaceAll (const QString &textToReplace, const QString &replacementText, bool matchCase)=0`
- `virtual void insertToDoCheckbox ()=0`
- `virtual void insertInAppNoteLink (const QString &userId, const QString &shardId, const QString &noteGuid, const QString &linkText)=0`
- `virtual void setSpellcheck (bool enabled)=0`
- `virtual bool spellCheckEnabled () const =0`
- `virtual void setFont (const QFont &font)=0`
- `virtual void setFontHeight (int height)=0`
- `virtual void setFontColor (const QColor &color)=0`
- `virtual void setBackgroundColor (const QColor &color)=0`
- `virtual QPalette defaultPalette () const =0`
- `virtual void setDefaultPalette (const QPalette &pal)=0`
- `virtual const QFont * defaultFont () const =0`
- `virtual void setDefaultFont (const QFont &font)=0`

- **virtual void** **insertHorizontalLine** ()=0
- **virtual void** **increaseFontSize** ()=0
- **virtual void** **decreaseFontSize** ()=0
- **virtual void** **increaseIndentation** ()=0
- **virtual void** **decreaseIndentation** ()=0
- **virtual void** **insertBulletedList** ()=0
- **virtual void** **insertNumberedList** ()=0
- **virtual void** **insertTableDialog** ()=0
- **virtual void** **insertFixedWidthTable** (int rows, int columns, int widthInPixels)=0
- **virtual void** **insertRelativeWidthTable** (int rows, int columns, double relativeWidth)=0
- **virtual void** **insertTableRow** ()=0
- **virtual void** **insertTableColumn** ()=0
- **virtual void** **removeTableRow** ()=0
- **virtual void** **removeTableColumn** ()=0
- **virtual void** **addAttachmentDialog** ()=0
- **virtual void** **saveAttachmentDialog** (const QByteArray &resourceHash)=0
- **virtual void** **saveAttachmentUnderCursor** ()=0
- **virtual void** **openAttachment** (const QByteArray &resourceHash)=0
- **virtual void** **openAttachmentUnderCursor** ()=0
- **virtual void** **copyAttachment** (const QByteArray &resourceHash)=0
- **virtual void** **copyAttachmentUnderCursor** ()=0
- **virtual void** **removeAttachment** (const QByteArray &resourceHash)=0
- **virtual void** **removeAttachmentUnderCursor** ()=0
- **virtual void** **renameAttachment** (const QByteArray &resourceHash)=0
- **virtual void** **renameAttachmentUnderCursor** ()=0
- **virtual void** **rotateImageAttachment** (const QByteArray &resourceHash, Rotation rotationDirection)=0
- **virtual void** **rotateImageAttachmentUnderCursor** (Rotation rotationDirection)=0
- **virtual void** **encryptSelectedText** ()=0
- **virtual void** **decryptEncryptedTextUnderCursor** ()=0
- **virtual void** **decryptEncryptedText** (QString encryptedText, QString cipher, QString keyLength, QString hint, QString enCryptIndex)=0
- **virtual void** **hideDecryptedTextUnderCursor** ()=0
- **virtual void** **hideDecryptedText** (QString encryptedText, QString decryptedText, QString cipher, QString keyLength, QString hint, QString enDecryptedIndex)=0
- **virtual void** **editHyperlinkDialog** ()=0
- **virtual void** **copyHyperlink** ()=0
- **virtual void** **removeHyperlink** ()=0
- **virtual void** **onNoteLoadCancelled** ()=0
- **virtual bool** **print** (QPrinter &printer, ErrorString &errorDescription)=0
- **virtual bool** **exportToPdf** (const QString &absoluteFilePath, ErrorString &errorDescription)=0
- **virtual bool** **exportToEnex** (const QStringList &tagNames, QString &enex, ErrorString &errorDescription)=0
- **virtual QString** **currentNoteLocalId** () const =0
- **virtual void** **setCurrentNoteLocalId** (const QString &noteLocalId)=0
- **virtual void** **clear** ()=0
- **virtual bool** **isModified** () const =0
- **virtual bool** **isEditorPageModified** () const =0
- **virtual void** **setFocusToEditor** ()=0

## Protected Member Functions

- **INoteEditorBackend** (NoteEditor \*parent)

### Protected Attributes

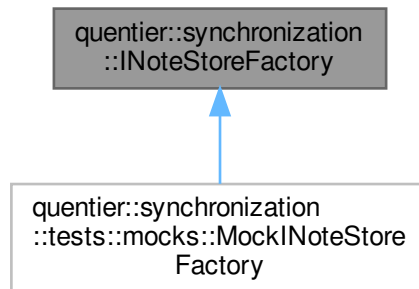
- [NoteEditor](#) \* `m_pNoteEditor`

### Friends

- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, Rotation rotation)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &dbg, Rotation rotation)`

## 5.32 `quentier::synchronization::INoteStoreFactory` Class Reference

Inheritance diagram for `quentier::synchronization::INoteStoreFactory`:

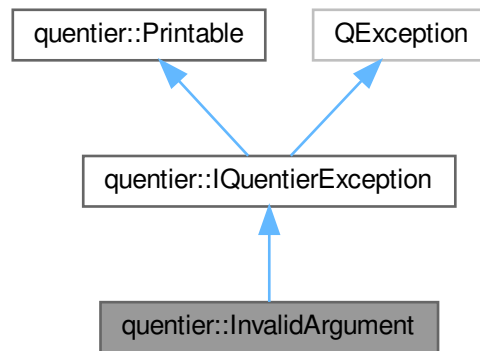


### Public Member Functions

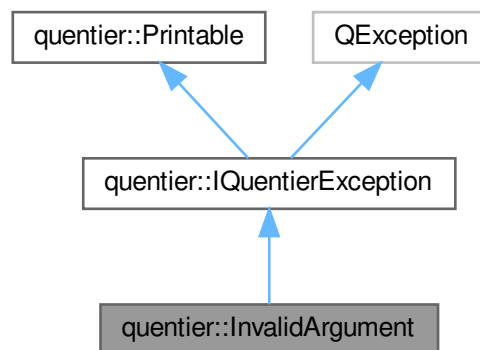
- `virtual qevercloud::INoteStorePtr createNoteStore (QString noteStoreUrl={}, std::optional< qevercloud::↳ Guid > linkedNotebookGuid={}, qevercloud::IRequestContextPtr ctx={}, qevercloud::IRetryPolicyPtr retry↳ Policy={})=0`

## 5.33 `quentier::InvalidArgument` Class Reference

Inheritance diagram for `quentier::InvalidArgument`:



Collaboration diagram for `quentier::InvalidArgument`:



### Public Member Functions

- `InvalidArgument` (`ErrorString` message)
- `InvalidArgument` \* `clone` () `const` override
- `void raise` () `const` override

### Public Member Functions inherited from `quentier::IQuentierException`

- `ErrorString` `errorMessage` () `const`
- `QString` `localizedErrorMessage` () `const`
- `QString` `nonLocalizedErrorMessage` () `const`
- `const char` \* `what` () `const` noexcept override
- `QTextStream` & `print` (`QTextStream` &strm) `const` override

## Public Member Functions inherited from [quentier::Printable](#)

- [QString](#) [toString](#) () [const](#)

## Protected Member Functions

- [QString](#) [exceptionDisplayName](#) () [const](#) [override](#)

## Protected Member Functions inherited from [quentier::IQuentierException](#)

- [IQuentierException](#) ([ErrorString](#) [message](#))
- [IQuentierException](#) ([const IQuentierException](#) &[other](#))
- [IQuentierException](#) & [operator=](#) ([const IQuentierException](#) &[other](#))

## 5.33.1 Member Function Documentation

### 5.33.1.1 [exceptionDisplayName\(\)](#)

```
QString quentier::InvalidArgument::exceptionDisplayName ( ) const \[override\], \[protected\], \[virtual\]
```

Implements [quentier::IQuentierException](#).

## 5.34 [quentier::ResourceRecognitionIndexItem::IObjectItem](#) Struct Reference

### Public Member Functions

- [virtual QString](#) [objectType](#) () [const](#) =0
- [virtual int](#) [weight](#) () [const](#) =0

## 5.35 [quentier::local\\_storage::IPatch](#) Class Reference

The [IPatch](#) interface represents patches of the local storage. Each such patch somehow changes the layout of local storage persistence so that only compliant & corresponding versions of libquentier can be used to work with it.

```
#include <IPatch.h>
```

### Public Member Functions

- [virtual int](#) [fromVersion](#) () [const](#) [noexcept](#)=0
- [virtual int](#) [toVersion](#) () [const](#) [noexcept](#)=0
- [virtual QString](#) [patchShortDescription](#) () [const](#) =0
- [virtual QString](#) [patchLongDescription](#) () [const](#) =0
- [virtual QFuture< void >](#) [backupLocalStorage](#) ()=0
- [virtual QFuture< void >](#) [restoreLocalStorageFromBackup](#) ()=0
- [virtual QFuture< void >](#) [removeLocalStorageBackup](#) ()=0
- [virtual QFuture< void >](#) [apply](#) ()=0

### 5.35.1 Detailed Description

The [IPatch](#) interface represents patches of the local storage. Each such patch somehow changes the layout of local storage persistence so that only compliant & corresponding versions of libquantier can be used to work with it.

### 5.35.2 Member Function Documentation

#### 5.35.2.1 `apply()`

```
virtual QFuture< void > quantier::local_storage::IPatch::apply ( ) [pure virtual]
```

Apply the patch to local storage

##### Returns

Future which can be awaited for patch application. Contains exception if patch application fails.

#### 5.35.2.2 `backupLocalStorage()`

```
virtual QFuture< void > quantier::local_storage::IPatch::backupLocalStorage ( ) [pure virtual]
```

Backup either the entire local storage or its parts affected by the particular patch, should be called before applying the patch (but can be skipped if not desired).

##### Returns

Future which can be awaited for the backup completion. Contains exception if backup fails.

#### 5.35.2.3 `fromVersion()`

```
virtual int quantier::local_storage::IPatch::fromVersion ( ) const [pure virtual], [noexcept]
```

##### Returns

Version of local storage to which the patch needs to be applied

#### 5.35.2.4 `patchLongDescription()`

```
virtual QString quantier::local_storage::IPatch::patchLongDescription ( ) const [pure virtual]
```

##### Returns

Long i.e. detailed description of the patch

#### 5.35.2.5 patchShortDescription()

```
virtual QString quentier::local_storage::IPatch::patchShortDescription ( ) const [pure virtual]
```

##### Returns

Short description of the patch

#### 5.35.2.6 removeLocalStorageBackup()

```
virtual QFuture< void > quentier::local_storage::IPatch::removeLocalStorageBackup ( ) [pure virtual]
```

Remove the previously made backup of local storage, presumably after successful application of the patch so the backup is no longer needed. It won't work if no backup was made before applying a patch, obviously.

##### Returns

Future which can be awaited for local storage backup removal. Contains exception if backup removal fails.

#### 5.35.2.7 restoreLocalStorageFromBackup()

```
virtual QFuture< void > quentier::local_storage::IPatch::restoreLocalStorageFromBackup ( ) [pure virtual]
```

Restore local storage from previously made backup, presumably after the failed attempt to apply a patch. Won't work if no backup was made before applying a patch, obviously.

##### Returns

Future which can be awaited for the backup restoration completion. Contains exception if backup restoration fails.

#### 5.35.2.8 toVersion()

```
virtual int quentier::local_storage::IPatch::toVersion ( ) const [pure virtual], [noexcept]
```

##### Returns

Version of local storage to which the patch would upgrade the local storage

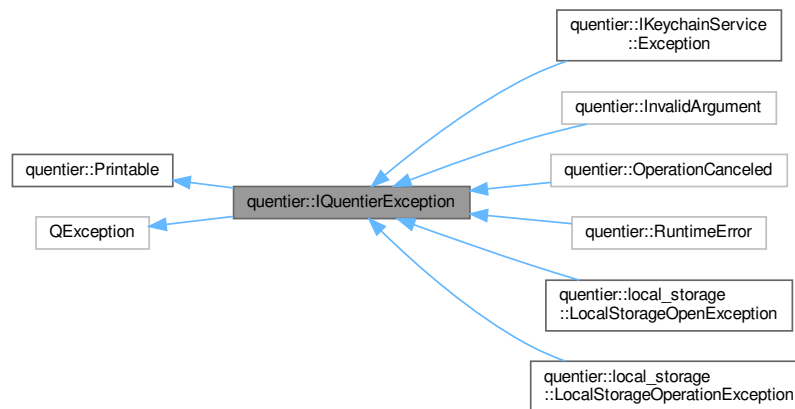


## 5.36 quantier::IQuantierException Class Reference

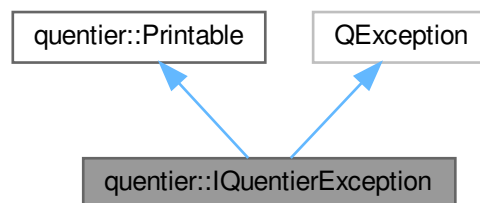
The [IQuantierException](#) class represents the interface for exceptions specific to libquantier and applications based on it.

```
#include <IQuantierException.h>
```

Inheritance diagram for quantier::IQuantierException:



Collaboration diagram for quantier::IQuantierException:



### Public Member Functions

- [ErrorString](#) `errorMessage () const`
- [QString](#) `localizedErrorMessage () const`
- [QString](#) `nonLocalizedErrorMessage () const`
- `const char *` `what () const` `noexcept override`
- [QTextStream](#) & `print (QTextStream &strm) const override`

### Public Member Functions inherited from [quantier::Printable](#)

- [QString](#) `toString () const`

### Protected Member Functions

- `IQuentierException` (`QString message`)
- `IQuentierException` (`const IQuentierException &other`)
- `IQuentierException` & `operator=` (`const IQuentierException &other`)
- `virtual QString exceptionDisplayName () const` =0

### 5.36.1 Detailed Description

The `IQuentierException` class represents the interface for exceptions specific to libquentier and applications based on it.

In addition to standard exception features inherited from `std::exception`, `IQuentierException` based exceptions can provide both localized and non-localized error messages.

### 5.36.2 Member Function Documentation

#### 5.36.2.1 `print()`

```
QTextStream & quentier::IQuentierException::print (
    QTextStream & strm ) const [override], [virtual]
```

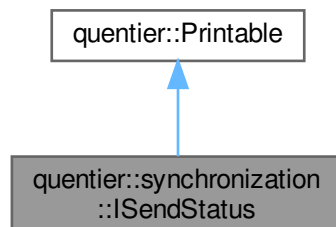
Implements `quentier::Printable`.

## 5.37 `quentier::synchronization::ISendStatus` Class Reference

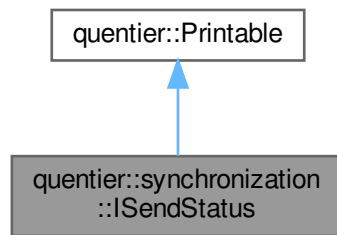
The `ISendStatus` interface represents the information about the attempt to send information either from user's own account or from some linked notebook to Evernote.

```
#include <ISendStatus.h>
```

Inheritance diagram for `quentier::synchronization::ISendStatus`:



Collaboration diagram for quantier::synchronization::ISendStatus:



### Public Types

- `using QExceptionPtr = std::shared_ptr< QException >`
- `using NoteWithException = std::pair< qevercloud::Note, QExceptionPtr >`
- `using NotebookWithException = std::pair< qevercloud::Notebook, QExceptionPtr >`
- `using SavedSearchWithException = std::pair< qevercloud::SavedSearch, QExceptionPtr >`
- `using TagWithException = std::pair< qevercloud::Tag, QExceptionPtr >`

### Public Member Functions

- `virtual quint64 totalAttemptedToSendNotes () const =0`
- `virtual quint64 totalAttemptedToSendNotebooks () const =0`
- `virtual quint64 totalAttemptedToSendSavedSearches () const =0`
- `virtual quint64 totalAttemptedToSendTags () const =0`
- `virtual quint64 totalSuccessfullySentNotes () const =0`
- `virtual QList< NoteWithException > failedToSendNotes () const =0`
- `virtual quint64 totalSuccessfullySentNotebooks () const =0`
- `virtual QList< NotebookWithException > failedToSendNotebooks () const =0`
- `virtual quint64 totalSuccessfullySentSavedSearches () const =0`
- `virtual QList< SavedSearchWithException > failedToSendSavedSearches () const =0`
- `virtual quint64 totalSuccessfullySentTags () const =0`
- `virtual QList< TagWithException > failedToSendTags () const =0`
- `virtual StopSynchronizationError stopSynchronizationError () const =0`
- `virtual bool needToRepeatIncrementalSync () const =0`

### Public Member Functions inherited from `quantier::Printable`

- `virtual QTextStream & print (QTextStream &strm) const =0`
- `QString toString () const`

#### 5.37.1 Detailed Description

The `ISendStatus` interface represents the information about the attempt to send information either from user's own account or from some linked notebook to Evernote.

## 5.37.2 Member Function Documentation

### 5.37.2.1 failedToSendNotebooks()

```
virtual QList< NotebookWithException > quantier::synchronization::ISendStatus::failedToSendNotebooks ( ) const [pure virtual]
```

#### Returns

list with notebooks and exceptions representing failures to send these notebooks to Evernote

### 5.37.2.2 failedToSendNotes()

```
virtual QList< NoteWithException > quantier::synchronization::ISendStatus::failedToSendNotes ( ) const [pure virtual]
```

#### Returns

list with notes and exceptions representing failures to send these notes to Evernote

### 5.37.2.3 failedToSendSavedSearches()

```
virtual QList< SavedSearchWithException > quantier::synchronization::ISendStatus::failedToSendSavedSearches ( ) const [pure virtual]
```

#### Returns

list with saved searches and exceptions representing failures to send these saved searches to Evernote

### 5.37.2.4 failedToSendTags()

```
virtual QList< TagWithException > quantier::synchronization::ISendStatus::failedToSendTags ( ) const [pure virtual]
```

#### Returns

list with tags and exceptions representing failures to send these tags to Evernote

### 5.37.2.5 needToRepeatIncrementalSync()

```
virtual bool quantier::synchronization::ISendStatus::needToRepeatIncrementalSync ( ) const [pure virtual]
```

If during the send step of synchronization it was found out that Evernote service's state of account has been updated since the last download step, returns true meaning that incremental download step should be repeated. Otherwise returns false.

### 5.37.2.6 stopSynchronizationError()

```
virtual StopSynchronizationError quentier::synchronization::ISendStatus::stopSynchronizationError ( ) const [pure virtual]
```

#### Returns

error which might have occurred during sending the data to Evernote which has prevented further attempts to send anything to Evernote or std::monostate if no such error has occurred

### 5.37.2.7 totalAttemptedToSendNotebooks()

```
virtual quint64 quentier::synchronization::ISendStatus::totalAttemptedToSendNotebooks ( ) const [pure virtual]
```

#### Returns

total number of notebooks attempted to be sent to Evernote

### 5.37.2.8 totalAttemptedToSendNotes()

```
virtual quint64 quentier::synchronization::ISendStatus::totalAttemptedToSendNotes ( ) const [pure virtual]
```

#### Returns

total number of notes attempted to be sent to Evernote

### 5.37.2.9 totalAttemptedToSendSavedSearches()

```
virtual quint64 quentier::synchronization::ISendStatus::totalAttemptedToSendSavedSearches ( ) const [pure virtual]
```

#### Returns

total number of saved searches attempted to be sent to Evernote

### 5.37.2.10 totalAttemptedToSendTags()

```
virtual quint64 quentier::synchronization::ISendStatus::totalAttemptedToSendTags ( ) const [pure virtual]
```

#### Returns

total number of tags attempted to be sent to Evernote

#### 5.37.2.11 totalSuccessfullySentNotebooks()

```
virtual quint64 quentier::synchronization::ISendStatus::totalSuccessfullySentNotebooks ( )  
const [pure virtual]
```

##### Returns

number of notebooks which were successfully sent to Evernote

#### 5.37.2.12 totalSuccessfullySentNotes()

```
virtual quint64 quentier::synchronization::ISendStatus::totalSuccessfullySentNotes ( ) const  
[pure virtual]
```

##### Returns

number of notes which were successfully sent to Evernote

#### 5.37.2.13 totalSuccessfullySentSavedSearches()

```
virtual quint64 quentier::synchronization::ISendStatus::totalSuccessfullySentSavedSearches ( )  
const [pure virtual]
```

##### Returns

number of saved searches which were successfully sent to Evernote

#### 5.37.2.14 totalSuccessfullySentTags()

```
virtual quint64 quentier::synchronization::ISendStatus::totalSuccessfullySentTags ( ) const  
[pure virtual]
```

##### Returns

number of tags which were successfully sent to Evernote

## 5.38 quentier::ResourceRecognitionIndexItem::IShapeItem Struct Reference

### Public Member Functions

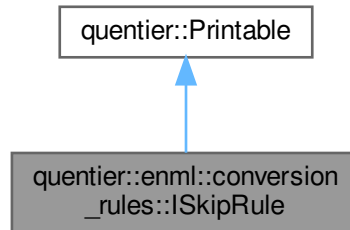
- `virtual QString shape () const =0`
- `virtual int weight () const =0`

## 5.39 quantier::enml::conversion\_rules::ISkipRule Class Reference

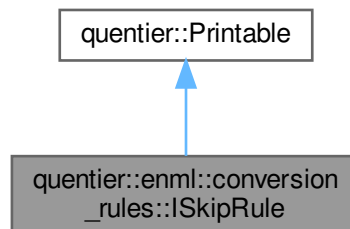
The [ISkipRule](#) interface describes a conversion rule with regards to which some ENML/HTML element/attribute should be skipped during the conversion.

```
#include <ISkipRule.h>
```

Inheritance diagram for quantier::enml::conversion\_rules::ISkipRule:



Collaboration diagram for quantier::enml::conversion\_rules::ISkipRule:



### Public Types

- enum class [Target](#) { [Element](#) , [AttributeName](#) , [AttributeValue](#) }

### Public Member Functions

- [virtual Target target \(\) const](#) =0
- [virtual QString value \(\) const](#) =0
- [virtual MatchMode matchMode \(\) const](#) =0
- [virtual bool includeContents \(\) const](#) =0
- [virtual Qt::CaseSensitivity caseSensitivity \(\) const](#) =0
- [QTextStream & print \(QTextStream &strm\) const](#) override

## Public Member Functions inherited from [quentier::Printable](#)

- [QString toString \(\) const](#)

## Friends

- [QUENTIER\\_EXPORT QTextStream & operator<< \(QTextStream &strm, Target target\)](#)
- [QUENTIER\\_EXPORT QDebug & operator<< \(QDebug &dbg, Target target\)](#)

### 5.39.1 Detailed Description

The [ISkipRule](#) interface describes a conversion rule with regards to which some ENML/HTML element/attribute should be skipped during the conversion.

ENML format prohibits the use of certain HTML tags and attributes. This interface facilitates skipping these tags and attributes in the process of conversion from HTML to ENML

### 5.39.2 Member Enumeration Documentation

#### 5.39.2.1 Target

```
enum class quentier::enml::conversion_rules::ISkipRule::Target [strong]
```

Target to be affected by the skip rule

#### Enumerator

Element	HTML element
AttributeName	HTML attribute with specified name
AttributeValue	HTML attribute with specified value

### 5.39.3 Member Function Documentation

#### 5.39.3.1 caseSensitivity()

```
virtual Qt::CaseSensitivity quentier::enml::conversion_rules::ISkipRule::caseSensitivity ( )
const [pure virtual]
```

Case sensitivity for target name/value check

#### 5.39.3.2 includeContents()

```
virtual bool quentier::enml::conversion_rules::ISkipRule::includeContents ( ) const [pure
virtual]
```

Specifies whether the element contents should be included without the element itself if it needs to be skipped or not



### 5.39.3.3 matchMode()

```
virtual MatchMode quotientier::enml::conversion_rules::ISkipRule::matchMode ( ) const [pure virtual]
```

Match mode for name or value of the target

### 5.39.3.4 print()

```
QTextStream & quotientier::enml::conversion_rules::ISkipRule::print (
    QTextStream & strm ) const [override], [virtual]
```

Implements [quotientier::Printable](#).

### 5.39.3.5 target()

```
virtual Target quotientier::enml::conversion_rules::ISkipRule::target ( ) const [pure virtual]
```

Target to be affected by the skip rule

### 5.39.3.6 value()

```
virtual QString quotientier::enml::conversion_rules::ISkipRule::value ( ) const [pure virtual]
```

Name or value of the target

## 5.40 quotientier::enml::conversion\_rules::ISkipRuleBuilder Class Reference

### Public Member Functions

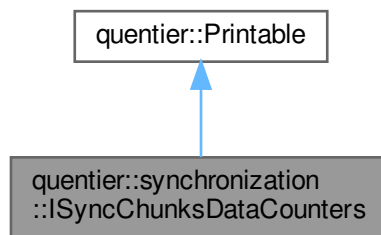
- [virtual ISkipRuleBuilder](#) & **setTarget** ([ISkipRule::Target](#) target)=0
- [virtual ISkipRuleBuilder](#) & **setValue** ([QString](#) value)=0
- [virtual ISkipRuleBuilder](#) & **setMatchMode** ([MatchMode](#) matchMode)=0
- [virtual ISkipRuleBuilder](#) & **setIncludeContents** ([bool](#) includeContents)=0
- [virtual ISkipRuleBuilder](#) & **setCaseSensitivity** ([Qt::CaseSensitivity](#) caseSensitivity)=0
- [virtual ISkipRulePtr](#) **build** ()=0

## 5.41 quantier::synchronization::ISyncChunksDataCounters Struct Reference

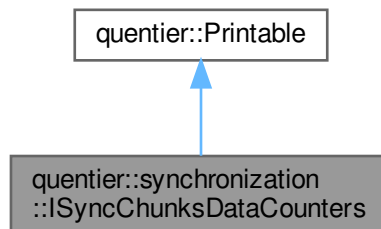
The [ISyncChunksDataCounters](#) interface provides integer counters representing the current progress on processing the data from downloaded sync chunks.

```
#include <ISyncChunksDataCounters.h>
```

Inheritance diagram for quantier::synchronization::ISyncChunksDataCounters:



Collaboration diagram for quantier::synchronization::ISyncChunksDataCounters:



### Public Member Functions

- [virtual quint64 totalSavedSearches \(\) const noexcept=0](#)
- [virtual quint64 totalExpungedSavedSearches \(\) const noexcept=0](#)
- [virtual quint64 addedSavedSearches \(\) const noexcept=0](#)
- [virtual quint64 updatedSavedSearches \(\) const noexcept=0](#)
- [virtual quint64 expungedSavedSearches \(\) const noexcept=0](#)
- [virtual quint64 totalTags \(\) const noexcept=0](#)
- [virtual quint64 totalExpungedTags \(\) const noexcept=0](#)
- [virtual quint64 addedTags \(\) const noexcept=0](#)
- [virtual quint64 updatedTags \(\) const noexcept=0](#)

- `virtual quint64 expungedTags () const noexcept=0`
- `virtual quint64 totalLinkedNotebooks () const noexcept=0`
- `virtual quint64 totalExpungedLinkedNotebooks () const noexcept=0`
- `virtual quint64 addedLinkedNotebooks () const noexcept=0`
- `virtual quint64 updatedLinkedNotebooks () const noexcept=0`
- `virtual quint64 expungedLinkedNotebooks () const noexcept=0`
- `virtual quint64 totalNotebooks () const noexcept=0`
- `virtual quint64 totalExpungedNotebooks () const noexcept=0`
- `virtual quint64 addedNotebooks () const noexcept=0`
- `virtual quint64 updatedNotebooks () const noexcept=0`
- `virtual quint64 expungedNotebooks () const noexcept=0`

## Public Member Functions inherited from `quentier::Printable`

- `virtual QTextStream & print (QTextStream &strm) const =0`
- `QString toString () const`

### 5.41.1 Detailed Description

The `ISyncChunksDataCounters` interface provides integer counters representing the current progress on processing the data from downloaded sync chunks.

### 5.41.2 Member Function Documentation

#### 5.41.2.1 `addedLinkedNotebooks()`

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::addedLinkedNotebooks ( )  
const [pure virtual], [noexcept]
```

Number of linked notebooks from sync chunks added to the local storage so far

#### 5.41.2.2 `addedNotebooks()`

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::addedNotebooks ( ) const  
[pure virtual], [noexcept]
```

Number of notebooks from sync chunks added to the local storage so far

#### 5.41.2.3 `addedSavedSearches()`

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::addedSavedSearches ( )  
const [pure virtual], [noexcept]
```

Number of saved searches from sync chunks added to the local storage so far

**5.41.2.4 addedTags()**

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::addedTags ( ) const [pure virtual], [noexcept]
```

Number of tags from sync chunks added to the local storage so far

**5.41.2.5 expungedLinkedNotebooks()**

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::expungedLinkedNotebooks ( ) const [pure virtual], [noexcept]
```

Number of linked notebooks from sync chunks expunged from the local storage so far

**5.41.2.6 expungedNotebooks()**

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::expungedNotebooks ( ) const [pure virtual], [noexcept]
```

Number of notebooks from sync chunks expunged from the local storage so far

**5.41.2.7 expungedSavedSearches()**

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::expungedSavedSearches ( ) const [pure virtual], [noexcept]
```

Number of saved searches from sync chunks expunged from the local storage so far

**5.41.2.8 expungedTags()**

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::expungedTags ( ) const [pure virtual], [noexcept]
```

Number of tags from sync chunks expunged from the local storage so far

**5.41.2.9 totalExpungedLinkedNotebooks()**

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::totalExpungedLinkedNotebooks ( ) const [pure virtual], [noexcept]
```

Total number of expunged saved searches in downloaded sync chunks

**5.41.2.10 totalExpungedNotebooks()**

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::totalExpungedNotebooks ( ) const [pure virtual], [noexcept]
```

Total number of expunged notebooks in downloaded sync chunks

#### 5.41.2.11 totalExpungedSavedSearches()

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::totalExpungedSavedSearches  
( ) const [pure virtual], [noexcept]
```

Total number of expunged saved searches in downloaded sync chunks

#### 5.41.2.12 totalExpungedTags()

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::totalExpungedTags ( )  
const [pure virtual], [noexcept]
```

Total number of expunged tags in downloaded sync chunks

#### 5.41.2.13 totalLinkedNotebooks()

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::totalLinkedNotebooks ( )  
const [pure virtual], [noexcept]
```

Total number of new or updated linked notebooks in downloaded sync chunks

#### 5.41.2.14 totalNotebooks()

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::totalNotebooks ( ) const  
[pure virtual], [noexcept]
```

Total number of new or updated notebooks in downloaded sync chunks

#### 5.41.2.15 totalSavedSearches()

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::totalSavedSearches ( )  
const [pure virtual], [noexcept]
```

Total number of new or updated saved searches in downloaded sync chunks

#### 5.41.2.16 totalTags()

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::totalTags ( ) const [pure  
virtual], [noexcept]
```

Total number of new or updated tags in downloaded sync chunks

#### 5.41.2.17 updatedLinkedNotebooks()

```
virtual quint64 quentier::synchronization::ISyncChunksDataCounters::updatedLinkedNotebooks ( )  
const [pure virtual], [noexcept]
```

Number of linked notebooks from sync chunks updated in the local storage so far

### 5.41.2.18 updatedNotebooks()

```
virtual quint64 quantier::synchronization::ISyncChunksDataCounters::updatedNotebooks ( ) const
[pure virtual], [noexcept]
```

Number of notebooks from sync chunks updated in the local storage so far

### 5.41.2.19 updatedSavedSearches()

```
virtual quint64 quantier::synchronization::ISyncChunksDataCounters::updatedSavedSearches ( )
const [pure virtual], [noexcept]
```

Number of saved searches from sync chunks updated in the local storage so far

### 5.41.2.20 updatedTags()

```
virtual quint64 quantier::synchronization::ISyncChunksDataCounters::updatedTags ( ) const
[pure virtual], [noexcept]
```

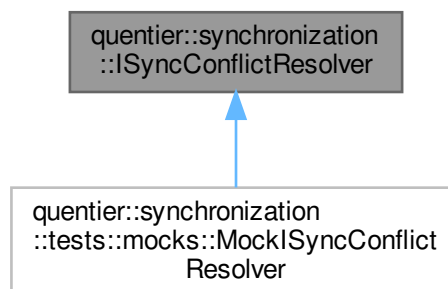
Number of tags from sync chunks updated in the local storage so far

## 5.42 quantier::synchronization::ISyncConflictResolver Class Reference

The [ISyncConflictResolver](#) interface provides methods used to resolve conflicts between local and remote versions of the same data item.

```
#include <ISyncConflictResolver.h>
```

Inheritance diagram for quantier::synchronization::ISyncConflictResolver:



### Classes

- struct [ConflictResolution](#)

The [ConflictResolution](#) struct is a namespace inside which several other structs determining actual conflict resolutions.

## Public Types

- using **NotebookConflictResolution** = std::variant< [ConflictResolution::UseTheirs](#), [ConflictResolution::UseMine](#), [ConflictResolution::IgnoreMine](#), [ConflictResolution::MoveMine](#)< [qevercloud::Notebook](#) > >
- using **NoteConflictResolution** = std::variant< [ConflictResolution::UseTheirs](#), [ConflictResolution::UseMine](#), [ConflictResolution::IgnoreMine](#), [ConflictResolution::MoveMine](#)< [qevercloud::Note](#) > >
- using **SavedSearchConflictResolution** = std::variant< [ConflictResolution::UseTheirs](#), [ConflictResolution::UseMine](#), [ConflictResolution::IgnoreMine](#), [ConflictResolution::MoveMine](#)< [qevercloud::SavedSearch](#) > >
- using **TagConflictResolution** = std::variant< [ConflictResolution::IgnoreMine](#), [ConflictResolution::UseTheirs](#), [ConflictResolution::UseMine](#), [ConflictResolution::MoveMine](#)< [qevercloud::Tag](#) > >

## Public Member Functions

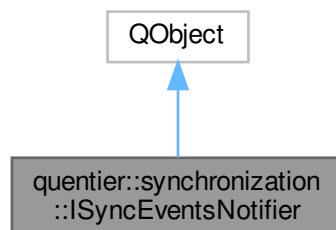
- virtual [QFuture](#)< [NotebookConflictResolution](#) > **resolveNotebookConflict** ([qevercloud::Notebook](#) [theirs](#), [qevercloud::Notebook](#) [mine](#))=0
- virtual [QFuture](#)< [NoteConflictResolution](#) > **resolveNoteConflict** ([qevercloud::Note](#) [theirs](#), [qevercloud::Note](#) [mine](#))=0
- virtual [QFuture](#)< [SavedSearchConflictResolution](#) > **resolveSavedSearchConflict** ([qevercloud::SavedSearch](#) [theirs](#), [qevercloud::SavedSearch](#) [mine](#))=0
- virtual [QFuture](#)< [TagConflictResolution](#) > **resolveTagConflict** ([qevercloud::Tag](#) [theirs](#), [qevercloud::Tag](#) [mine](#))=0

### 5.42.1 Detailed Description

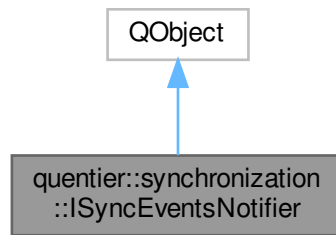
The [ISyncConflictResolver](#) interface provides methods used to resolve conflicts between local and remote versions of the same data item.

## 5.43 quantier::synchronization::ISyncEventsNotifier Class Reference

Inheritance diagram for quantier::synchronization::ISyncEventsNotifier:



Collaboration diagram for `quentier::synchronization::ISyncEventsNotifier`:



## Signals

- `void syncChunksDownloadProgress` (`qint32 highestDownloadedUsn`, `qint32 highestServerUsn`, `qint32 lastPreviousUsn`)
- `void syncChunksDownloaded` ()
- `void syncChunksDataProcessingProgress` (`ISyncChunksDataCountersPtr counters`)
- `void startLinkedNotebooksDataDownloading` (`const QList< qevercloud::LinkedNotebook > &linkedNotebooks`)
- `void linkedNotebookSyncChunksDownloadProgress` (`qint32 highestDownloadedUsn`, `qint32 highestServerUsn`, `qint32 lastPreviousUsn`, `const qevercloud::LinkedNotebook &linkedNotebook`)
- `void linkedNotebookSyncChunksDownloaded` (`const qevercloud::LinkedNotebook &linkedNotebook`)
- `void linkedNotebookSyncChunksDataProcessingProgress` (`ISyncChunksDataCountersPtr counters`, `const qevercloud::LinkedNotebook &linkedNotebook`)
- `void notesDownloadProgress` (`quint32 notesDownloaded`, `quint32 totalNotesToDownload`)
- `void linkedNotebookNotesDownloadProgress` (`quint32 notesDownloaded`, `quint32 totalNotesToDownload`, `const qevercloud::LinkedNotebook &linkedNotebook`)
- `void resourcesDownloadProgress` (`quint32 resourcesDownloaded`, `quint32 totalResourcesToDownload`)
- `void linkedNotebookResourcesDownloadProgress` (`quint32 resourcesDownloaded`, `quint32 totalResourcesToDownload`, `const qevercloud::LinkedNotebook &linkedNotebook`)
- `void downloadFinished` (`bool dataDownloaded`)
- `void userOwnSendStatusUpdate` (`ISendStatusPtr sendStatus`)
- `void linkedNotebookSendStatusUpdate` (`const qevercloud::Guid &linkedNotebookGuid`, `ISendStatusPtr sendStatus`)

## Protected Member Functions

- `ISyncEventsNotifier` (`QObject *parent=nullptr`)

## 5.43.1 Member Function Documentation

### 5.43.1.1 downloadFinished

```
void quentier::synchronization::ISyncEventsNotifier::downloadFinished (
    bool dataDownloaded ) [signal]
```

This signal is emitted when the initial download step is finished.



## Parameters

<i>dataDownloaded</i>	True if some data was actually downloaded during this step i.e. there were some updates on Evernote servers compared to local state, false otherwise.
-----------------------	---

**5.43.1.2 linkedNotebookNotesDownloadProgress**

```
void quantier::synchronization::ISyncEventsNotifier::linkedNotebookNotesDownloadProgress (
    quint32 notesDownloaded,
    quint32 totalNotesToDownload,
    const qevercloud::LinkedNotebook & linkedNotebook ) [signal]
```

This signal is emitted on each successful download of full note data from some linked notebook.

## Parameters

<i>notesDownloaded</i>	The number of notes downloaded by the moment
<i>totalNotesToDownload</i>	The total number of notes that need to be downloaded
<i>linkedNotebook</i>	The linked notebook which notes download progress is being reported

**5.43.1.3 linkedNotebookResourcesDownloadProgress**

```
void quantier::synchronization::ISyncEventsNotifier::linkedNotebookResourcesDownloadProgress (
    quint32 resourcesDownloaded,
    quint32 totalResourcesToDownload,
    const qevercloud::LinkedNotebook & linkedNotebook ) [signal]
```

This signal is emitted on each successful download of full resource data from linked notebooks during the incremental sync (as individual resources are downloaded along with their notes during full sync).

## Parameters

<i>resourcesDownloaded</i>	The number of resources downloaded by the moment
<i>totalResourcesToDownload</i>	The total number of resources that need to be downloaded
<i>linkedNotebook</i>	The linked notebook which resources download progress is being reported

**5.43.1.4 linkedNotebookSendStatusUpdate**

```
void quantier::synchronization::ISyncEventsNotifier::linkedNotebookSendStatusUpdate (
    const qevercloud::Guid & linkedNotebookGuid,
    ISendStatusPtr sendStatus ) [signal]
```

This signal is emitted on each successful or unsuccessful attempt to send some new or locally modified data item from some linked notebook to Evernote.

## Parameters

<i>linkedNotebookGuid</i>	Guid of the linked notebook for which the send status was updated
<i>sendStatus</i>	The updated send status

#### 5.43.1.5 linkedNotebookSyncChunksDataProcessingProgress

```
void quantier::synchronization::ISyncEventsNotifier::linkedNotebookSyncChunksDataProcessingProgress (
    ISyncChunksDataCountersPtr counters,
    const qevercloud::LinkedNotebook & linkedNotebook ) [signal]
```

This signal is emitted during some linked notebook's downloaded sync chunks contents processing and denotes the progress on that step.

##### Parameters

<i>counters</i>	Updated sync chunks data counters
<i>linkedNotebook</i>	The linked notebook which sync chunks data processing progress is being reported

#### 5.43.1.6 linkedNotebookSyncChunksDownloaded

```
void quantier::synchronization::ISyncEventsNotifier::linkedNotebookSyncChunksDownloaded (
    const qevercloud::LinkedNotebook & linkedNotebook ) [signal]
```

This signal is emitted when the sync chunks for data from some linked notebook are downloaded during "remote to local" synchronization step

##### Parameters

<i>linkedNotebook</i>	The linked notebook which sync chunks were downloaded
-----------------------	---

#### 5.43.1.7 linkedNotebookSyncChunksDownloadProgress

```
void quantier::synchronization::ISyncEventsNotifier::linkedNotebookSyncChunksDownloadProgress (
    qint32 highestDownloadedUsn,
    qint32 highestServerUsn,
    qint32 lastPreviousUsn,
    const qevercloud::LinkedNotebook & linkedNotebook ) [signal]
```

This signal is emitted during linked notebooks sync chunks downloading and denotes the progress of that step, individually for each linked notebook. The percentage of completeness can be computed roughly as  $(\text{highestDownloadedUsn} - \text{lastPreviousUsn}) / (\text{highestServerUsn} - \text{lastPreviousUsn}) * 100\%$ .

##### Parameters

<i>highestDownloadedUsn</i>	The highest update sequence number within data items from linked notebook sync chunks downloaded so far
<i>highestServerUsn</i>	The current highest update sequence number within the linked notebook
<i>lastPreviousUsn</i>	The last update sequence number from previous sync of the given linked notebook; if current sync is the first one, this value is zero
<i>linkedNotebook</i>	The linked notebook which sync chunks download progress is reported

#### 5.43.1.8 notesDownloadProgress

```
void quantier::synchronization::ISyncEventsNotifier::notesDownloadProgress (
    quint32 notesDownloaded,
    quint32 totalNotesToDownload ) [signal]
```

This signal is emitted on each successful download of full note data from user's own account.

##### Parameters

<i>notesDownloaded</i>	The number of notes downloaded by the moment
<i>totalNotesToDownload</i>	The total number of notes that need to be downloaded

#### 5.43.1.9 resourcesDownloadProgress

```
void quantier::synchronization::ISyncEventsNotifier::resourcesDownloadProgress (
    quint32 resourcesDownloaded,
    quint32 totalResourcesToDownload ) [signal]
```

This signal is emitted on each successful download of full resource data from user's own account during the incremental sync (as individual resources are downloaded along with their notes during full sync).

##### Parameters

<i>resourcesDownloaded</i>	The number of resources downloaded by the moment
<i>totalResourcesToDownload</i>	The total number of resources that need to be downloaded

#### 5.43.1.10 startLinkedNotebooksDataDownloading

```
void quantier::synchronization::ISyncEventsNotifier::startLinkedNotebooksDataDownloading (
    const QList< qevercloud::LinkedNotebook > & linkedNotebooks ) [signal]
```

This signal is emitted before the downloading of data corresponding to linked notebooks starts.

##### Parameters

<i>linkedNotebooks</i>	Linked notebooks the data from which will start being downloaded after the execution of this callback
------------------------	---

#### 5.43.1.11 syncChunksDataProcessingProgress

```
void quantier::synchronization::ISyncEventsNotifier::syncChunksDataProcessingProgress (
    ISyncChunksDataCountersPtr counters ) [signal]
```

This signal is emitted during user own account's downloaded sync chunks contents processing and denotes the progress on that step.

### 5.43.1.12 syncChunksDownloaded

```
void quantier::synchronization::ISyncEventsNotifier::syncChunksDownloaded ( ) [signal]
```

This signal is emitted when the sync chunks for data from user's own account are downloaded during the download synchronization step.

### 5.43.1.13 syncChunksDownloadProgress

```
void quantier::synchronization::ISyncEventsNotifier::syncChunksDownloadProgress (
    qint32 highestDownloadedUsn,
    qint32 highestServerUsn,
    qint32 lastPreviousUsn ) [signal]
```

This signal is emitted during user own account's sync chunks downloading and denotes the progress of that step. The percentage of completeness can be computed roughly as  $(\text{highestDownloadedUsn} - \text{lastPreviousUsn}) / (\text{highestServerUsn} - \text{lastPreviousUsn}) * 100\%$ .

#### Parameters

<i>highestDownloadedUsn</i>	The highest update sequence number within data items from sync chunks downloaded so far
<i>highestServerUsn</i>	The current highest update sequence number within the account
<i>lastPreviousUsn</i>	The last update sequence number from previous sync; if current sync is the first one, this value is zero

### 5.43.1.14 userOwnSendStatusUpdate

```
void quantier::synchronization::ISyncEventsNotifier::userOwnSendStatusUpdate (
    ISendStatusPtr sendStatus ) [signal]
```

This signal is emitted on each successful or unsuccessful attempt to send some new or locally modified data item from user's own account to Evernote.

#### Parameters

<i>sendStatus</i>	The updated send status
-------------------	-------------------------

## 5.44 quantier::synchronization::ISynchronizer Class Reference

### Public Types

- using **SyncResult** = std::pair< QFuture< ISyncResultPtr >, ISyncEventsNotifier \* >

### Public Member Functions

- virtual QFuture< std::pair< Account, IAuthenticationInfoPtr > > **authenticateNewAccount** ()=0

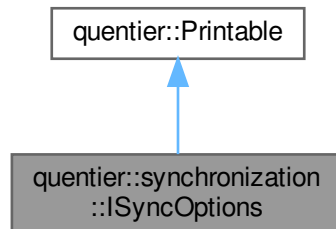
- [virtual QFuture< IAuthenticationInfoPtr > authenticateAccount \(Account account\)=0](#)
- [virtual SyncResult synchronizeAccount \(Account account, local\\_storage::ILocalStoragePtr localStorage, utility::cancellers::ICancelerPtr canceler, ISyncOptionsPtr options=nullptr, ISyncConflictResolverPtr syncConflictResolver=nullptr\)=0](#)
- [virtual void revokeAuthentication \(qevercloud::UserID userId\)=0](#)

## 5.45 quantier::synchronization::ISyncOptions Class Reference

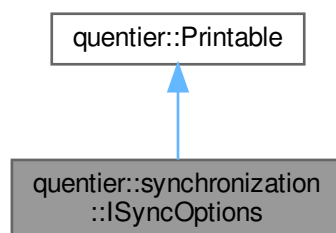
Options for synchronization process.

```
#include <ISyncOptions.h>
```

Inheritance diagram for quantier::synchronization::ISyncOptions:



Collaboration diagram for quantier::synchronization::ISyncOptions:



### Public Member Functions

- [virtual bool downloadNoteThumbnails \(\) const =0](#)
- [virtual std::optional< QDir > inkNotelImagesStorageDir \(\) const =0](#)
- [virtual qevercloud::IRequestContextPtr requestContext \(\) const =0](#)
- [virtual qevercloud::IRetryPolicyPtr retryPolicy \(\) const =0](#)
- [virtual std::optional< quint32 > maxConcurrentNoteDownloads \(\) const =0](#)
- [virtual std::optional< quint32 > maxConcurrentResourceDownloads \(\) const =0](#)

## Public Member Functions inherited from [quentier::Printable](#)

- [virtual QTextStream & print \(QTextStream &strm\) const](#) =0
- [QString toString \(\) const](#)

### 5.45.1 Detailed Description

Options for synchronization process.

### 5.45.2 Member Function Documentation

#### 5.45.2.1 downloadNoteThumbnails()

```
virtual bool quentier::synchronization::ISyncOptions::downloadNoteThumbnails ( ) const [pure virtual]
```

Flag to enable or disable downloading of note thumbnails during the sync. Note thumbnails are stored inside the local storage along with other note data.

#### 5.45.2.2 inkNoteImagesStorageDir()

```
virtual std::optional< QDir > quentier::synchronization::ISyncOptions::inkNoteImagesStorageDir ( ) const [pure virtual]
```

Directory to store the downloaded ink note images. If this method returns `std::nullopt`, ink note images would not be downloaded during the sync.

Ink notes images data is stored inside note's resources but the format of the data is not documented, which makes it quite hard to implement note editor able to fully handle ink notes. An easier option is to visualize a static image corresponding to the last revision of the ink note. Such images need to be downloaded separately during the sync if they are required.

Ink note images are stored right in this directory without any subdirectories, file names correspond to pattern `<resource guid>.png`.

#### 5.45.2.3 maxConcurrentNoteDownloads()

```
virtual std::optional< quint32 > quentier::synchronization::ISyncOptions::maxConcurrentNote↔Downloads ( ) const [pure virtual]
```

Maximal number of concurrent note downloads. Allowing unlimited concurrent note downloads can lead to errors due to reaching the platform's limit on the number of open files. If `std::nullopt` is returned, the default limit is used.

#### 5.45.2.4 maxConcurrentResourceDownloads()

```
virtual std::optional< quint32 > quentier::synchronization::ISyncOptions::maxConcurrent↔ResourceDownloads ( ) const [pure virtual]
```

Maximal number of concurrent resource downloads. Allowing unlimited concurrent resource downloads can lead to errors due to reaching the platform's limit on the number of open files. If `std::nullopt` is returned, the default limit is used.

## 5.45.2.5 requestContext()

```
virtual qevercloud::IRequestContextPtr quantier::synchronization::ISyncOptions::requestContext
( ) const [pure virtual]
```

Request context with settings which should be used during the sync. If nullptr then request context with default settings would be used.

## 5.45.2.6 retryPolicy()

```
virtual qevercloud::IRetryPolicyPtr quantier::synchronization::ISyncOptions::retryPolicy ( )
const [pure virtual]
```

Retry policy which should be used during the sync. If nullptr then the default retry policy would be used.

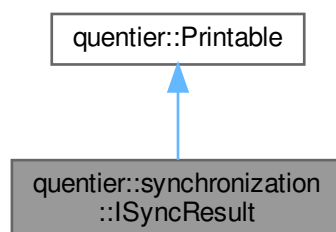
## 5.46 quantier::synchronization::ISyncOptionsBuilder Class Reference

## Public Member Functions

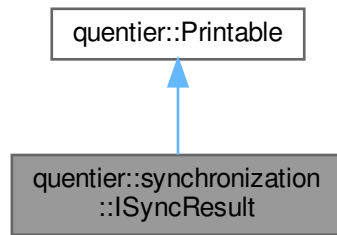
- virtual ISyncOptionsBuilder & setDownloadNoteThumbnails (bool value)=0
- virtual ISyncOptionsBuilder & setLinkNoteImagesStorageDir (std::optional< QDir > dir)=0
- virtual ISyncOptionsBuilder & setRequestContext (qevercloud::IRequestContextPtr ctx)=0
- virtual ISyncOptionsBuilder & setRetryPolicy (qevercloud::IRetryPolicyPtr retryPolicy)=0
- virtual ISyncOptionsBuilder & setMaxConcurrentNoteDownloads (std::optional< quint32 > max↔ ConcurrentNoteDownloads)=0
- virtual ISyncOptionsBuilder & setMaxConcurrentResourceDownloads (std::optional< quint32 > max↔ ConcurrentResourceDownloads)=0
- virtual ISyncOptionsPtr build ()=0

## 5.47 quantier::synchronization::ISyncResult Class Reference

Inheritance diagram for quantier::synchronization::ISyncResult:



Collaboration diagram for `quentier::synchronization::ISyncResult`:



### Public Member Functions

- `virtual ISyncStatePtr syncState () const =0`
- `virtual ISyncChunksDataCountersPtr userAccountSyncChunksDataCounters () const =0`
- `virtual QHash< qevercloud::Guid, ISyncChunksDataCountersPtr > linkedNotebookSyncChunksDataCounters () const =0`
- `virtual bool userAccountSyncChunksDownloaded () const =0`
- `virtual QSet< qevercloud::Guid > linkedNotebookGuidsWithSyncChunksDownloaded () const =0`
- `virtual IDownloadNotesStatusPtr userAccountDownloadNotesStatus () const =0`
- `virtual QHash< qevercloud::Guid, IDownloadNotesStatusPtr > linkedNotebookDownloadNotesStatuses () const =0`
- `virtual IDownloadResourcesStatusPtr userAccountDownloadResourcesStatus () const =0`
- `virtual QHash< qevercloud::Guid, IDownloadResourcesStatusPtr > linkedNotebookDownloadResourcesStatuses () const =0`
- `virtual ISendStatusPtr userAccountSendStatus () const =0`
- `virtual QHash< qevercloud::Guid, ISendStatusPtr > linkedNotebookSendStatuses () const =0`
- `virtual StopSynchronizationError stopSynchronizationError () const =0`

### Public Member Functions inherited from `quentier::Printable`

- `virtual QTextStream & print (QTextStream &strm) const =0`
- `QString toString () const`

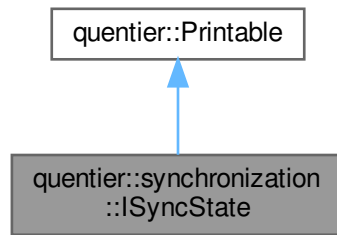
## 5.48 quentier::synchronization::ISyncState Class Reference

The `ISyncState` interface provides accessory methods to determine the sync state for the account.

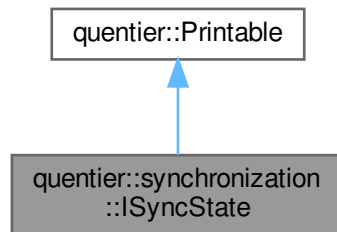
```
#include <ISyncState.h>
```



Inheritance diagram for `quentier::synchronization::ISyncState`:



Collaboration diagram for `quentier::synchronization::ISyncState`:



### Public Member Functions

- `virtual qint32 userDataUpdateCount () const =0`
- `virtual qevercloud::Timestamp userDataLastSyncTime () const =0`
- `virtual QHash< qevercloud::Guid, qint32 > linkedNotebookUpdateCounts () const =0`
- `virtual QHash< qevercloud::Guid, qevercloud::Timestamp > linkedNotebookLastSyncTimes () const =0`

### Public Member Functions inherited from `quentier::Printable`

- `virtual QTextStream & print (QTextStream &strm) const =0`
- `QString toString () const`

#### 5.48.1 Detailed Description

The `ISyncState` interface provides accessory methods to determine the sync state for the account.

## 5.49 quantier::synchronization::ISyncStateBuilder Class Reference

### Public Member Functions

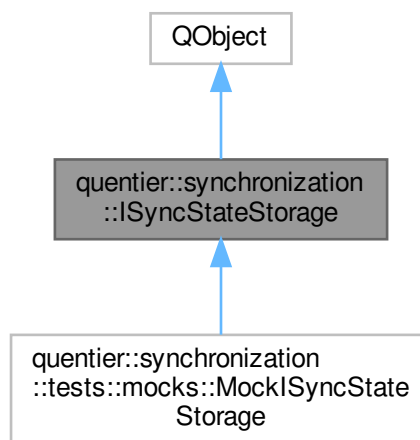
- [virtual ISyncStateBuilder](#) & **setUserDataUpdateCount** ([qint32](#) [updateCount](#))=0
- [virtual ISyncStateBuilder](#) & **setUserDataLastSyncTime** ([qevercloud::Timestamp](#) [lastSyncTime](#))=0
- [virtual ISyncStateBuilder](#) & **setLinkedNotebookUpdateCounts** ([QHash](#)< [qevercloud::Guid](#), [qint32](#) > [updateCounts](#))=0
- [virtual ISyncStateBuilder](#) & **setLinkedNotebookLastSyncTimes** ([QHash](#)< [qevercloud::Guid](#), [qevercloud::Timestamp](#) > [lastSyncTimes](#))=0
- [virtual ISyncStatePtr](#) **build** ()=0

## 5.50 quantier::synchronization::ISyncStateStorage Class Reference

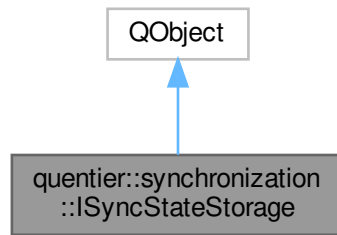
The [ISyncStateStorage](#) interface represents the interface of a class which stores sync state for given accounts persistently and provides access to previously stores sync states.

```
#include <ISyncStateStorage.h>
```

Inheritance diagram for `quantier::synchronization::ISyncStateStorage`:



Collaboration diagram for quantier::synchronization::ISyncStateStorage:



## Signals

- `void notifySyncStateUpdated (Account account, ISyncStatePtr syncState)`

## Public Member Functions

- `virtual ISyncStatePtr getSyncState (const Account &account)=0`
- `virtual void setSyncState (const Account &account, ISyncStatePtr syncState)=0`

## Protected Member Functions

- `ISyncStateStorage (QObject *parent=nullptr)`

### 5.50.1 Detailed Description

The `ISyncStateStorage` interface represents the interface of a class which stores sync state for given accounts persistently and provides access to previously stores sync states.

### 5.50.2 Member Function Documentation

#### 5.50.2.1 notifySyncStateUpdated

```

void quantier::synchronization::ISyncStateStorage::notifySyncStateUpdated (
    Account account,
    ISyncStatePtr syncState ) [signal]
  
```

Classes implementing `ISyncStateStorage` interface are expected to emit `notifySyncStateUpdated` signal each time when sync state for the corresponding account is updated

## 5.51 quantier::ResourceRecognitionIndexItem::ITextItem Struct Reference

### Public Member Functions

- `virtual QString text () const` =0
- `virtual int weight () const` =0

## 5.52 quantier::synchronization::IUserStoreFactory Class Reference

### Public Member Functions

- `virtual qevercloud::IUserStorePtr createUserStore (QString userStoreUrl={}, qevercloud::IRequestContext←Ptr ctx={}, qevercloud::IRetryPolicyPtr retryPolicy={})=0`

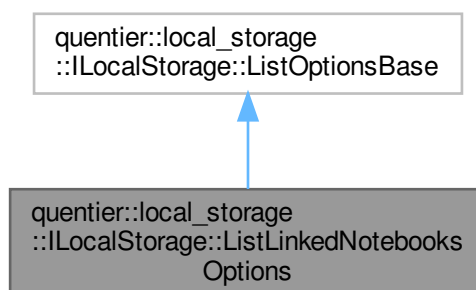
## 5.53 quantier::local\_storage::ILocalStorage::ListGuidsFilters Struct Reference

### Public Attributes

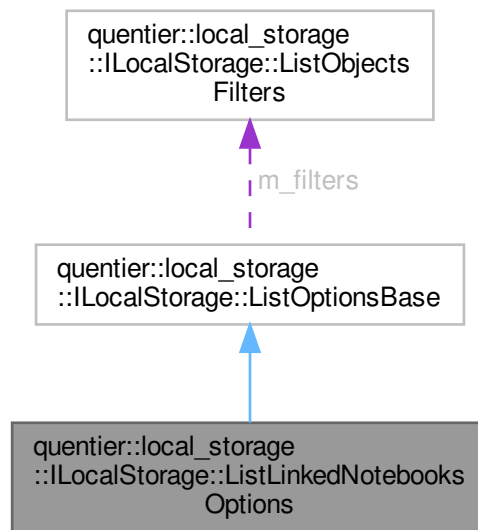
- `std::optional< ListObjectsFilter > m_locallyModifiedFilter`
- `std::optional< ListObjectsFilter > m_locallyFavoritedFilter`

## 5.54 quantier::local\_storage::ILocalStorage::ListLinkedNotebooksOptions Struct Reference

Inheritance diagram for quantier::local\_storage::ILocalStorage::ListLinkedNotebooksOptions:



Collaboration diagram for `quentier::local_storage::ILocalStorage::ListLinkedNotebooksOptions`:



#### Public Attributes

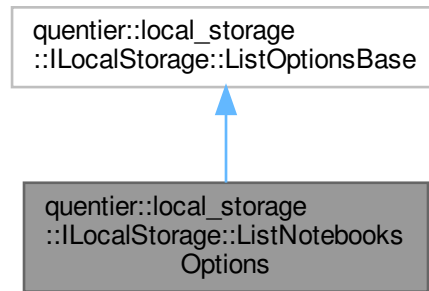
- `ListLinkedNotebooksOrder` **m\_order** = `ListLinkedNotebooksOrder::NoOrder`

#### Public Attributes inherited from `quentier::local_storage::ILocalStorage::ListOptionsBase`

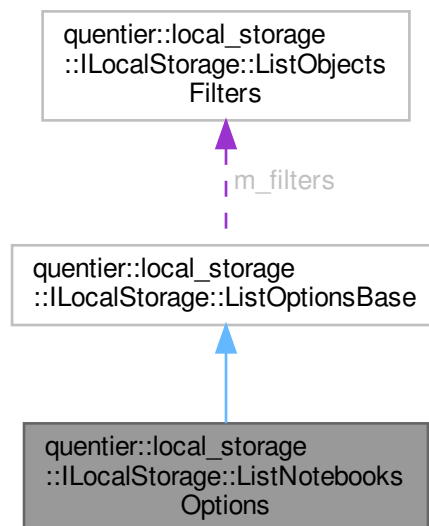
- `ListObjectsFilters` **m\_filters** = {}
- `quint64` **m\_limit** = 0UL
- `quint64` **m\_offset** = 0UL
- `OrderDirection` **m\_direction** = `OrderDirection::Ascending`

## 5.55 quantier::local\_storage::ILocalStorage::ListNotebooksOptions Struct Reference

Inheritance diagram for quantier::local\_storage::ILocalStorage::ListNotebooksOptions:



Collaboration diagram for quantier::local\_storage::ILocalStorage::ListNotebooksOptions:



### Public Attributes

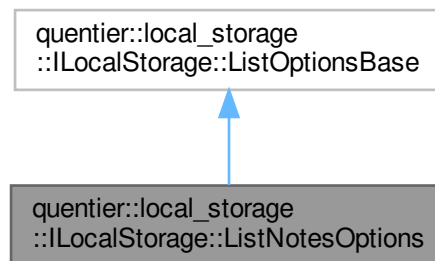
- ListNotebooksOrder **m\_order** = ListNotebooksOrder::NoOrder
- [Affiliation](#) **m\_affiliation** = Affiliation::Any
- [QList](#)< [qevercloud::Guid](#) > **m\_linkedNotebookGuids**

**Public Attributes inherited from [quantier::local\\_storage::ILocalStorage::ListOptionsBase](#)**

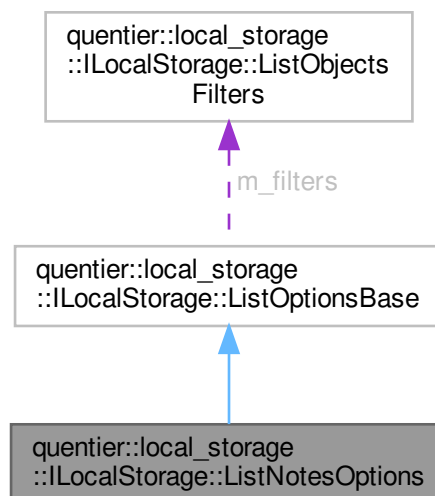
- [ListObjectsFilters](#) **m\_filters** = {}
- [quint64](#) **m\_limit** = 0UL
- [quint64](#) **m\_offset** = 0UL
- [OrderDirection](#) **m\_direction** = OrderDirection::Ascending

## 5.56 quantier::local\_storage::ILocalStorage::ListNotesOptions Struct Reference

Inheritance diagram for quantier::local\_storage::ILocalStorage::ListNotesOptions:



Collaboration diagram for quantier::local\_storage::ILocalStorage::ListNotesOptions:



## Public Attributes

- ListNotesOrder **m\_order** = ListNotesOrder::NoOrder

## Public Attributes inherited from [quentier::local\\_storage::ILocalStorage::ListOptionsBase](#)

- [ListObjectsFilters](#) **m\_filters** = {}
- [quint64](#) **m\_limit** = 0UL
- [quint64](#) **m\_offset** = 0UL
- OrderDirection **m\_direction** = OrderDirection::Ascending

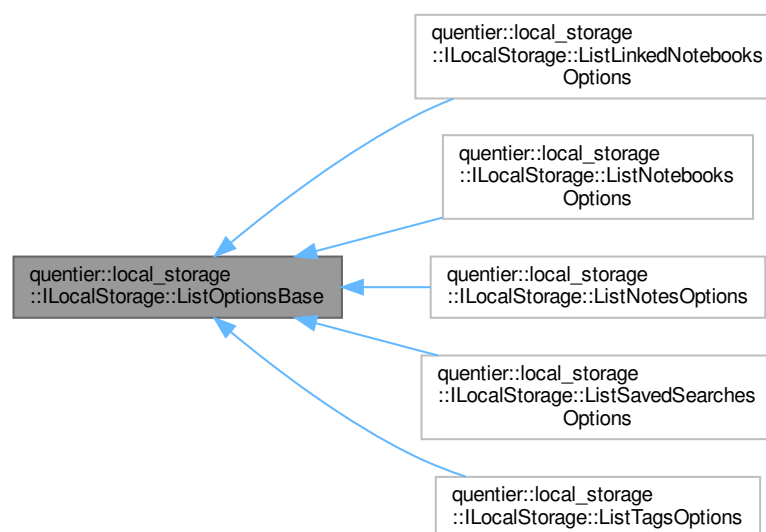
## 5.57 quentier::local\_storage::ILocalStorage::ListObjectsFilters Struct Reference

### Public Attributes

- `std::optional< ListObjectsFilter >` **m\_locallyModifiedFilter**
- `std::optional< ListObjectsFilter >` **m\_withGuidFilter**
- `std::optional< ListObjectsFilter >` **m\_localOnlyFilter**
- `std::optional< ListObjectsFilter >` **m\_locallyFavoritedFilter**

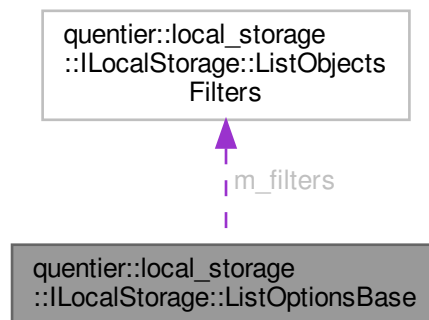
## 5.58 quentier::local\_storage::ILocalStorage::ListOptionsBase Struct Reference

Inheritance diagram for quentier::local\_storage::ILocalStorage::ListOptionsBase:





Collaboration diagram for quantier::local\_storage::ILocalStorage::ListOptionsBase:

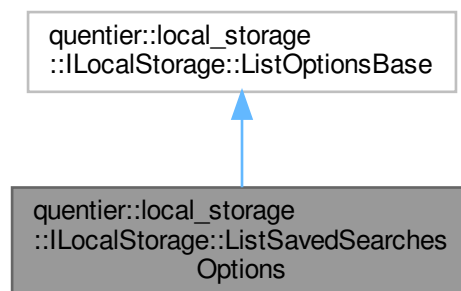


#### Public Attributes

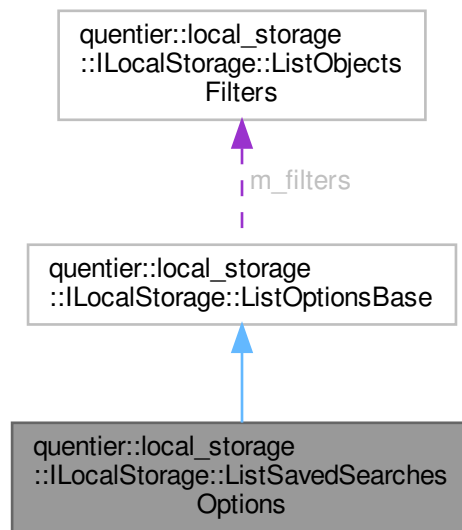
- `ListObjectsFilters m_filters = {}`
- `quint64 m_limit = 0UL`
- `quint64 m_offset = 0UL`
- `OrderDirection m_direction = OrderDirection::Ascending`

## 5.59 quantier::local\_storage::ILocalStorage::ListSavedSearchesOptions Struct Reference

Inheritance diagram for quantier::local\_storage::ILocalStorage::ListSavedSearchesOptions:



Collaboration diagram for `quentier::local_storage::ILocalStorage::ListSavedSearchesOptions`:



#### Public Attributes

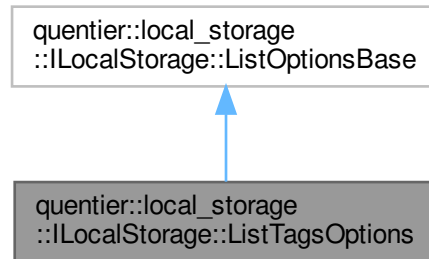
- ListSavedSearchesOrder **m\_order** = ListSavedSearchesOrder::NoOrder

#### Public Attributes inherited from [quentier::local\\_storage::ILocalStorage::ListOptionsBase](#)

- [ListObjectsFilters](#) **m\_filters** = {}
- [quint64](#) **m\_limit** = 0UL
- [quint64](#) **m\_offset** = 0UL
- OrderDirection **m\_direction** = OrderDirection::Ascending

## 5.60 quantier::local\_storage::ILocalStorage::ListTagsOptions Struct Reference

Inheritance diagram for quantier::local\_storage::ILocalStorage::ListTagsOptions:



Collaboration diagram for quantier::local\_storage::ILocalStorage::ListTagsOptions:



### Public Attributes

- ListTagsOrder **m\_order** = ListTagsOrder::NoOrder
- Affiliation **m\_affiliation** = Affiliation::Any
- QList< qevercloud::Guid > **m\_linkedNotebookGuids**
- TagNotesRelation **m\_tagNotesRelation** = TagNotesRelation::Any

## Public Attributes inherited from [quentier::local\\_storage::ILocalStorage::ListOptionsBase](#)

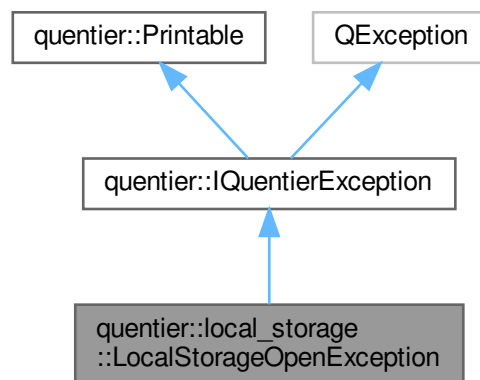
- [ListObjectsFilters](#) **m\_filters** = {}
- [quint64](#) **m\_limit** = 0UL
- [quint64](#) **m\_offset** = 0UL
- [OrderDirection](#) **m\_direction** = OrderDirection::Ascending

## 5.61 quentier::local\_storage::LocalStorageOpenException Class Reference

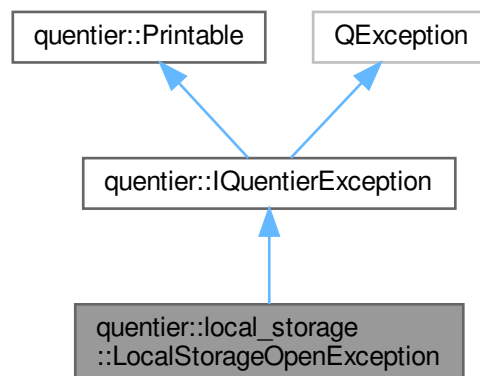
The [LocalStorageOpenException](#) is thrown on failure to open the local storage database.

```
#include <LocalStorageOpenException.h>
```

Inheritance diagram for quentier::local\_storage::LocalStorageOpenException:



Collaboration diagram for quentier::local\_storage::LocalStorageOpenException:



### Public Member Functions

- **LocalStorageOpenException** ([const ErrorString](#) &message)
- [LocalStorageOpenException](#) \* **clone** () [const override](#)
- **void raise** () [const override](#)

### Public Member Functions inherited from [quantier::IQuantierException](#)

- [ErrorString](#) **errorMessage** () [const](#)
- [QString](#) **localizedErrorMessage** () [const](#)
- [QString](#) **nonLocalizedErrorMessage** () [const](#)
- [const char](#) \* **what** () [const noexcept override](#)
- [QTextStream](#) & **print** ([QTextStream](#) &strm) [const override](#)

### Public Member Functions inherited from [quantier::Printable](#)

- [QString](#) **toString** () [const](#)

### Protected Member Functions

- [QString](#) **exceptionDisplayName** () [const override](#)

### Protected Member Functions inherited from [quantier::IQuantierException](#)

- **IQuantierException** ([ErrorString](#) message)
- **IQuantierException** ([const IQuantierException](#) &other)
- **IQuantierException** & **operator=** ([const IQuantierException](#) &other)

## 5.61.1 Detailed Description

The [LocalStorageOpenException](#) is thrown on failure to open the local storage database.

## 5.61.2 Member Function Documentation

### 5.61.2.1 exceptionDisplayName()

```
QString quantier::local_storage::LocalStorageOpenException::exceptionDisplayName ( ) const
[override], [protected], [virtual]
```

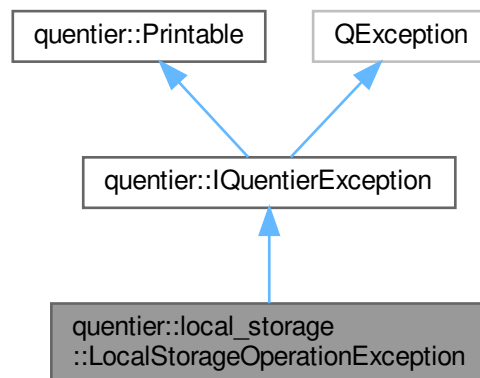
Implements [quantier::IQuantierException](#).

## 5.62 quantier::local\_storage::LocalStorageOperationException Class Reference

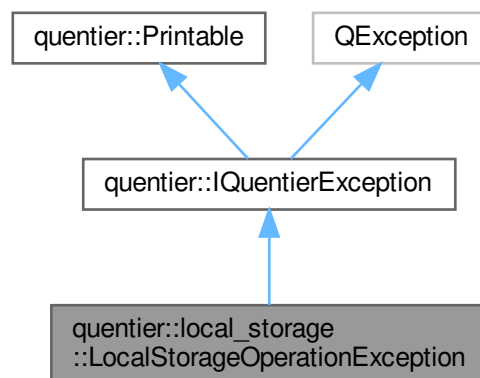
The [LocalStorageOperationException](#) is thrown when the local storage encounters some internal error during the attempt to process some operation.

```
#include <LocalStorageOperationException.h>
```

Inheritance diagram for quantier::local\_storage::LocalStorageOperationException:



Collaboration diagram for quantier::local\_storage::LocalStorageOperationException:



### Public Member Functions

- [LocalStorageOperationException](#) ([ErrorString](#) message)
- [LocalStorageOperationException](#) \* `clone` () [const override](#)
- `void raise` () [const override](#)

**Public Member Functions inherited from `quentier::IQuentierException`**

- `ErrorString errorMessage () const`
- `QString localizedErrorMessage () const`
- `QString nonLocalizedErrorMessage () const`
- `const char * what () const noexcept override`
- `QTextStream & print (QTextStream &strm) const override`

**Public Member Functions inherited from `quentier::Printable`**

- `QString toString () const`

**Protected Member Functions**

- `QString exceptionDisplayName () const override`

**Protected Member Functions inherited from `quentier::IQuentierException`**

- `IQuentierException (ErrorString message)`
- `IQuentierException (const IQuentierException &other)`
- `IQuentierException & operator= (const IQuentierException &other)`

**5.62.1 Detailed Description**

The `LocalStorageOperationException` is thrown when the local storage encounters some internal error during the attempt to process some operation.

**5.62.2 Member Function Documentation****5.62.2.1 `exceptionDisplayName()`**

```
QString quentier::local_storage::LocalStorageOperationException::exceptionDisplayName ( )
const [override], [protected], [virtual]
```

Implements `quentier::IQuentierException`.

**5.63 `quentier::LRUCache< Key, Value, Allocator >` Class Template Reference****Public Types**

- `using key_type = Key`
- `using mapped_type = Value`
- `using allocator_type = Allocator`
- `using value_type = std::pair< key_type, mapped_type >`
- `using container_type = std::list< value_type, allocator_type >`
- `using size_type = typename container_type::size_type`
- `using difference_type = typename container_type::difference_type`
- `using iterator = typename container_type::iterator`
- `using const_iterator = typename container_type::const_iterator`
- `using reverse_iterator = std::reverse_iterator< iterator >`
- `using const_reverse_iterator = std::reverse_iterator< const_iterator >`
- `using reference = value_type &`
- `using const_reference = const value_type &`
- `using pointer = typename std::allocator_traits< allocator_type >::pointer`
- `using const_pointer = typename std::allocator_traits< allocator_type >::const_pointer`

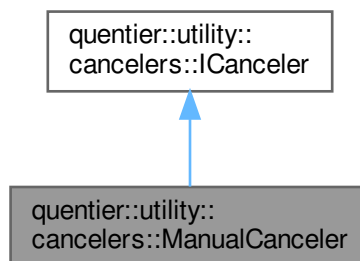
## Public Member Functions

- **LRUCache** (`const size_t maxSize=100`)
- iterator **begin** () `noexcept`
- const\_iterator **begin** () `const noexcept`
- reverse\_iterator **rbegin** () `noexcept`
- const\_reverse\_iterator **rbegin** () `const noexcept`
- iterator **end** () `noexcept`
- const\_iterator **end** () `const noexcept`
- reverse\_iterator **rend** () `noexcept`
- const\_reverse\_iterator **rend** () `const noexcept`
- **bool empty** () `const noexcept`
- `size_t size` () `const noexcept`
- `size_t max_size` () `const noexcept`
- **void clear** ()
- **void put** (`const key_type &key`, `const mapped_type &value`)
- `const mapped_type * get` (`const key_type &key`) `const noexcept`
- **bool exists** (`const key_type &key`) `const noexcept`
- **bool remove** (`const key_type &key`) `noexcept`
- **void setMaxSize** (`const size_t maxSize`)

## 5.64 quantier::utility::cancelers::ManualCanceler Class Reference

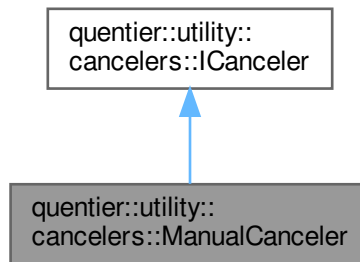
```
#include <ManualCanceler.h>
```

Inheritance diagram for `quantier::utility::cancelers::ManualCanceler`:





Collaboration diagram for `quentier::utility::cancelers::ManualCanceler`:



### Public Member Functions

- **ManualCanceler** ([ManualCanceler](#) &&[other](#)) `noexcept`
- **ManualCanceler** & **operator=** ([ManualCanceler](#) &&[other](#)) `noexcept`
- **void cancel** () `noexcept`
- **bool isCanceled** () `const noexcept override`

#### 5.64.1 Detailed Description

[ICanceler](#) which allows one to manually call `cancel` method to cancel some task

#### 5.64.2 Member Function Documentation

##### 5.64.2.1 `cancel()`

```
void quentier::utility::cancelers::ManualCanceler::cancel ( ) [noexcept]
```

Manually cancel a task

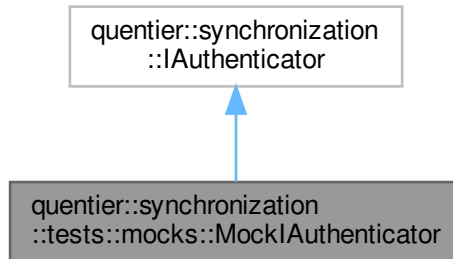
##### 5.64.2.2 `isCanceled()`

```
bool quentier::utility::cancelers::ManualCanceler::isCanceled ( ) const [override], [virtual], [noexcept]
```

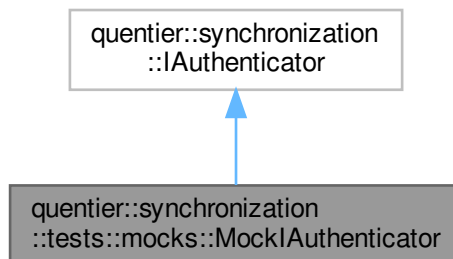
Implements [quentier::utility::cancelers::ICanceler](#).

## 5.65 `quentier::synchronization::tests::mocks::MockIAuthenticator` Class Reference

Inheritance diagram for `quentier::synchronization::tests::mocks::MockIAuthenticator`:



Collaboration diagram for `quentier::synchronization::tests::mocks::MockIAuthenticator`:



### Public Member Functions

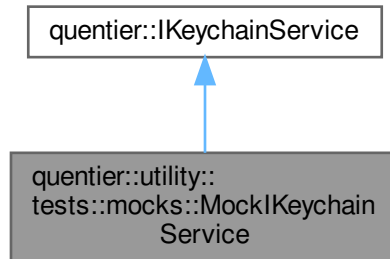
- **MOCK\_METHOD** ([QFuture](#)< [IAuthenticationInfoPtr](#) >, `authenticateNewAccount`,(),([override](#)))
- **MOCK\_METHOD** ([QFuture](#)< [IAuthenticationInfoPtr](#) >, `authenticateAccount`,([Account account](#)),([override](#)))

### Public Member Functions inherited from [quentier::synchronization::IAuthenticator](#)

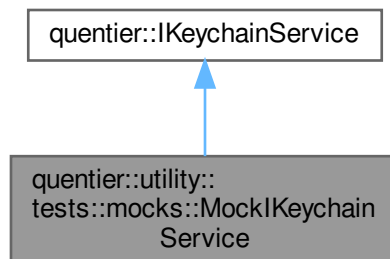
- [virtual QFuture](#)< [IAuthenticationInfoPtr](#) > **authenticateNewAccount** ()=0
- [virtual QFuture](#)< [IAuthenticationInfoPtr](#) > **authenticateAccount** ([Account account](#))=0

## 5.66 `quentier::utility::tests::mocks::MockIKeychainService` Class Reference

Inheritance diagram for `quentier::utility::tests::mocks::MockIKeychainService`:



Collaboration diagram for `quentier::utility::tests::mocks::MockIKeychainService`:



### Public Member Functions

- **MOCK\_METHOD** (`QFuture< void >`, `writePassword`, (`QString service`, `QString key`, `QString password`), (`override`))
- **MOCK\_METHOD** (`QFuture< QString >`, `readPassword`, (`QString service`, `QString key`), (`const`, `override`))
- **MOCK\_METHOD** (`QFuture< void >`, `deletePassword`, (`QString service`, `QString key`), (`override`))

### Public Member Functions inherited from `quentier::IKeychainService`

- `virtual QFuture< void > writePassword (QString service, QString key, QString password)=0`
- `virtual QFuture< QString > readPassword (QString service, QString key) const =0`
- `virtual QFuture< void > deletePassword (QString service, QString key)=0`

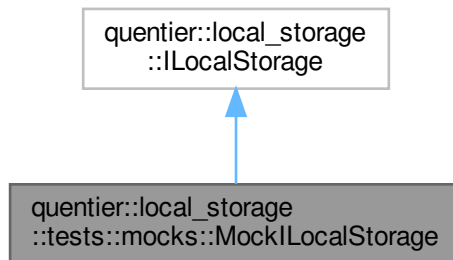
## Additional Inherited Members

## Public Types inherited from [quentier::IKeychainService](#)

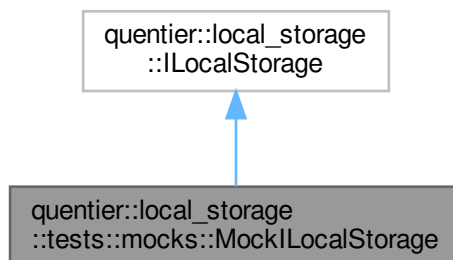
- enum class [ErrorCode](#) {  
[NoError](#) , [EntryNotFound](#) , [CouldNotDeleteEntry](#) , [AccessDeniedByUser](#) ,  
[AccessDenied](#) , [NoBackendAvailable](#) , [NotImplemented](#) , [OtherError](#) }

## 5.67 quentier::local\_storage::tests::mocks::MockLocalStorage Class Reference

Inheritance diagram for quentier::local\_storage::tests::mocks::MockLocalStorage:



Collaboration diagram for quentier::local\_storage::tests::mocks::MockLocalStorage:



## Public Member Functions

- **MOCK\_METHOD** (QFuture< bool >, isVersionTooHigh,(),(const, override))
- **MOCK\_METHOD** (QFuture< bool >, requiresUpgrade,(),(const, override))
- **MOCK\_METHOD** (QFuture< QList< IPatchPtr > >, requiredPatches,(),(const, override))
- **MOCK\_METHOD** (QFuture< qint32 >, version,(),(const, override))
- **MOCK\_METHOD** (QFuture< qint32 >, highestSupportedVersion,(),(const, override))
- **MOCK\_METHOD** (QFuture< quint32 >, userCount,(),(const, override))
- **MOCK\_METHOD** (QFuture< void >, putUser,(qevercloud::User user),(override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::User > >, findUserById,(qevercloud::UserID userId),(const, override))
- **MOCK\_METHOD** (QFuture< void >, expungeUserById,(qevercloud::UserID userId),(override))
- **MOCK\_METHOD** (QFuture< quint32 >, notebookCount,(),(const, override))
- **MOCK\_METHOD** (QFuture< void >, putNotebook,(qevercloud::Notebook notebook),(override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Notebook > >, findNotebookByLocalId,(QString localId),(const, override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Notebook > >, findNotebookByGuid,(qevercloud::Guid guid),(const, override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Notebook > >, findNotebookByName,(QString name, std::optional< qevercloud::Guid > linkedNotebookGuid),(const, override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Notebook > >, findDefaultNotebook,(),(const, override))
- **MOCK\_METHOD** (QFuture< void >, expungeNotebookByLocalId,(QString localId),(override))
- **MOCK\_METHOD** (QFuture< void >, expungeNotebookByGuid,(qevercloud::Guid guid),(override))
- **MOCK\_METHOD** (QFuture< void >, expungeNotebookByName,(QString name, std::optional< qevercloud::Guid > linkedNotebookGuid),(override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::Notebook > >, listNotebooks,(ListNotebooksOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::SharedNotebook > >, listSharedNotebooks,(qevercloud::Guid notebookGuid),(const, override))
- **MOCK\_METHOD** (QFuture< QSet< qevercloud::Guid > >, listNotebookGuids,(ListGuidsFilters filters, std::optional< qevercloud::Guid > linkedNotebookGuid),(const, override))
- **MOCK\_METHOD** (QFuture< quint32 >, linkedNotebookCount,(),(const, override))
- **MOCK\_METHOD** (QFuture< void >, putLinkedNotebook,(qevercloud::LinkedNotebook linkedNotebook),(override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::LinkedNotebook > >, findLinkedNotebookByGuid,(qevercloud::Guid guid),(const, override))
- **MOCK\_METHOD** (QFuture< void >, expungeLinkedNotebookByGuid,(qevercloud::Guid guid),(override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::LinkedNotebook > >, listLinkedNotebooks,(ListLinkedNotebooksOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< quint32 >, noteCount,(NoteCountOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< quint32 >, noteCountPerNotebookLocalId,(QString notebookLocalId, NoteCountOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< quint32 >, noteCountPerTagLocalId,(QString tagLocalId, NoteCountOptions options),(const, override))
- **MOCK\_METHOD** ((QFuture< QHash< QString, quint32 > >), noteCountsPerTags,(ListTagsOptions listTagsOptions, NoteCountOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< quint32 >, noteCountPerNotebookAndTagLocalIds,(QStringList notebookLocalIds, QStringList tagLocalIds, NoteCountOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< void >, putNote,(qevercloud::Note note),(override))
- **MOCK\_METHOD** (QFuture< void >, updateNote,(qevercloud::Note note, UpdateNoteOptions options),(override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Note > >, findNoteByLocalId,(QString localId, FetchNoteOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Note > >, findNoteByGuid,(qevercloud::Guid guid, FetchNoteOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< void >, expungeNoteByLocalId,(QString localId),(override))
- **MOCK\_METHOD** (QFuture< void >, expungeNoteByGuid,(qevercloud::Guid guid),(override))

- **MOCK\_METHOD** (QFuture< QList< qevercloud::Note > >, listNotes,(FetchNoteOptions fetchOptions, ListNotesOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::Note > >, listNotesPerNotebookLocallId,(QString notebookLocallId, FetchNoteOptions fetchOptions, ListNotesOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::Note > >, listNotesPerTagLocallId,(QString tagLocallId, FetchNoteOptions fetchOptions, ListNotesOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::Note > >, listNotesPerNotebookAndTagLocalIds,(QStringList notebookLocalIds, QStringList tagLocalIds, FetchNoteOptions fetchOptions, ListNotesOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::Note > >, listNotesByLocalIds,(QStringList noteLocalIds, FetchNoteOptions fetchOptions, ListNotesOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< QSet< qevercloud::Guid > >, listNoteGuids,(ListGuidsFilters filters, std::optional< qevercloud::Guid > linkedNotebookGuid),(const, override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::Note > >, queryNotes,(NoteSearchQuery query, FetchNoteOptions fetchOptions),(const, override))
- **MOCK\_METHOD** (QFuture< QStringList >, queryNoteLocalIds,(NoteSearchQuery query),(const, override))
- **MOCK\_METHOD** (QFuture< quint32 >, tagCount,(),(const, override))
- **MOCK\_METHOD** (QFuture< void >, putTag,(qevercloud::Tag tag),(override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Tag > >, findTagByLocallId,(QString tagLocallId),(const, override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Tag > >, findTagByGuid,(qevercloud::Guid tagGuid),(const, override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Tag > >, findTagByName,(QString tagName, std::optional< QString > linkedNotebookGuid),(const, override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::Tag > >, listTags,(ListTagsOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::Tag > >, listTagsPerNoteLocallId,(QString noteLocallId, ListTagsOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< QSet< qevercloud::Guid > >, listTagGuids,(ListGuidsFilters filters, std::optional< qevercloud::Guid > linkedNotebookGuid),(const, override))
- **MOCK\_METHOD** (QFuture< void >, expungeTagByLocallId,(QString tagLocallId),(override))
- **MOCK\_METHOD** (QFuture< void >, expungeTagByGuid,(qevercloud::Guid tagGuid),(override))
- **MOCK\_METHOD** (QFuture< void >, expungeTagByName,(QString name, std::optional< qevercloud::Guid > linkedNotebookGuid),(override))
- **MOCK\_METHOD** (QFuture< quint32 >, resourceCount,(NoteCountOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< quint32 >, resourceCountPerNoteLocallId,(QString noteLocallId),(const, override))
- **MOCK\_METHOD** (QFuture< void >, putResource,(qevercloud::Resource resource),(override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Resource > >, findResourceByLocallId,(QString resourceLocallId, FetchResourceOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::Resource > >, findResourceByGuid,(qevercloud::Guid resourceGuid, FetchResourceOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< void >, expungeResourceByLocallId,(QString resourceLocallId),(override))
- **MOCK\_METHOD** (QFuture< void >, expungeResourceByGuid,(qevercloud::Guid resourceGuid),(override))
- **MOCK\_METHOD** (QFuture< quint32 >, savedSearchCount,(),(const, override))
- **MOCK\_METHOD** (QFuture< void >, putSavedSearch,(qevercloud::SavedSearch search),(override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::SavedSearch > >, findSavedSearchByLocalId,(QString locallId),(const, override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::SavedSearch > >, findSavedSearchByGuid,(qevercloud::Guid guid),(const, override))
- **MOCK\_METHOD** (QFuture< std::optional< qevercloud::SavedSearch > >, findSavedSearchByName,(QString name),(const, override))
- **MOCK\_METHOD** (QFuture< QList< qevercloud::SavedSearch > >, listSavedSearches,(ListSavedSearchesOptions options),(const, override))
- **MOCK\_METHOD** (QFuture< QSet< qevercloud::Guid > >, listSavedSearchGuids,(ListGuidsFilters filters),(const, override))

- **MOCK\_METHOD** ([QFuture](#)< [void](#) >, [expungeSavedSearchByLocalId](#),([QString](#) [localId](#)),([override](#)))
- **MOCK\_METHOD** ([QFuture](#)< [void](#) >, [expungeSavedSearchByGuid](#),([qevercloud::Guid](#) [guid](#)),([override](#)))
- **MOCK\_METHOD** ([QFuture](#)< [qint32](#) >, [highestUpdateSequenceNumber](#),([HighestUsnOption](#) [option](#)),([const](#), [override](#)))
- **MOCK\_METHOD** ([QFuture](#)< [qint32](#) >, [highestUpdateSequenceNumber](#),([qevercloud::Guid](#) [linkedNotebookGuid](#)),([const](#), [override](#)))
- **MOCK\_METHOD** ([ILocalStorageNotifier](#) \*, [notifier](#),(),([const](#), [override](#)))

## Public Member Functions inherited from [quentier::local\\_storage::ILocalStorage](#)

- **Q\_DECLARE\_FLAGS** ([StartupOptions](#), [StartupOption](#))
- [virtual](#) [QFuture](#)< [bool](#) > [isVersionTooHigh](#) () [const](#) =0
- [virtual](#) [QFuture](#)< [bool](#) > [requiresUpgrade](#) () [const](#) =0
- [virtual](#) [QFuture](#)< [QList](#)< [IPatchPtr](#) > > [requiredPatches](#) () [const](#) =0
- [virtual](#) [QFuture](#)< [qint32](#) > [version](#) () [const](#) =0
- [virtual](#) [QFuture](#)< [qint32](#) > [highestSupportedVersion](#) () [const](#) =0
- [virtual](#) [QFuture](#)< [qint32](#) > [userCount](#) () [const](#) =0
- [virtual](#) [QFuture](#)< [void](#) > [putUser](#) ([qevercloud::User](#) [user](#))=0
- [virtual](#) [QFuture](#)< [std::optional](#)< [qevercloud::User](#) > > [findUserById](#) ([qevercloud::UserID](#) [userId](#)) [const](#) =0
- [virtual](#) [QFuture](#)< [void](#) > [expungeUserById](#) ([qevercloud::UserID](#) [userId](#))=0
- [virtual](#) [QFuture](#)< [qint32](#) > [notebookCount](#) () [const](#) =0
- [virtual](#) [QFuture](#)< [void](#) > [putNotebook](#) ([qevercloud::Notebook](#) [notebook](#))=0
- [virtual](#) [QFuture](#)< [std::optional](#)< [qevercloud::Notebook](#) > > [findNotebookByLocalId](#) ([QString](#) [notebookLocalId](#)) [const](#) =0
- [virtual](#) [QFuture](#)< [std::optional](#)< [qevercloud::Notebook](#) > > [findNotebookByGuid](#) ([qevercloud::Guid](#) [guid](#)) [const](#) =0
- [virtual](#) [QFuture](#)< [std::optional](#)< [qevercloud::Notebook](#) > > [findNotebookByName](#) ([QString](#) [notebookName](#), [std::optional](#)< [qevercloud::Guid](#) > [linkedNotebookGuid](#)=[std::nullopt](#)) [const](#) =0
- [virtual](#) [QFuture](#)< [std::optional](#)< [qevercloud::Notebook](#) > > [findDefaultNotebook](#) () [const](#) =0
- [virtual](#) [QFuture](#)< [void](#) > [expungeNotebookByLocalId](#) ([QString](#) [notebookLocalId](#))=0
- [virtual](#) [QFuture](#)< [void](#) > [expungeNotebookByGuid](#) ([qevercloud::Guid](#) [notebookGuid](#))=0
- [virtual](#) [QFuture](#)< [void](#) > [expungeNotebookByName](#) ([QString](#) [name](#), [std::optional](#)< [qevercloud::Guid](#) > [linkedNotebookGuid](#)=[std::nullopt](#))=0
- [virtual](#) [QFuture](#)< [QList](#)< [qevercloud::Notebook](#) > > [listNotebooks](#) ([ListNotebooksOptions](#) [options](#)={}) [const](#) =0
- [virtual](#) [QFuture](#)< [QList](#)< [qevercloud::SharedNotebook](#) > > [listSharedNotebooks](#) ([qevercloud::Guid](#) [notebookGuid](#)={}) [const](#) =0
- [virtual](#) [QFuture](#)< [QSet](#)< [qevercloud::Guid](#) > > [listNotebookGuids](#) ([ListGuidsFilters](#) [filters](#), [std::optional](#)< [qevercloud::Guid](#) > [linkedNotebookGuid](#)={}) [const](#) =0
- [virtual](#) [QFuture](#)< [qint32](#) > [linkedNotebookCount](#) () [const](#) =0
- [virtual](#) [QFuture](#)< [void](#) > [putLinkedNotebook](#) ([qevercloud::LinkedNotebook](#) [linkedNotebook](#))=0
- [virtual](#) [QFuture](#)< [std::optional](#)< [qevercloud::LinkedNotebook](#) > > [findLinkedNotebookByGuid](#) ([qevercloud::Guid](#) [guid](#)) [const](#) =0
- [virtual](#) [QFuture](#)< [void](#) > [expungeLinkedNotebookByGuid](#) ([qevercloud::Guid](#) [guid](#))=0
- [virtual](#) [QFuture](#)< [QList](#)< [qevercloud::LinkedNotebook](#) > > [listLinkedNotebooks](#) ([ListLinkedNotebooksOptions](#) [options](#)={}) [const](#) =0
- [virtual](#) [QFuture](#)< [qint32](#) > [noteCount](#) ([NoteCountOptions](#) [options](#)=[NoteCountOptions](#)([NoteCountOption](#)↵[::IncludeNonDeletedNotes](#))) [const](#) =0
- [virtual](#) [QFuture](#)< [qint32](#) > [noteCountPerNotebookLocalId](#) ([QString](#) [notebookLocalId](#), [NoteCountOptions](#) [options](#)=[NoteCountOptions](#)([NoteCountOption](#)↵[::IncludeNonDeletedNotes](#))) [const](#) =0
- [virtual](#) [QFuture](#)< [qint32](#) > [noteCountPerTagLocalId](#) ([QString](#) [tagLocalId](#), [NoteCountOptions](#) [options](#)=[NoteCountOptions](#)([NoteCountOption](#)↵[::IncludeNonDeletedNotes](#))) [const](#) =0
- [virtual](#) [QFuture](#)< [QHash](#)< [QString](#), [qint32](#) > > [noteCountsPerTags](#) ([ListTagsOptions](#) [listTagsOptions](#)={}, [NoteCountOptions](#) [options](#)=[NoteCountOptions](#)([NoteCountOption](#)↵[::IncludeNonDeletedNotes](#))) [const](#) =0



- `virtual QFuture< quint32 > noteCountPerNotebookAndTagLocalIds (QStringList notebookLocalIds, QStringList tagLocalIds, NoteCountOptions options=NoteCountOptions(NoteCountOption::IncludeNonDeletedNotes)) const =0`
- `virtual QFuture< void > putNote (qevercloud::Note note)=0`
- `virtual QFuture< void > updateNote (qevercloud::Note note, UpdateNoteOptions options)=0`
- `virtual QFuture< std::optional< qevercloud::Note > > findNoteByLocalId (QString noteLocalId, FetchNoteOptions options) const =0`
- `virtual QFuture< std::optional< qevercloud::Note > > findNoteByGuid (qevercloud::Guid noteGuid, FetchNoteOptions options) const =0`
- `virtual QFuture< QList< qevercloud::Note > > listNotes (FetchNoteOptions fetchOptions, ListNotesOptions listOptions={}) const =0`
- `virtual QFuture< QList< qevercloud::Note > > listNotesPerNotebookLocalId (QString notebookLocalId, FetchNoteOptions fetchOptions, ListNotesOptions listOptions={}) const =0`
- `virtual QFuture< QList< qevercloud::Note > > listNotesPerTagLocalId (QString tagLocalId, FetchNoteOptions fetchOptions, ListNotesOptions listOptions={}) const =0`
- `virtual QFuture< QList< qevercloud::Note > > listNotesPerNotebookAndTagLocalIds (QStringList notebookLocalIds, QStringList tagLocalIds, FetchNoteOptions fetchOptions, ListNotesOptions listOptions={}) const =0`
- `virtual QFuture< QList< qevercloud::Note > > listNotesByLocalIds (QStringList noteLocalIds, FetchNoteOptions fetchOptions, ListNotesOptions listOptions={}) const =0`
- `virtual QFuture< QSet< qevercloud::Guid > > listNoteGuids (ListGuidsFilters filters, std::optional< qevercloud::Guid > linkedNotebookGuid={}) const =0`
- `virtual QFuture< QList< qevercloud::Note > > queryNotes (NoteSearchQuery query, FetchNoteOptions fetchOptions) const =0`
- `virtual QFuture< QStringList > queryNoteLocalIds (NoteSearchQuery query) const =0`
- `virtual QFuture< void > expungeNoteByLocalId (QString noteLocalId)=0`
- `virtual QFuture< void > expungeNoteByGuid (qevercloud::Guid noteGuid)=0`
- `virtual QFuture< quint32 > tagCount () const =0`
- `virtual QFuture< void > putTag (qevercloud::Tag tag)=0`
- `virtual QFuture< std::optional< qevercloud::Tag > > findTagByLocalId (QString tagLocalId) const =0`
- `virtual QFuture< std::optional< qevercloud::Tag > > findTagByGuid (qevercloud::Guid tagGuid) const =0`
- `virtual QFuture< std::optional< qevercloud::Tag > > findTagByName (QString tagName, std::optional< qevercloud::Guid > linkedNotebookGuid=std::nullopt) const =0`
- `virtual QFuture< QList< qevercloud::Tag > > listTags (ListTagsOptions options={}) const =0`
- `virtual QFuture< QList< qevercloud::Tag > > listTagsPerNoteLocalId (QString noteLocalId, ListTagsOptions options={}) const =0`
- `virtual QFuture< QSet< qevercloud::Guid > > listTagGuids (ListGuidsFilters filters, std::optional< qevercloud::Guid > linkedNotebookGuid={}) const =0`
- `virtual QFuture< void > expungeTagByLocalId (QString tagLocalId)=0`
- `virtual QFuture< void > expungeTagByGuid (qevercloud::Guid tagGuid)=0`
- `virtual QFuture< void > expungeTagByName (QString name, std::optional< qevercloud::Guid > linkedNotebookGuid=std::nullopt)=0`
- `virtual QFuture< quint32 > resourceCount (NoteCountOptions options=NoteCountOptions(NoteCountOption::IncludeNonDeletedNotes)) const =0`
- `virtual QFuture< quint32 > resourceCountPerNoteLocalId (QString noteLocalId) const =0`
- `virtual QFuture< void > putResource (qevercloud::Resource resource)=0`
- `virtual QFuture< std::optional< qevercloud::Resource > > findResourceByLocalId (QString resourceLocalId, FetchResourceOptions options={}) const =0`
- `virtual QFuture< std::optional< qevercloud::Resource > > findResourceByGuid (qevercloud::Guid resourceGuid, FetchResourceOptions options={}) const =0`
- `virtual QFuture< void > expungeResourceByLocalId (QString resourceLocalId)=0`
- `virtual QFuture< void > expungeResourceByGuid (qevercloud::Guid resourceGuid)=0`
- `virtual QFuture< quint32 > savedSearchCount () const =0`
- `virtual QFuture< void > putSavedSearch (qevercloud::SavedSearch search)=0`
- `virtual QFuture< std::optional< qevercloud::SavedSearch > > findSavedSearchByLocalId (QString savedSearchLocalId) const =0`



- `virtual QFuture< std::optional< qevercloud::SavedSearch > > findSavedSearchByGuid (qevercloud::Guid guid) const =0`
- `virtual QFuture< std::optional< qevercloud::SavedSearch > > findSavedSearchByName (QString name) const =0`
- `virtual QFuture< QList< qevercloud::SavedSearch > > listSavedSearches (ListSavedSearchesOptions options={}) const =0`
- `virtual QFuture< QSet< qevercloud::Guid > > listSavedSearchGuids (ListGuidsFilters filters) const =0`
- `virtual QFuture< void > expungeSavedSearchByLocalId (QString savedSearchLocalId)=0`
- `virtual QFuture< void > expungeSavedSearchByGuid (qevercloud::Guid guid)=0`
- `virtual QFuture< qint32 > highestUpdateSequenceNumber (HighestUsnOption option) const =0`
- `virtual QFuture< qint32 > highestUpdateSequenceNumber (qevercloud::Guid linkedNotebookGuid) const =0`
- `virtual ILocalStorageNotifier * notifier () const =0`

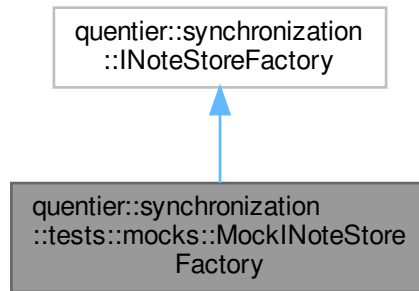
### Additional Inherited Members

### Public Types inherited from `quentier::local_storage::ILocalStorage`

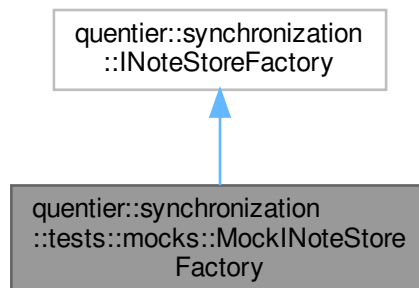
- enum class **StartupOption** { **ClearDatabase** = 1 << 1 , **OverrideLock** = 1 << 2 }
- enum class **ListObjectsFilter** { **Include** , **Exclude** }
- enum class **OrderDirection** { **Ascending** , **Descending** }
- enum class **ListNotebooksOrder** { **NoOrder** , **ByUpdateSequenceNumber** , **ByNotebookName** , **ByCreationTimestamp** , **ByModificationTimestamp** }
- enum class **ListLinkedNotebooksOrder** { **NoOrder** , **ByUpdateSequenceNumber** , **ByShareName** , **ByUsername** }
- enum class **ListTagsOrder** { **NoOrder** , **ByUpdateSequenceNumber** , **ByName** }
- enum class **ListNotesOrder** { **NoOrder** , **ByUpdateSequenceNumber** , **ByTitle** , **ByCreationTimestamp** , **ByModificationTimestamp** , **ByDeletionTimestamp** , **ByAuthor** , **BySource** , **BySourceApplication** , **ByReminderTime** , **ByPlaceName** }
- enum class **ListSavedSearchesOrder** { **NoOrder** , **ByUpdateSequenceNumber** , **ByName** , **ByFormat** }
- enum class **Affiliation** { **Any** , **User** , **AnyLinkedNotebook** , **ParticularLinkedNotebooks** }
- enum class **TagNotesRelation** { **Any** , **WithNotes** , **WithoutNotes** }
- enum class **NoteCountOption** { **IncludeNonDeletedNotes** = 1 << 1 , **IncludeDeletedNotes** = 1 << 2 }
- enum class **UpdateNoteOption** { **UpdateResourceMetadata** = 1 << 1 , **UpdateResourceBinaryData** = 1 << 2 , **UpdateTags** = 1 << 3 }
- enum class **FetchNoteOption** { **WithResourceMetadata** = 1 << 1 , **WithResourceBinaryData** = 1 << 2 }
- enum class **FetchResourceOption** { **WithBinaryData** = 1 << 1 }
- enum class **HighestUsnOption** { **WithinUserOwnContent** , **WithinUserOwnContentAndLinkedNotebooks** }

## 5.68 `quentier::synchronization::tests::mocks::MockINoteStoreFactory` Class Reference

Inheritance diagram for `quentier::synchronization::tests::mocks::MockINoteStoreFactory`:



Collaboration diagram for `quentier::synchronization::tests::mocks::MockINoteStoreFactory`:



### Public Member Functions

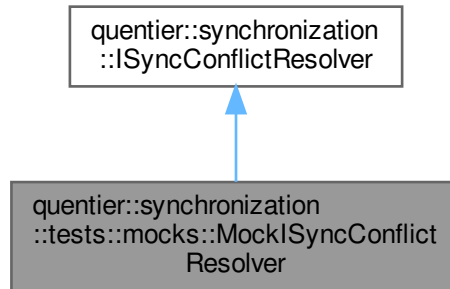
- **MOCK\_METHOD** (`::qevercloud::INoteStorePtr`, `createNoteStore`, (`QString` `noteStoreUrl`, `std::optional<::qevercloud::Guid >` `linkedNotebookGuid`, `::qevercloud::IRequestContextPtr` `ctx`, `::qevercloud::IRetryPolicyPtr` `retryPolicy`), (`override`))

### Public Member Functions inherited from `quentier::synchronization::INoteStoreFactory`

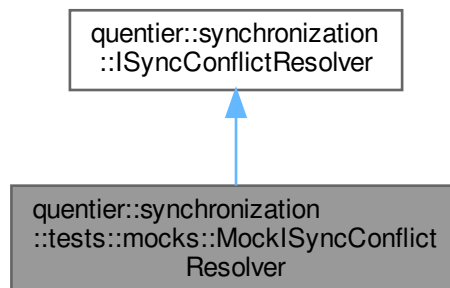
- **virtual** `qevercloud::INoteStorePtr` **createNoteStore** (`QString` `noteStoreUrl`=`{}`, `std::optional< qevercloud::Guid >` `linkedNotebookGuid`=`{}`, `qevercloud::IRequestContextPtr` `ctx`=`{}`, `qevercloud::IRetryPolicyPtr` `retryPolicy`=`{}`)=0

## 5.69 quantier::synchronization::tests::mocks::MockISyncConflictResolver Class Reference

Inheritance diagram for quantier::synchronization::tests::mocks::MockISyncConflictResolver:



Collaboration diagram for quantier::synchronization::tests::mocks::MockISyncConflictResolver:



### Public Member Functions

- **MOCK\_METHOD** (`QFuture< NotebookConflictResolution >`, `resolveNotebookConflict`, (`::qevercloud::Notebook theirs`, `::qevercloud::Notebook mine`), (`override`))
- **MOCK\_METHOD** (`QFuture< NoteConflictResolution >`, `resolveNoteConflict`, (`::qevercloud::Note theirs`, `::qevercloud::Note mine`), (`override`))
- **MOCK\_METHOD** (`QFuture< SavedSearchConflictResolution >`, `resolveSavedSearchConflict`, (`::qevercloud::SavedSearch theirs`, `::qevercloud::SavedSearch mine`), (`override`))
- **MOCK\_METHOD** (`QFuture< TagConflictResolution >`, `resolveTagConflict`, (`::qevercloud::Tag theirs`, `::qevercloud::Tag mine`), (`override`))

## Public Member Functions inherited from `quentier::synchronization::ISyncConflictResolver`

- `virtual QFuture< NotebookConflictResolution > resolveNotebookConflict` (`qevercloud::Notebook theirs`, `qevercloud::Notebook mine`)=0
- `virtual QFuture< NoteConflictResolution > resolveNoteConflict` (`qevercloud::Note theirs`, `qevercloud::Note mine`)=0
- `virtual QFuture< SavedSearchConflictResolution > resolveSavedSearchConflict` (`qevercloud::SavedSearch theirs`, `qevercloud::SavedSearch mine`)=0
- `virtual QFuture< TagConflictResolution > resolveTagConflict` (`qevercloud::Tag theirs`, `qevercloud::Tag mine`)=0

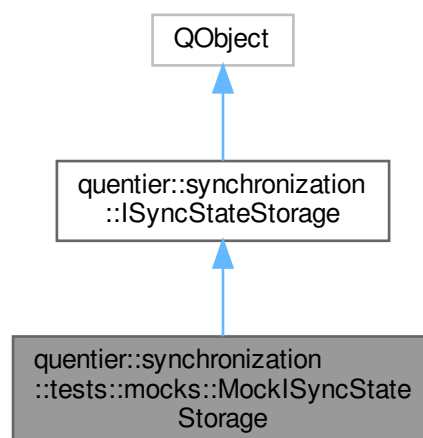
## Additional Inherited Members

## Public Types inherited from `quentier::synchronization::ISyncConflictResolver`

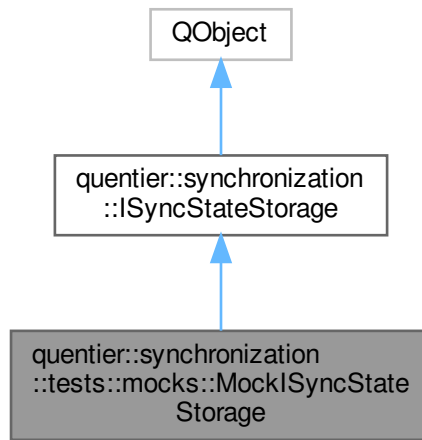
- `using NotebookConflictResolution` = `std::variant< ConflictResolution::UseTheirs, ConflictResolution::UseMine, ConflictResolution::IgnoreMine, ConflictResolution::MoveMine< qevercloud::Notebook > >`
- `using NoteConflictResolution` = `std::variant< ConflictResolution::UseTheirs, ConflictResolution::UseMine, ConflictResolution::IgnoreMine, ConflictResolution::MoveMine< qevercloud::Note > >`
- `using SavedSearchConflictResolution` = `std::variant< ConflictResolution::UseTheirs, ConflictResolution::UseMine, ConflictResolution::IgnoreMine, ConflictResolution::MoveMine< qevercloud::SavedSearch > >`
- `using TagConflictResolution` = `std::variant< ConflictResolution::IgnoreMine, ConflictResolution::UseTheirs, ConflictResolution::UseMine, ConflictResolution::MoveMine< qevercloud::Tag > >`

## 5.70 `quentier::synchronization::tests::mocks::MockISyncStateStorage` Class Reference

Inheritance diagram for `quentier::synchronization::tests::mocks::MockISyncStateStorage`:



Collaboration diagram for `quentier::synchronization::tests::mocks::MockISyncStateStorage`:



#### Public Member Functions

- **MOCK\_METHOD** (`ISyncStatePtr`, `getSyncState`,(`const Account &account`),(`override`))
- **MOCK\_METHOD** (`void`, `setSyncState`,(`const Account &account`, `ISyncStatePtr syncState`),(`override`))

#### Public Member Functions inherited from `quentier::synchronization::ISyncStateStorage`

- `virtual ISyncStatePtr` **getSyncState** (`const Account &account`)=0
- `virtual void` **setSyncState** (`const Account &account`, `ISyncStatePtr syncState`)=0

#### Additional Inherited Members

#### Signals inherited from `quentier::synchronization::ISyncStateStorage`

- `void` **notifySyncStateUpdated** (`Account account`, `ISyncStatePtr syncState`)

#### Protected Member Functions inherited from `quentier::synchronization::ISyncStateStorage`

- `ISyncStateStorage` (`QObject *parent=nullptr`)

## 5.71 `quentier::synchronization::ISyncConflictResolver::ConflictResolution::MoveMine< T > Struct` Template Reference

The `MoveMine` conflict resolution means "before using theirs version change mine version as specified". Note: the data item inside this conflict resolution might refer to something different than mine version passed to the conflict resolution function. It can be that way because the actual conflict might be with another local data item instead of the passed one.

```
#include <ISyncConflictResolver.h>
```

## Public Types

- `using value_type = T`

## Public Attributes

- `T mine`

### 5.71.1 Detailed Description

`template<class T>`

`struct quantier::synchronization::ISyncConflictResolver::ConflictResolution::MoveMine< T >`

The `MoveMine` conflict resolution means "before using theirs version change mine version as specified". Note: the data item inside this conflict resolution might refer to something different than mine version passed to the conflict resolution function. It can be that way because the actual conflict might be with another local data item instead of the passed one.

### 5.71.2 Member Data Documentation

#### 5.71.2.1 mine

`template<class T >`

`T quantier::synchronization::ISyncConflictResolver::ConflictResolution::MoveMine< T >::mine`

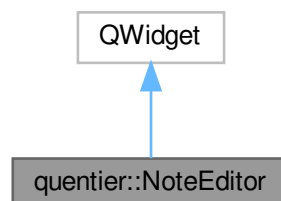
The changed value of mine data item.

## 5.72 quantier::NoteEditor Class Reference

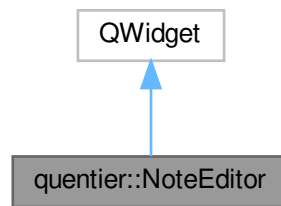
The `NoteEditor` class is a widget encapsulating all the functionality necessary for showing and editing notes.

```
#include <NoteEditor.h>
```

Inheritance diagram for `quantier::NoteEditor`:



Collaboration diagram for quantier::NoteEditor:



### Public Slots

- `void convertToNote ()`
- `void saveNoteToLocalStorage ()`
- `void setNoteTitle (const QString &noteTitle)`
- `void setTagIds (const QStringList &tagLocalIds, const QStringList &tagGuids)`
- `void undo ()`
- `void redo ()`
- `void cut ()`
- `void copy ()`
- `void paste ()`
- `void pasteUnformatted ()`
- `void selectAll ()`
- `void formatSelectionAsSourceCode ()`
- `void fontMenu ()`
- `void textBold ()`
- `void textItalic ()`
- `void textUnderline ()`
- `void textStrikethrough ()`
- `void textHighlight ()`
- `void alignLeft ()`
- `void alignCenter ()`
- `void alignRight ()`
- `void alignFull ()`
- `void findNext (const QString &text, bool matchCase) const`
- `void findPrevious (const QString &text, bool matchCase) const`
- `void replace (const QString &textToReplace, const QString &replacementText, bool matchCase)`
- `void replaceAll (const QString &textToReplace, const QString &replacementText, bool matchCase)`
- `void insertToDoCheckbox ()`
- `void insertInAppNoteLink (const QString &userId, const QString &shardId, const QString &noteGuid, const QString &linkText)`
- `void setSpellcheck (bool enabled)`
- `void setFont (const QFont &font)`
- `void setFontHeight (int height)`
- `void setFontColor (const QColor &color)`
- `void setBackgroundColor (const QColor &color)`
- `void setDefaultPalette (const QPalette &pal)`
- `void setDefaultFont (const QFont &font)`

- `void insertHorizontalLine ()`
- `void increaseFontSize ()`
- `void decreaseFontSize ()`
- `void increaseIndentation ()`
- `void decreaseIndentation ()`
- `void insertBulletedList ()`
- `void insertNumberedList ()`
- `void insertTableDialog ()`
- `void insertFixedWidthTable (int rows, int columns, int widthInPixels)`
- `void insertRelativeWidthTable (int rows, int columns, double relativeWidth)`
- `void insertTableRow ()`
- `void insertTableColumn ()`
- `void removeTableRow ()`
- `void removeTableColumn ()`
- `void addAttachmentDialog ()`
- `void saveAttachmentDialog (const QByteArray &resourceHash)`
- `void saveAttachmentUnderCursor ()`
- `void openAttachment (const QByteArray &resourceHash)`
- `void openAttachmentUnderCursor ()`
- `void copyAttachment (const QByteArray &resourceHash)`
- `void copyAttachmentUnderCursor ()`
- `void encryptSelectedText ()`
- `void decryptEncryptedTextUnderCursor ()`
- `void editHyperlinkDialog ()`
- `void copyHyperlink ()`
- `void removeHyperlink ()`
- `void onNoteLoadCancelled ()`

## Signals

- `void contentChanged ()`  
*contentChanged signal is emitted when the note's content (text) gets modified via manual editing (i.e. not any action like paste or cut)*
- `void noteAndNotebookFoundInLocalStorage (qevercloud::Note note, qevercloud::Notebook notebook)`  
*noteAndNotebookFoundInLocalStorage signal is emitted when note and its corresponding notebook were found within the local storage right before the note editor starts to load the note into the editor*
- `void noteNotFound (QString noteLocalId)`  
*noteNotFound signal is emitted when the note could not be found within the local storage by the provided local id*
- `void noteDeleted (QString noteLocalId)`  
*noteDeleted signal is emitted when the note displayed within the note editor is deleted. The note editor stops displaying the note in this case shortly after emitting this signal*
- `void noteModified ()`  
*noteModified signal is emitted when the note's content within the editor gets modified via some way - either via manual editing or via some action (like paste or cut)*
- `void notifyError (QString error)`  
*notifyError signal is emitted when [NoteEditor](#) encounters some problem worth letting the user to know about*
- `void inAppNoteLinkClicked (QString userId, QString shardId, QString noteGuid)`  
*inAppNoteLinkClicked signal is emitted when the in-app note link is clicked within the note editor*
- `void inAppNoteLinkPasteRequested (QString url, QString userId, QString shardId, QString noteGuid)`
- `void convertedToNote (qevercloud::Note note)`
- `void cantConvertToNote (QString error)`
- `void noteEditorHtmlUpdated (QString html)`
- `void currentNoteChanged (qevercloud::Note note)`



- **void spellCheckerNotReady ()**
- **void spellCheckerReady ()**
- **void noteLoaded ()**
- **void noteSavedToLocalStorage (QString noteLocalId)**  
*noteSavedToLocalStorage signal is emitted when the note has been saved within the local storage. [NoteEditor](#) doesn't do this on its own unless it's explicitly asked to do this via invoking its saveNoteToLocalStorage slot*
- **void failedToSaveNoteToLocalStorage (ErrorString errorDescription, QString noteLocalId)**  
*failedToSaveNoteToLocalStorage signal is emitted in case of failure to save the note to local storage*
- **void textBoldState (bool state)**
- **void textItalicState (bool state)**
- **void textUnderlineState (bool state)**
- **void textStrikethroughState (bool state)**
- **void textAlignLeftState (bool state)**
- **void textAlignCenterState (bool state)**
- **void textAlignRightState (bool state)**
- **void textAlignFullState (bool state)**
- **void textInsideOrderedListState (bool state)**
- **void textInsideUnorderedListState (bool state)**
- **void textInsideTableState (bool state)**
- **void textFontFamilyChanged (QString fontFamily)**
- **void textFontSizeChanged (int fontSize)**
- **void insertTableDialogRequested ()**

## Public Member Functions

- **NoteEditor** (QWidget \*parent=nullptr, Qt::WindowFlags flags={})
- **void initialize** (local\_storage::ILocalStoragePtr localStorage, SpellChecker &spellChecker, const Account &account, QThread \*pBackgroundJobsThread=nullptr)
- **INoteEditorBackend \* backend ()** noexcept
- **void setBackend** (INoteEditorBackend \*backend)
- **void setAccount** (const Account &account)
- **const QUndoStack \* undoStack ()** const noexcept
- **void setUndoStack** (QUndoStack \*pUndoStack)
- **void setInitialPageHtml** (const QString &html)
- **void setNoteNotFoundPageHtml** (const QString &html)
- **void setNoteDeletedPageHtml** (const QString &html)
- **void setNoteLoadingPageHtml** (const QString &html)
- **QString currentNoteLocalId ()** const
- **void setCurrentNoteLocalId** (const QString &noteLocalId)
- **void clear ()**
- **bool isModified ()** const noexcept
- **bool isEditorPageModified ()** const noexcept
- **bool isNoteLoaded ()** const noexcept
- **qint64 idleTime ()** const noexcept
- **void setFocus ()**
- **QString selectedText ()** const noexcept
- **bool hasSelection ()** const noexcept
- **bool spellCheckEnabled ()** const noexcept
- **bool print** (QPrinter &printer, ErrorString &errorDescription)
- **bool exportToPdf** (const QString &absoluteFilePath, ErrorString &errorDescription)
- **bool exportToEnex** (const QStringList &tagNames, QString &enex, ErrorString &errorDescription)
- **QPalette defaultPalette ()** const
- **const QFont \* defaultFont ()** const

## Protected Member Functions

- `void dragMoveEvent (QDragMoveEvent *pEvent) override`
- `void dropEvent (QDropEvent *pEvent) override`

### 5.72.1 Detailed Description

The `NoteEditor` class is a widget encapsulating all the functionality necessary for showing and editing notes.

### 5.72.2 Member Function Documentation

#### 5.72.2.1 backend()

```
InNoteEditorBackend * quentier::NoteEditor::backend ( ) [noexcept]
```

##### Returns

the pointer to the note editor's backend

#### 5.72.2.2 clear()

```
void quentier::NoteEditor::clear ( )
```

Clear the contents of the note editor

#### 5.72.2.3 convertToNote

```
void quentier::NoteEditor::convertToNote ( ) [slot]
```

Invoke this slot to launch the asynchronous procedure of converting the current contents of the note editor to note; the convertedToNote signal would be emitted in response when the conversion is done

#### 5.72.2.4 currentNoteLocalId()

```
QString quentier::NoteEditor::currentNoteLocalId ( ) const
```

Get the local id of the note currently set to the note editor

#### 5.72.2.5 defaultFont()

```
const QFont * quentier::NoteEditor::defaultFont ( ) const
```

##### Returns

pointer to the default font used by the note editor; if no such font was set to the editor previously, returns null pointer

### 5.72.2.6 defaultPalette()

```
QPalette quantier::NoteEditor::defaultPalette ( ) const
```

#### Returns

palette containing default colors used by the editor; the palette is composed of colors from note editor widget's native palette but some of them might be overridden by colors from the palette specified previously via set↵↵ DefaultPalette method: those colors from the specified palette which were valid

### 5.72.2.7 idleTime()

```
qint64 quantier::NoteEditor::idleTime ( ) const [noexcept]
```

#### Returns

the number of milliseconds since the last user's interaction with the note editor or -1 if there was no interaction or if no note is loaded at the moment

### 5.72.2.8 inAppNoteLinkPasteRequested

```
void quantier::NoteEditor::inAppNoteLinkPasteRequested (
    QString url,
    QString userId,
    QString shardId,
    QString noteGuid ) [signal]
```

inAppNoteLinkPasteRequested signal is emitted when the note editor detects the attempt to paste the in-app note link into the note editor; the link would not be inserted right away, instead this signal would be emitted. Whatever party managing the note editor is expected to connect some slot to this signal and provide the optionally amended link information to the note editor by sending the signal connected to its insertInAppNoteLink slot - this slot accepts both the URL of the link and the link text and performs the actual link insertion into the note. If the link text is empty, the URL itself is used as the link text.

### 5.72.2.9 initialize()

```
void quantier::NoteEditor::initialize (
    local_storage::ILocalStoragePtr localStorage,
    SpellChecker & spellChecker,
    const Account & account,
    QThread * pBackgroundJobsThread = nullptr )
```

[NoteEditor](#) requires [LocalStorageManagerAsync](#), [SpellChecker](#) and [Account](#) for its work but due to the particularities of Qt's .ui files processing these can't be passed right inside the constructor, hence here's a special initialization method

#### Parameters

<i>localStorage</i>	Local storage
<i>spellChecker</i>	Spell checker to be used by note editor
<i>account</i>	Current account
<i>pBackgroundJobsThread</i>	Pointer to the thread to be used for scheduling of background jobs of <a href="#">NoteEditor</a> ; if null, <a href="#">NoteEditor</a> 's background jobs would take place in GUI thread

#### 5.72.2.10 isEditorPageModified()

```
bool quentier::NoteEditor::isEditorPageModified ( ) const [noexcept]
```

##### Returns

true if there's content within the editor not yet converted to note, false otherwise

#### 5.72.2.11 isModified()

```
bool quentier::NoteEditor::isModified ( ) const [noexcept]
```

##### Returns

true if there's content within the editor not yet converted to note or not saved to local storage, false otherwise

#### 5.72.2.12 isNoteLoaded()

```
bool quentier::NoteEditor::isNoteLoaded ( ) const [noexcept]
```

##### Returns

true if the note last set to the editor has been fully loaded already, false otherwise

#### 5.72.2.13 saveNoteToLocalStorage

```
void quentier::NoteEditor::saveNoteToLocalStorage ( ) [slot]
```

Invoke this slot to launch the asynchronous procedure of saving the modified current note back to the local storage. If no note is set to the editor or if the note is not modified, no action would be performed. Otherwise noteSaved↔ToLocalStorage signal would be emitted in case of successful saving or failedToSaveNoteToLocalStorage would be emitted otherwise

#### 5.72.2.14 setAccount()

```
void quentier::NoteEditor::setAccount (
    const Account & account )
```

Set the current account to the note editor

#### 5.72.2.15 setBackend()

```
void quentier::NoteEditor::setBackend (
    INoteEditorBackend * backend )
```

This method can be used to set the backend to the note editor; the note editor has the default backend so this method is not obligatory to be called

#### 5.72.2.16 setCurrentNoteLocalId()

```
void quentier::NoteEditor::setCurrentNoteLocalId (
    const QString & noteLocalId )
```

Set note local id to the note editor. The note is being searched for within the local storage, in case of no note being found noteNotFound signal is emitted. Otherwise note editor page starts loading.

## Parameters

<i>note</i> ↔ <i>LocalId</i>	The local id of note
---------------------------------	----------------------

**5.72.2.17 setDefaultFont**

```
void quantier::NoteEditor::setDefaultFont (
    const QFont & font ) [slot]
```

Sets the font which would be used by the editor by default

## Parameters

<i>font</i>	The font to be used by the editor by default
-------------	--

**5.72.2.18 setDefaultPalette**

```
void quantier::NoteEditor::setDefaultPalette (
    const QPalette & pal ) [slot]
```

Sets the palette with colors to be used by the editor. New colors are applied after the note is fully loaded. If no note is set to the editor, the palette is simply remembered for the next note to be loaded into it.

Colors within the palette and their usage:

1. WindowText - used as default font color
2. Base - used as default background color
3. HighlightedText - used as font color for selected text
4. Highlight - used as background color for selected text

## Parameters

<i>pal</i>	The palette to be set. Invalid colors from it are substituted by colors from widget's palette by the editor
------------	---

**5.72.2.19 setFocus()**

```
void quantier::NoteEditor::setFocus ( )
```

Sets the focus to the backend note editor widget

**5.72.2.20 setInitialPageHtml()**

```
void quantier::NoteEditor::setInitialPageHtml (
    const QString & html )
```

Set the html to be displayed when the note is not set to the editor

#### 5.72.2.21 setNoteDeletedPageHtml()

```
void quentier::NoteEditor::setNoteDeletedPageHtml (
    const QString & html )
```

Set the html to be displayed when the note set to the editor was deleted from the local storage (either marked as deleted or deleted permanently i.e. expunged)

#### 5.72.2.22 setNoteLoadingPageHtml()

```
void quentier::NoteEditor::setNoteLoadingPageHtml (
    const QString & html )
```

Set the html to be displayed when the note set to the editor is being loaded into it

#### 5.72.2.23 setNoteNotFoundPageHtml()

```
void quentier::NoteEditor::setNoteNotFoundPageHtml (
    const QString & html )
```

Set the html to be displayed when the note attempted to be set to the editor was not found within the local storage

#### 5.72.2.24 setNoteTitle

```
void quentier::NoteEditor::setNoteTitle (
    const QString & noteTitle ) [slot]
```

Invoke this slot to set the title to the note displayed via the note editor. The note editor itself doesn't manage the note title in any way so any external code using the note editor can set the title to the note editor's note which would be considered modified if the title is new and then eventually the note would be saved to local storage

##### Parameters

<i>noteTitle</i>	The title of the note
------------------	-----------------------

#### 5.72.2.25 setTagIds

```
void quentier::NoteEditor::setTagIds (
    const QStringList & tagLocalIds,
    const QStringList & tagGuids ) [slot]
```

Invoke this slot to set tag local ids and/or tag guides to the note displayed via the note editor. The note editor itself doesn't manage the note tags in any way so any external code using the note editor can set the tag ids to the note editor's internal note which would be considered modified if the tag ids are new and then eventually the note would be saved to local storage

##### Parameters

<i>tagLocalIds</i>	The list of tag local ids for the note
<i>tagGuids</i>	The list of tag guides for the note

#### 5.72.2.26 setUndoStack()

```
void quantier::NoteEditor::setUndoStack (
    QUndoStack * pUndoStack )
```

Set the undo stack for the note editor to use

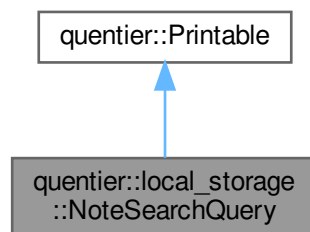
#### 5.72.2.27 undoStack()

```
const QUndoStack * quantier::NoteEditor::undoStack ( ) const [noexcept]
```

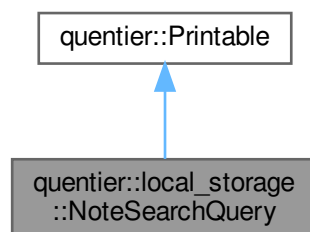
Get the undo stack serving to the note editor

## 5.73 quantier::local\_storage::NoteSearchQuery Class Reference

Inheritance diagram for quantier::local\_storage::NoteSearchQuery:



Collaboration diagram for quantier::local\_storage::NoteSearchQuery:



## Public Member Functions

- **NoteSearchQuery** ([const NoteSearchQuery &other](#))
- **NoteSearchQuery** ([NoteSearchQuery &&other](#)) [noexcept](#)
- [NoteSearchQuery & operator=](#) ([const NoteSearchQuery &other](#))
- [NoteSearchQuery & operator=](#) ([NoteSearchQuery &&other](#)) [noexcept](#)
- **bool isEmpty** () [const](#)
- **void clear** ()
- [QString queryString](#) () [const](#)
- **bool setQueryString** ([const QString &queryString](#), [ErrorString &error](#))
- [QString notebookModifier](#) () [const](#)
- **bool hasAnyModifier** () [const](#)
- [const QStringList & tagNames](#) () [const](#)
- [const QStringList & negatedTagNames](#) () [const](#)
- **bool hasAnyTag** () [const](#)
- **bool hasNegatedAnyTag** () [const](#)
- [const QStringList & titleNames](#) () [const](#)
- [const QStringList & negatedTitleNames](#) () [const](#)
- **bool hasAnyTitleName** () [const](#)
- **bool hasNegatedAnyTitleName** () [const](#)
- [const QList< qint64 > & creationTimestamps](#) () [const](#)
- [const QList< qint64 > & negatedCreationTimestamps](#) () [const](#)
- **bool hasAnyCreationTimestamp** () [const](#)
- **bool hasNegatedAnyCreationTimestamp** () [const](#)
- [const QList< qint64 > & modificationTimestamps](#) () [const](#)
- [const QList< qint64 > & negatedModificationTimestamps](#) () [const](#)
- **bool hasAnyModificationTimestamp** () [const](#)
- **bool hasNegatedAnyModificationTimestamp** () [const](#)
- [const QStringList & resourceMimeTypes](#) () [const](#)
- [const QStringList & negatedResourceMimeTypes](#) () [const](#)
- **bool hasAnyResourceMimeType** () [const](#)
- **bool hasNegatedAnyResourceMimeType** () [const](#)
- [const QList< qint64 > & subjectDateTimestamps](#) () [const](#)
- [const QList< qint64 > & negatedSubjectDateTimestamps](#) () [const](#)
- **bool hasAnySubjectDateTimestamp** () [const](#)
- **bool hasNegatedAnySubjectDateTimestamp** () [const](#)
- [const QList< double > & latitudes](#) () [const](#)
- [const QList< double > & negatedLatitudes](#) () [const](#)
- **bool hasAnyLatitude** () [const](#)
- **bool hasNegatedAnyLatitude** () [const](#)
- [const QList< double > & longitudes](#) () [const](#)
- [const QList< double > & negatedLongitudes](#) () [const](#)
- **bool hasAnyLongitude** () [const](#)
- **bool hasNegatedAnyLongitude** () [const](#)
- [const QList< double > & altitudes](#) () [const](#)
- [const QList< double > & negatedAltitudes](#) () [const](#)
- **bool hasAnyAltitude** () [const](#)
- **bool hasNegatedAnyAltitude** () [const](#)
- [const QStringList & authors](#) () [const](#)
- [const QStringList & negatedAuthors](#) () [const](#)
- **bool hasAnyAuthor** () [const](#)
- **bool hasNegatedAnyAuthor** () [const](#)
- [const QStringList & sources](#) () [const](#)
- [const QStringList & negatedSources](#) () [const](#)
- **bool hasAnySource** () [const](#)



- `bool hasNegatedAnySource () const`
- `const QStringList & sourceApplications () const`
- `const QStringList & negatedSourceApplications () const`
- `bool hasAnySourceApplication () const`
- `bool hasNegatedAnySourceApplication () const`
- `const QStringList & contentClasses () const`
- `const QStringList & negatedContentClasses () const`
- `bool hasAnyContentClass () const`
- `bool hasNegatedAnyContentClass () const`
- `const QStringList & placeNames () const`
- `const QStringList & negatedPlaceNames () const`
- `bool hasAnyPlaceName () const`
- `bool hasNegatedAnyPlaceName () const`
- `const QStringList & applicationData () const`
- `const QStringList & negatedApplicationData () const`
- `bool hasAnyApplicationData () const`
- `bool hasNegatedAnyApplicationData () const`
- `const QList< qint64 > & reminderOrders () const`
- `const QList< qint64 > & negatedReminderOrders () const`
- `bool hasAnyReminderOrder () const`
- `bool hasNegatedAnyReminderOrder () const`
- `const QList< qint64 > & reminderTimes () const`
- `const QList< qint64 > & negatedReminderTimes () const`
- `bool hasAnyReminderTime () const`
- `bool hasNegatedAnyReminderTime () const`
- `const QList< qint64 > & reminderDoneTimes () const`
- `const QList< qint64 > & negatedReminderDoneTimes () const`
- `bool hasAnyReminderDoneTime () const`
- `bool hasNegatedAnyReminderDoneTime () const`
- `bool hasUnfinishedToDo () const`
- `bool hasNegatedUnfinishedToDo () const`
- `bool hasFinishedToDo () const`
- `bool hasNegatedFinishedToDo () const`
- `bool hasAnyToDo () const`
- `bool hasNegatedAnyToDo () const`
- `bool hasEncryption () const`
- `bool hasNegatedEncryption () const`
- `const QStringList & contentSearchTerms () const`
- `const QStringList & negatedContentSearchTerms () const`
- `bool hasAnyContentSearchTerms () const`
- `bool isMatcheable () const`
- `QTextStream & print (QTextStream &strm) const` override

## Public Member Functions inherited from `quentier::Printable`

- `QString toString () const`

### 5.73.1 Member Function Documentation

#### 5.73.1.1 notebookModifier()

```
QString quentier::local_storage::NoteSearchQuery::notebookModifier ( ) const
```

If query string has "notebook:<notebook name>" scope modifier, this method returns the name of the notebook, otherwise it returns empty string

### 5.73.1.2 print()

```
QTextStream & quentier::local_storage::NoteSearchQuery::print (
    QTextStream & strm ) const [override], [virtual]
```

Implements [quentier::Printable](#).

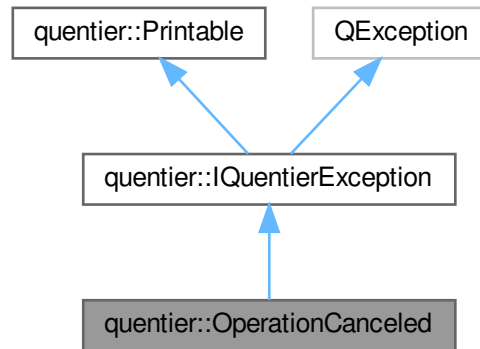
### 5.73.1.3 queryString()

```
QString quentier::local_storage::NoteSearchQuery::queryString ( ) const
```

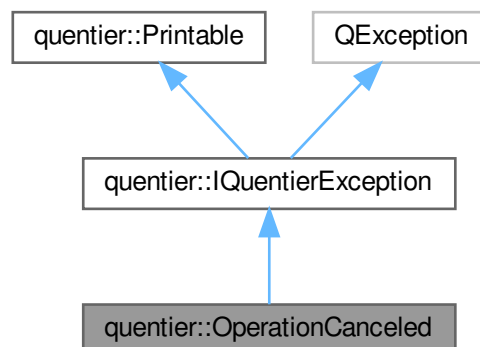
Returns the original non-parsed query string

## 5.74 quentier::OperationCanceled Class Reference

Inheritance diagram for quentier::OperationCanceled:



Collaboration diagram for quentier::OperationCanceled:



### Public Member Functions

- `OperationCanceled * clone () const` override
- `void raise () const` override

### Public Member Functions inherited from `quentier::IQuentierException`

- `QString errorMessage () const`
- `QString localizedErrorMessage () const`
- `QString nonLocalizedErrorMessage () const`
- `const char * what () const` noexcept override
- `QTextStream & print (QTextStream &strm) const` override

### Public Member Functions inherited from `quentier::Printable`

- `QString toString () const`

### Protected Member Functions

- `QString exceptionDisplayName () const` override

### Protected Member Functions inherited from `quentier::IQuentierException`

- `IQuentierException (QString message)`
- `IQuentierException (const IQuentierException &other)`
- `IQuentierException & operator= (const IQuentierException &other)`

## 5.74.1 Member Function Documentation

### 5.74.1.1 `exceptionDisplayName()`

```
QString quentier::OperationCanceled::exceptionDisplayName ( ) const [override], [protected],  
[virtual]
```

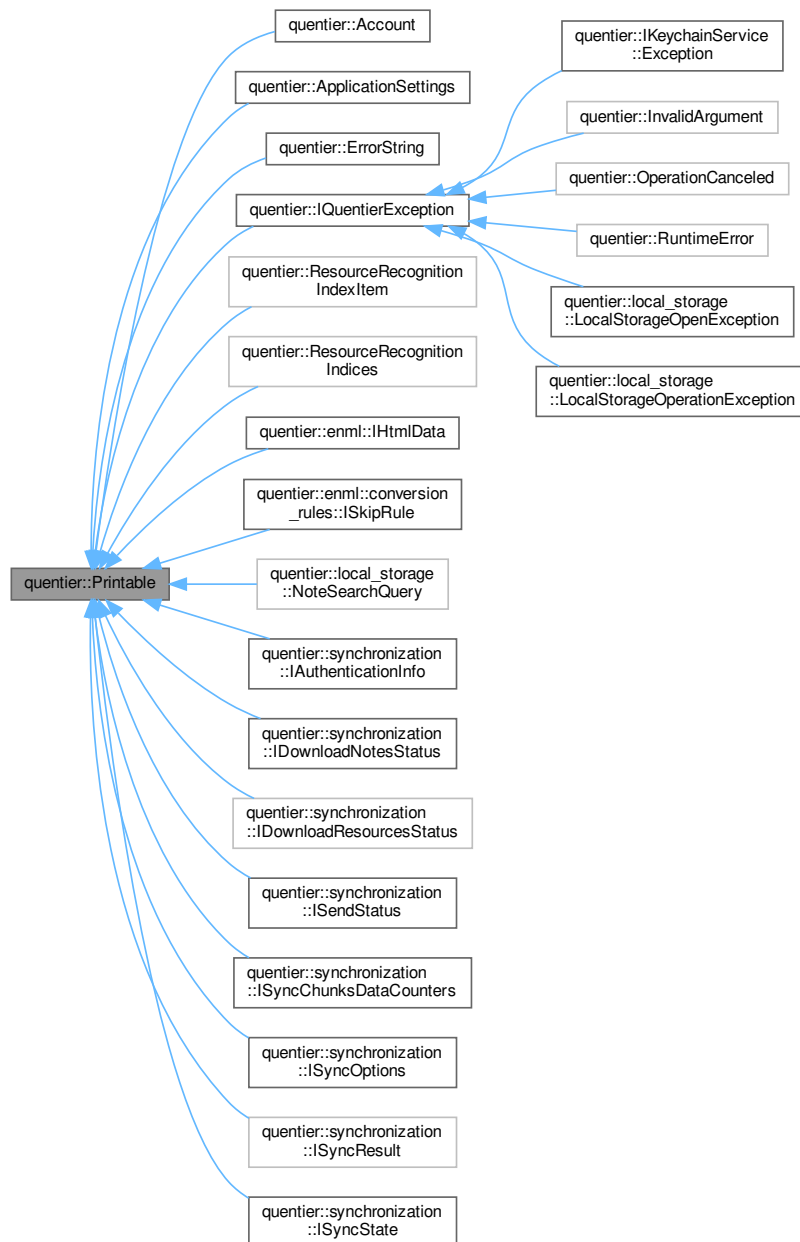
Implements `quentier::IQuentierException`.

## 5.75 quantier::Printable Class Reference

The [Printable](#) class is the interface for Quantier's internal classes which should be able to write themselves into QTextStream and/or convert to QString.

```
#include <Printable.h>
```

Inheritance diagram for quantier::Printable:



### Public Member Functions

- [virtual QTextStream & print \(QTextStream &strm\) const =0](#)
- [QString toString \(\) const](#)

**Friends**

- `QUENTIER_EXPORT QTextStream & operator<< (QTextStream &strm, const Printable &printable)`
- `QUENTIER_EXPORT QDebug & operator<< (QDebug &debug, const Printable &printable)`

**5.75.1 Detailed Description**

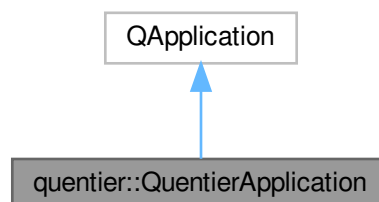
The `Printable` class is the interface for Quentier's internal classes which should be able to write themselves into `QTextStream` and/or convert to `QString`.

**5.76 QPromise< T > Class Template Reference****Public Member Functions**

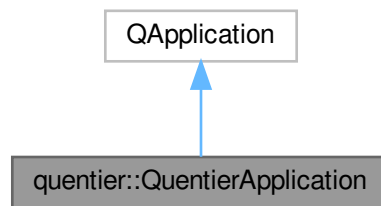
- `QPromise (QPromise< T > &&other) noexcept`
- `QPromise (QFutureInterface< T > &other)`
- `QPromise & operator= (QPromise< T > &&other) noexcept`
- `QFuture< T > future () const`
- `template<typename U , typename = std::enable_if_t< std::is_same_v<U, T> || std::is_convertible_v<U, T>>> void addResult (U &&result, int index=-1)`
- `void setException (const QException &e)`
- `void start ()`
- `void finish ()`
- `void suspendIfRequested ()`
- `bool isCanceled () const`
- `void setProgressRange (int minimum, int maximum)`
- `void setProgressValue (int progressValue)`
- `void setProgressValueAndText (int progressValue, const QString &progressText)`
- `void swap (QPromise< T > &other) noexcept`

**5.77 quentier::QuentierApplication Class Reference**

Inheritance diagram for `quentier::QuentierApplication`:



Collaboration diagram for `quentier::QuentierApplication`:



### Public Member Functions

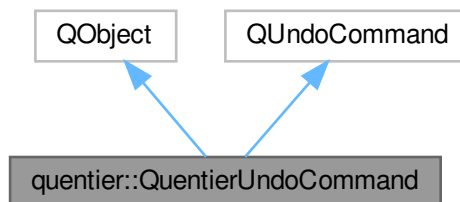
- **QuentierApplication** (`int &argc`, `char *argv[]`)
- `bool notify` (`QObject *pObject`, `QEvent *pEvent`) *override*
- `bool event` (`QEvent *pEvent`) *override*

## 5.78 quentier::QuentierUndoCommand Class Reference

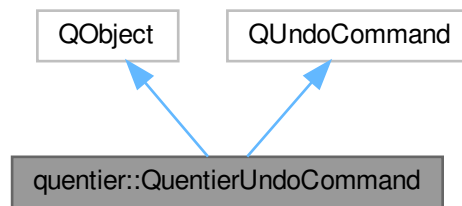
The `QuentierUndoCommand` class has the sole purpose of working around one quirky aspect of Qt's undo/redo framework: when you push `QUndoCommand` to `QUndoStack`, it calls "redo" method of that command. This class offers subclasses to implement their own methods for actual "undo" and "redo" commands while ignoring the attempts to "redo" anything if there were no previous "undo" call prior to that.

```
#include <QuentierUndoCommand.h>
```

Inheritance diagram for `quentier::QuentierUndoCommand`:



Collaboration diagram for quantier::QuantierUndoCommand:



## Signals

- `void notifyError (ErrorString error)`

## Public Member Functions

- **QuantierUndoCommand** (QUndoCommand \*parent=nullptr)
- **QuantierUndoCommand** (const QString &text, QUndoCommand \*parent=nullptr)
- `void undo () final`
- `void redo () final`
- `bool onceUndoExecuted () const noexcept`

## Protected Member Functions

- `virtual void undoImpl ()=0`
- `virtual void redoImpl ()=0`

### 5.78.1 Detailed Description

The [QuantierUndoCommand](#) class has the sole purpose of working around one quirky aspect of Qt's undo/redo framework: when you push QUndoCommand to QUndoStack, it calls "redo" method of that command. This class offers subclasses to implement their own methods for actual "undo" and "redo" commands while ignoring the attempts to "redo" anything if there were no previous "undo" call prior to that.

The rationale behind the current behaviour seems to be the compliance with "command pattern behaviour" when you create the command to execute the action instead of just executing it immediately. This design is enforced by Qt's undo/redo framework, there's no option to choose not to call "redo" when pushing to the stack.

One thing which this design fails to see is the fact that the command may be already executed externally by the moment the QUndoCommand can be created. Suppose we can get the information about how to undo (and then again redo) that command. We create the corresponding QUndoCommand, set up the stuff for its undo/redo methods and push it to QUndoStack for future use... But at the same time QUndoStack calls "redo" method of the command. Really not the behaviour you'd like to have.

[QuantierUndoCommand](#) is also QObject, it is for error reporting via notifyError signal

## 5.79 `quentier::synchronization::RateLimitReachedError` Struct Reference

```
#include <Errors.h>
```

### Public Attributes

- `std::optional< qint32 > rateLimitDurationSec`

### 5.79.1 Detailed Description

Information about "API rate limit reached" error which Evernote servers might return if too much of their API calls were made recently. In case of such error synchronization should be repeated later, after some time passes.

### 5.79.2 Member Data Documentation

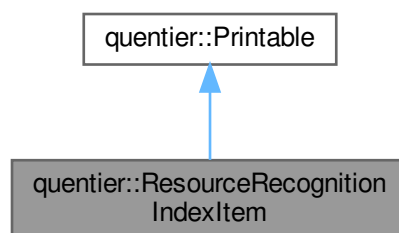
#### 5.79.2.1 `rateLimitDurationSec`

```
std::optional<qint32> quentier::synchronization::RateLimitReachedError::rateLimitDurationSec
```

Number of seconds during which since the current moment during which any call to Evernote API would again result in "API rate limit reached" error i.e. the number of seconds to wait for before the next attempt to run synchronization

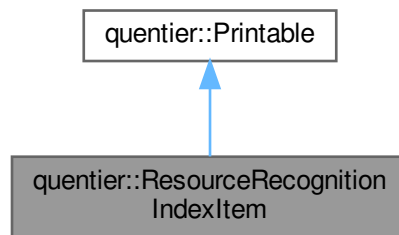
## 5.80 `quentier::ResourceRecognitionIndexItem` Class Reference

Inheritance diagram for `quentier::ResourceRecognitionIndexItem`:





Collaboration diagram for quantier::ResourceRecognitionIndexItem:



## Classes

- struct [IBarcodeItem](#)
- struct [IObjectItem](#)
- struct [IShapeItem](#)
- struct [ITextItem](#)

## Public Types

- using [ITextItemPtr](#) = std::shared\_ptr< [ITextItem](#) >
- using [IObjectItemPtr](#) = std::shared\_ptr< [IObjectItem](#) >
- using [IShapeItemPtr](#) = std::shared\_ptr< [IShapeItem](#) >
- using [IBarcodeItemPtr](#) = std::shared\_ptr< [IBarcodeItem](#) >

## Public Member Functions

- **ResourceRecognitionIndexItem** ([const ResourceRecognitionIndexItem &other](#))
- **ResourceRecognitionIndexItem** ([ResourceRecognitionIndexItem &&other](#)) [noexcept](#)
- [ResourceRecognitionIndexItem &](#) **operator=** ([const ResourceRecognitionIndexItem &other](#))
- [ResourceRecognitionIndexItem &](#) **operator=** ([ResourceRecognitionIndexItem &&other](#)) [noexcept](#)
- [bool](#) **isValid** () [const](#)
- [int](#) **x** () [const](#)
- [void](#) **setX** ([int](#) x)
- [int](#) **y** () [const](#)
- [void](#) **setY** ([int](#) y)
- [int](#) **h** () [const](#)
- [void](#) **setH** ([int](#) h)
- [int](#) **w** () [const](#)
- [void](#) **setW** ([int](#) w)
- [int](#) **offset** () [const](#)
- [void](#) **setOffset** ([int](#) offset)
- [int](#) **duration** () [const](#)
- [void](#) **setDuration** ([int](#) duration)
- [QList< int >](#) **strokes** () [const](#)
- [void](#) **setStrokes** ([QList< int >](#) strokes)

- [QList< ITextItemPtr >](#) **textItems** () [const](#)
- **void setTextItems** ([QList< ITextItemPtr >](#) textItems)
- [QList< IObjectItemPtr >](#) **objectItems** () [const](#)
- **void setObjectItems** ([QList< IObjectItemPtr >](#) objectItems)
- [QList< IShapeltemPtr >](#) **shapeltems** () [const](#)
- **void setShapeltems** ([QList< IShapeltemPtr >](#) shapeltems)
- [QList< IBarcodeItemPtr >](#) **barcodeItems** () [const](#)
- **void setBarcodeItems** ([QList< IBarcodeItemPtr >](#) barcodeItems)
- [QTextStream](#) & **print** ([QTextStream](#) &strm) [const override](#)

## Public Member Functions inherited from [quentier::Printable](#)

- [QString](#) **toString** () [const](#)

### 5.80.1 Member Function Documentation

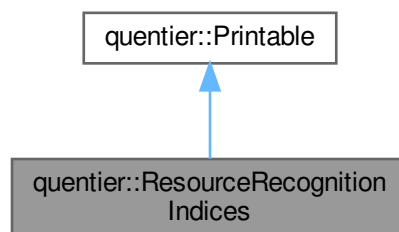
#### 5.80.1.1 print()

```
QTextStream & quentier::ResourceRecognitionIndexItem::print (
    QTextStream & strm ) const [override], [virtual]
```

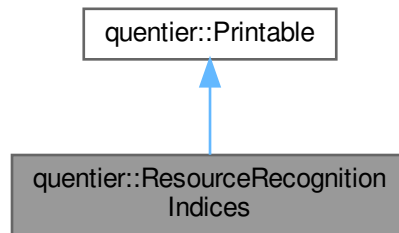
Implements [quentier::Printable](#).

## 5.81 quentier::ResourceRecognitionIndices Class Reference

Inheritance diagram for quentier::ResourceRecognitionIndices:



Collaboration diagram for quantier::ResourceRecognitionIndices:



### Public Member Functions

- **ResourceRecognitionIndices** ([const QByteArray](#) &[rawRecognitionIndicesData](#))
- **ResourceRecognitionIndices** ([const ResourceRecognitionIndices](#) &[other](#))
- **ResourceRecognitionIndices** ([ResourceRecognitionIndices](#) &&[other](#)) [noexcept](#)
- [ResourceRecognitionIndices](#) & **operator=** ([const ResourceRecognitionIndices](#) &[other](#))
- [ResourceRecognitionIndices](#) & **operator=** ([ResourceRecognitionIndices](#) &&[other](#)) [noexcept](#)
- [bool](#) **isNull** () [const](#)
- [bool](#) **isValid** () [const](#)
- [QString](#) **objectId** () [const](#)
- [QString](#) **objectType** () [const](#)
- [QString](#) **recoType** () [const](#)
- [QString](#) **engineVersion** () [const](#)
- [QString](#) **docType** () [const](#)
- [QString](#) **lang** () [const](#)
- [int](#) **objectHeight** () [const](#)
- [int](#) **objectWidth** () [const](#)
- [QVector](#)< [ResourceRecognitionIndexItem](#) > **items** () [const](#)
- [bool](#) **setData** ([const QByteArray](#) &[rawRecognitionIndicesData](#))
- [QTextStream](#) & **print** ([QTextStream](#) &[strm](#)) [const](#) [override](#)

### Public Member Functions inherited from [quantier::Printable](#)

- [QString](#) **toString** () [const](#)

## 5.81.1 Member Function Documentation

### 5.81.1.1 `print()`

```

QTextStream & quantier::ResourceRecognitionIndices::print (
    QTextStream & strm ) const [override], [virtual]
  
```

Implements [quantier::Printable](#).

## 5.82 quotient::Result< T, Error, typename > Class Template Reference

The [Result](#) template class represents the bare bones result monad implementation which either contains some valid value or an error.

```
#include <Result.h>
```

### Public Member Functions

- `template<typename T1 = T, typename std::enable_if_t<!std::is_void_v< std::decay_t< T1 > > > * = nullptr> Result (T1 t)`
- `Result (Error error)`
- `Result (const Result< T, Error > &other)`
- `Result (Result< T, Error > &&other)`
- `Result & operator= (const Result< T, Error > &other)`
- `Result & operator= (Result< T, Error > &&other)`
- `bool isValid () const noexcept`
- `operator bool () const noexcept`
- `template<typename T1 = T, typename std::enable_if_t<!std::is_void_v< std::decay_t< T1 > > > * = nullptr> T1 & get ()`
- `template<typename T1 = T, typename std::enable_if_t<!std::is_void_v< std::decay_t< T1 > > > * = nullptr> const T1 & get () const`
- `template<typename T1 = T, typename std::enable_if_t<!std::is_void_v< std::decay_t< T1 > > > * = nullptr> T1 & operator* ()`
- `template<typename T1 = T, typename std::enable_if_t<!std::is_void_v< std::decay_t< T1 > > > * = nullptr> const T1 & operator* () const`
- `const Error & error () const`
- `Error & error ()`

### 5.82.1 Detailed Description

```
template<class T, class Error, typename = typename std::enable_if_t< !std::is_same_v<std::decay_t<T>,
std::decay_t<Error>>>>>
class quotient::Result< T, Error, typename >
```

The [Result](#) template class represents the bare bones result monad implementation which either contains some valid value or an error.

### 5.82.2 Member Function Documentation

#### 5.82.2.1 isValid()

```
template<class T , class Error , typename = typename std::enable_if_t< !std::is_same_v<std::decay_t<T>,
std::decay_t<Error>>>>>
bool quotient::Result< T, Error, typename >::isValid ( ) const [inline], [noexcept]
```

#### Returns

boolean value indicating whether the result contains a value

### 5.83 `quentier::threading::detail::ResultTypeHelper< F, Arg, Enable >` Struct Template Reference

### 5.84 `quentier::threading::detail::ResultTypeHelper< F, Arg, typename std::enable_if_t< !std::is_invocable_v< std::decay_t< F >, QFuture< Arg > > > >` Struct Template Reference

#### Public Types

- `using ResultType = std::invoke_result_t< std::decay_t< F >, std::decay_t< Arg > >`

### 5.85 `quentier::threading::detail::ResultTypeHelper< F, Arg, typename std::enable_if_t< std::is_invocable_v< std::decay_t< F >, QFuture< Arg > > > >` Struct Template Reference

#### Public Types

- `using ResultType = std::invoke_result_t< std::decay_t< F >, QFuture< Arg > >`

### 5.86 `quentier::threading::detail::ResultTypeHelper< F, void, typename std::enable_if_t< !std::is_invocable_v< std::decay_t< F >, QFuture< void > > > >` Struct Template Reference

#### Public Types

- `using ResultType = std::invoke_result_t< std::decay_t< F > >`

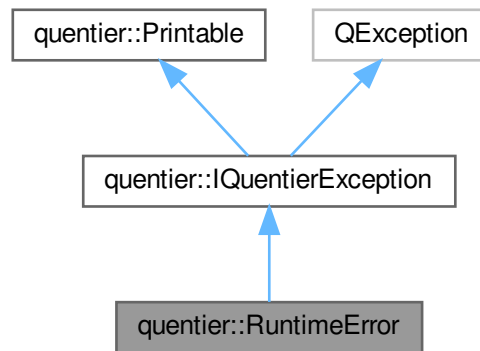
### 5.87 `quentier::threading::detail::ResultTypeHelper< F, void, typename std::enable_if_t< std::is_invocable_v< std::decay_t< F >, QFuture< void > > > >` Struct Template Reference

#### Public Types

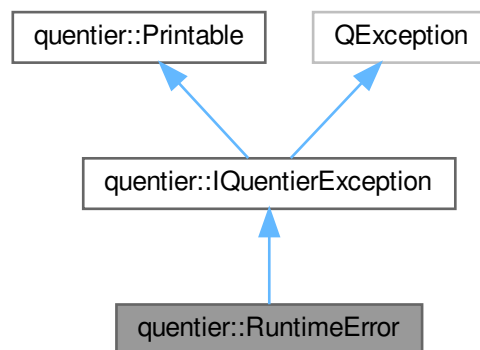
- `using ResultType = std::invoke_result_t< std::decay_t< F >, QFuture< void > >`

## 5.88 `quentier::RuntimeError` Class Reference

Inheritance diagram for `quentier::RuntimeError`:



Collaboration diagram for `quentier::RuntimeError`:



### Public Member Functions

- `RuntimeError` ([ErrorString](#) message)
- `RuntimeError * clone ()` [const override](#)
- `void raise ()` [const override](#)

### Public Member Functions inherited from [quentier::IQuentierException](#)

- [ErrorString](#) `errorMessage ()` [const](#)
- [QString](#) `localizedErrorMessage ()` [const](#)
- [QString](#) `nonLocalizedErrorMessage ()` [const](#)
- `const char * what ()` [const noexcept override](#)
- [QTextStream](#) & `print (QTextStream &strm)` [const override](#)

**Public Member Functions inherited from [quantier::Printable](#)**

- [QString](#) [toString](#) () const

**Protected Member Functions**

- [QString](#) [exceptionDisplayName](#) () const override

**Protected Member Functions inherited from [quantier::IQuantierException](#)**

- [IQuantierException](#) ([ErrorString](#) message)
- [IQuantierException](#) (const [IQuantierException](#) &other)
- [IQuantierException](#) & **operator=** (const [IQuantierException](#) &other)

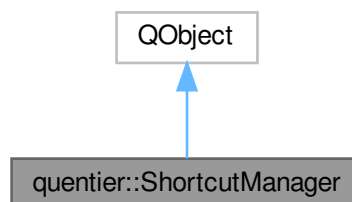
**5.88.1 Member Function Documentation****5.88.1.1 exceptionDisplayName()**

[QString](#) [quantier::RuntimeError::exceptionDisplayName](#) ( ) const [override], [protected], [virtual]

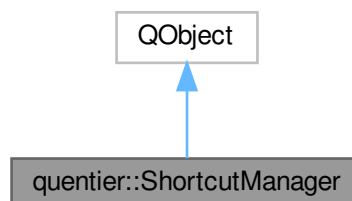
Implements [quantier::IQuantierException](#).

**5.89 quantier::ShortcutManager Class Reference**

Inheritance diagram for [quantier::ShortcutManager](#):



Collaboration diagram for [quantier::ShortcutManager](#):



## Public Types

- enum **QuentierShortcutKey** {  
**NewNote** = 5000 , **NewTag** , **NewNotebook** , **NewSavedSearch** ,  
**AddAttachment** , **SaveAttachment** , **OpenAttachment** , **CopyAttachment** ,  
**CutAttachment** , **RemoveAttachment** , **RenameAttachment** , **AddAccount** ,  
**ExitAccount** , **SwitchAccount** , **AccountInfo** , **NoteSearch** ,  
**NewNoteSearch** , **ShowNotes** , **ShowNotebooks** , **ShowTags** ,  
**ShowSavedSearches** , **ShowDeletedNotes** , **ShowStatusBar** , **ShowToolBar** ,  
**PasteUnformatted** , **Font** , **UpperIndex** , **LowerIndex** ,  
**AlignLeft** , **AlignCenter** , **AlignRight** , **AlignFull** ,  
**IncreaseIndentation** , **DecreaseIndentation** , **IncreaseFontSize** , **DecreaseFontSize** ,  
**InsertNumberedList** , **InsertBulletedList** , **Strikethrough** , **Highlight** ,  
**InsertTable** , **InsertRow** , **InsertColumn** , **RemoveRow** ,  
**RemoveColumn** , **InsertHorizontalLine** , **InsertToDoTag** , **EditHyperlink** ,  
**CopyHyperlink** , **RemoveHyperlink** , **Encrypt** , **Decrypt** ,  
**DecryptPermanently** , **BackupLocalStorage** , **RestoreLocalStorage** , **UpgradeLocalStorage** ,  
**LocalStorageStatus** , **SpellCheck** , **SpellCheckIgnoreWord** , **SpellCheckAddWordToUserDictionary** ,  
**SavelImage** , **AnnotateImage** , **ImageRotateClockwise** , **ImageRotateCounterClockwise** ,  
**Synchronize** , **FullSync** , **ImportFolders** , **Preferences** ,  
**ReleaseNotes** , **ViewLogs** , **About** , **UnknownKey** = 100000 }

## Public Slots

- **void setUserShortcut** (int key, QKeySequence shortcut, const Account &account, QString context={})
- **void setNonStandardUserShortcut** (QString nonStandardKey, QKeySequence shortcut, const Account &account, QString context={})
- **void setDefaultShortcut** (int key, QKeySequence shortcut, const Account &account, QString context={})
- **void setNonStandardDefaultShortcut** (QString nonStandardKey, QKeySequence shortcut, const Account &account, QString context={})

## Signals

- **void shortcutChanged** (int key, QKeySequence shortcut, const Account &account, QString context)
- **void nonStandardShortcutChanged** (QString nonStandardKey, QKeySequence shortcut, const Account &account, QString context)

## Public Member Functions

- **ShortcutManager** (QObject \*parent=nullptr)
- **QKeySequence shortcut** (int key, const Account &account, const QString &context={}) const
- **QKeySequence shortcut** (const QString &nonStandardKey, const Account &account, const QString &context={}) const
- **QKeySequence defaultShortcut** (int key, const Account &account, const QString &context={}) const
- **QKeySequence defaultShortcut** (const QString &nonStandardKey, const Account &account, const QString &context={}) const
- **QKeySequence userShortcut** (int key, const Account &account, const QString &context={}) const
- **QKeySequence userShortcut** (const QString &nonStandardKey, const Account &account, const QString &context={}) const



## 5.89.1 Member Function Documentation

### 5.89.1.1 defaultShortcut() [1/2]

```
QKeySequence quantier::ShortcutManager::defaultShortcut (
    const QString & nonStandardKey,
    const Account & account,
    const QString & context = {} ) const
```

#### Returns

Default shortcut for the non-standard key if present, otherwise empty key sequence

### 5.89.1.2 defaultShortcut() [2/2]

```
QKeySequence quantier::ShortcutManager::defaultShortcut (
    int key,
    const Account & account,
    const QString & context = {} ) const
```

#### Returns

Default shortcut for the standard key if present, otherwise empty key sequence

### 5.89.1.3 shortcut() [1/2]

```
QKeySequence quantier::ShortcutManager::shortcut (
    const QString & nonStandardKey,
    const Account & account,
    const QString & context = {} ) const
```

#### Returns

Active shortcut for the non-standard key - either the user defined shortcut (if present) or the default one (if present as well)

### 5.89.1.4 shortcut() [2/2]

```
QKeySequence quantier::ShortcutManager::shortcut (
    int key,
    const Account & account,
    const QString & context = {} ) const
```

#### Returns

Active shortcut for the standard key - either the user defined shortcut (if present) or the default one (if present as well)

**5.89.1.5 userShortcut() [1/2]**

```
QKeySequence quentier::ShortcutManager::userShortcut (
    const QString & nonStandardKey,
    const Account & account,
    const QString & context = {} ) const
```

**Returns**

User defined shortcut for the non-standard key if present, otherwise empty key sequence

**5.89.1.6 userShortcut() [2/2]**

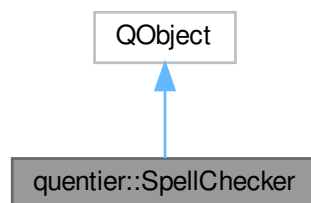
```
QKeySequence quentier::ShortcutManager::userShortcut (
    int key,
    const Account & account,
    const QString & context = {} ) const
```

**Returns**

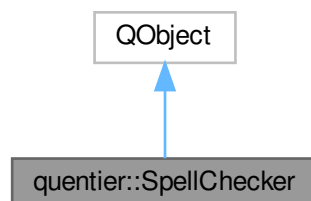
User defined shortcut for the standard key if present, otherwise empty key sequence

**5.90 quentier::SpellChecker Class Reference**

Inheritance diagram for quentier::SpellChecker:



Collaboration diagram for quentier::SpellChecker:



## Signals

- `void ready ()`

## Public Member Functions

- **SpellChecker** (`FileIOProcessorAsync *fileIOProcessorAsync`, `Account account`, `QObject *parent=nullptr`, `const QString &userDictionaryPath={}`)
- `QList< std::pair< QString, bool > > listAvailableDictionaries () const`
- `void setAccount (const Account &account)`
- `void enableDictionary (const QString &language)`
- `void disableDictionary (const QString &language)`
- `bool checkSpell (const QString &word) const`
- `QStringList spellCorrectionSuggestions (const QString &misSpelledWord) const`
- `void addToUserWordlist (const QString &word)`
- `void removeFromUserWordList (const QString &word)`
- `void ignoreWord (const QString &word)`
- `void removeWord (const QString &word)`
- `bool isReady () const noexcept`

## 5.91 quotient::StringUtils Class Reference

### Public Member Functions

- `void removePunctuation (QString &str, const QList< QChar > &charactersToPreserve={}) const`
- `void removeDiacritics (QString &str) const`
- `void removeNewlines (QString &str) const`

## 5.92 quotient::SysInfo Class Reference

### Public Member Functions

- `qint64 pageSize ()`
- `qint64 totalMemory ()`
- `qint64 freeMemory ()`
- `QString stackTrace ()`
- `QString platformName ()`

## 5.93 quotient::threading::TrackedTask< LockableObject, Function > Class Template Reference

```
#include <TrackedTask.h>
```

## Public Member Functions

- `template<typename SomeLockableObject, typename SomeFunction >`  
`constexpr TrackedTask (SomeLockableObject &&someLockableObject, SomeFunction &&function)`
- `template<typename... Arguments, typename = std::enable_if_t< std::is_invocable_v<Function, Arguments...> || std::is_member_↵`  
`function_pointer_v<Function>>>`  
`constexpr void operator() (Arguments &&... arguments)`
- `template<typename... Arguments, typename = std::enable_if_t< std::is_invocable_v<Function, Arguments...> || std::is_member_↵`  
`function_pointer_v<Function>>>`  
`constexpr void operator() (Arguments &&... arguments) const`

### 5.93.1 Detailed Description

`template<typename LockableObject, typename Function >`  
`class quantier::threading::TrackedTask< LockableObject, Function >`

Wrapper class which automates checking for the state of a lockable object. With this class code like this

```
auto task = [selfWeak = weak_from_this()] { auto self = selfWeak.lock(); if (!self) { return; } // otherwise do something
};
```

can be written like this:

```
auto task = threading::TrackedTask{weak_from_this(), &MyClass::someMethod};
```

## 5.94 quantier::UidGenerator Class Reference

### Static Public Member Functions

- `static QString Generate ()`
- `static QString UidToString (const QUuid &uid)`

## 5.95 quantier::synchronization::ISyncConflictResolver::Conflict↵ Resolution::UseMine Struct Reference

The `UseMine` conflict resolution means "override theirs version with mine version".

```
#include <ISyncConflictResolver.h>
```

### 5.95.1 Detailed Description

The `UseMine` conflict resolution means "override theirs version with mine version".

## 5.96 quantier::synchronization::ISyncConflictResolver::Conflict↵ Resolution::UseTheirs Struct Reference

The `UseTheirs` conflict resolution means "override mine version with theirs version".

```
#include <ISyncConflictResolver.h>
```

### 5.96.1 Detailed Description

The `UseTheirs` conflict resolution means "override mine version with theirs version".

## Chapter 6

# File Documentation

### 6.1 ISkipRule.h

```
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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/enml/conversion_rules/MatchMode.h>
00022 #include <quentier/utility/Printable.h>
00023
00024 #include <QtGlobal>
00025
00026 namespace quentier::enml::conversion_rules {
00027
00028     class ISkipRule : public Printable
00029     {
00030     public:
00031         ~ISkipRule() override;
00032
00033         enum class Target
00034         {
00035             Element,
00036             AttributeName,
00037             AttributeValue
00038         };
00039
00040         friend QUENTIER_EXPORT QTextStream & operator<<(
00041             QTextStream & strm, Target target);
00042
00043         friend QUENTIER_EXPORT QDebug & operator<<(QDebug & dbg, Target target);
00044
00045         [[nodiscard]] virtual Target target() const = 0;
00046
00047         [[nodiscard]] virtual QString value() const = 0;
00048
00049         [[nodiscard]] virtual MatchMode matchMode() const = 0;
00050
00051         [[nodiscard]] virtual bool includeContents() const = 0;
00052
00053         [[nodiscard]] virtual Qt::CaseSensitivity caseSensitivity() const = 0;
00054
00055     public: // Printable
00056         QTextStream & print(QTextStream & strm) const override;
00057     };
00058 } // namespace quentier::enml::conversion_rules
```

## 6.2 ISkipRuleBuilder.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/enml/conversion_rules/Fwd.h>
00022 #include <quentier/enml/conversion_rules/ISkipRule.h>
00023 #include <quentier/utility/Linkage.h>
00024
00025 namespace quentier::enml::conversion_rules {
00026
00027 class QUINTIER_EXPORT ISkipRuleBuilder
00028 {
00029 public:
00030     virtual ~ISkipRuleBuilder();
00031
00032     virtual ISkipRuleBuilder & setTarget(ISkipRule::Target target) = 0;
00033     virtual ISkipRuleBuilder & setValue(QString value) = 0;
00034     virtual ISkipRuleBuilder & setMatchMode(MatchMode matchMode) = 0;
00035     virtual ISkipRuleBuilder & setIncludeContents(bool includeContents) = 0;
00036     virtual ISkipRuleBuilder & setCaseSensitivity(
00037         Qt::CaseSensitivity caseSensitivity) = 0;
00038
00039     [[nodiscard]] virtual ISkipRulePtr build() = 0;
00040 };
00041
00042 } // namespace quentier::enml::conversion_rules

```

## 6.3 MatchMode.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 class QDebug;
00024 class QTextStream;
00025
00026 namespace quentier::enml::conversion_rules {
00027
00031 enum class MatchMode
00032 {
00036     Equals,
00040     StartsWith,
00044     EndsWith,
00048     Contains
00049 };
00050
00051 QUINTIER_EXPORT QTextStream & operator«(

```

```

00052     QTextStream & strm, MatchMode matchMode);
00053
00054 QUENTIER_EXPORT QDebug & operator<<(QDebug & dbg, MatchMode matchMode);
00055
00056 } // namespace quentier::enml::conversion_rules

```

## 6.4 HtmlUtils.h

```

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00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/types/ErrorMessage.h>
00022 #include <quentier/types/Result.h>
00023 #include <quentier/utility/Linkage.h>
00024
00025 #include <QFlags>
00026
00027 #include <memory>
00028
00029 namespace quentier::enml::utils {
00030
00031 [[nodiscard]] Result<QString, ErrorMessage> QUENTIER_EXPORT
00032     convertHtmlToXml(const QString & html);
00033
00034 [[nodiscard]] Result<QString, ErrorMessage> QUENTIER_EXPORT
00035     convertHtmlToXhtml(const QString & html);
00036
00037 [[nodiscard]] Result<QString, ErrorMessage> QUENTIER_EXPORT
00038     cleanupHtml(const QString & html);
00039
00040 enum class EscapeStringOption
00041 {
00042     Simplify = 1 « 0,
00043 };
00044
00045 Q_DECLARE_FLAGS(EscapeStringOptions, EscapeStringOption);
00046
00047 [[nodiscard]] QString QUENTIER_EXPORT htmlEscapeString(
00048     QString str, EscapeStringOptions options = EscapeStringOptions{});
00049
00050 } // namespace quentier::enml::utils

```

## 6.5 IConverter.h

```

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00017  */
00018

```

```

00019 #pragma once
00020
00021 #include <quentier/enml/Fwd.h>
00022 #include <quentier/enml/conversion_rules/Fwd.h>
00023 #include <quentier/types/ErrorMessage.h>
00024 #include <quentier/types/Result.h>
00025 #include <quentier/utility/Linkage.h>
00026
00027 #include <QList>
00028 #include <QStringList>
00029 #include <QTextDocument>
00030
00031 #include <qevercloud/types/Note.h>
00032
00033 namespace quentier::enml {
00034
00035 class QUENTIER_EXPORT IConverter
00036 {
00037 public:
00038     virtual ~IConverter();
00039
00040     [[nodiscard]] virtual Result<QString, ErrorMessage> convertHtmlToEnml(
00041         const QString & html, IDecryptedTextCache & decryptedTextCache,
00042         const QList<conversion_rules::ISkipRulePtr> & skipRules = {}) const = 0;
00043
00044     [[nodiscard]] virtual Result<void, ErrorMessage> convertHtmlToDoc(
00045         const QString & html, QTextDocument & doc,
00046         const QList<conversion_rules::ISkipRulePtr> & skipRules = {}) const = 0;
00047
00048     [[nodiscard]] virtual Result<QString, ErrorMessage> convertHtmlToXml(
00049         const QString & html) const = 0;
00050
00051     [[nodiscard]] virtual Result<QString, ErrorMessage> convertHtmlToXhtml(
00052         const QString & html) const = 0;
00053
00054     [[nodiscard]] virtual Result<IHtmlDataPtr, ErrorMessage> convertEnmlToHtml(
00055         const QString & enml,
00056         IDecryptedTextCache & decryptedTextCache) const = 0;
00057
00058     [[nodiscard]] virtual Result<QString, ErrorMessage> convertEnmlToPlainText(
00059         const QString & enml) const = 0;
00060
00061     [[nodiscard]] virtual Result<QStringList, ErrorMessage>
00062         convertEnmlToWordsList(const QString & enml) const = 0;
00063
00064     [[nodiscard]] virtual QStringList convertPlainTextToWordsList(
00065         const QString & plainText) const = 0;
00066
00067     [[nodiscard]] virtual Result<void, ErrorMessage> validateEnml(
00068         const QString & enml) const = 0;
00069
00070     [[nodiscard]] virtual Result<QString, ErrorMessage> validateAndFixupEnml(
00071         const QString & enml) const = 0;
00072
00073     enum class EnexExportTags
00074     {
00075         Yes = 0,
00076         No
00077     };
00078
00079     [[nodiscard]] virtual Result<QString, ErrorMessage> exportNotesToEnex(
00080         const QList<qevercloud::Note> & notes,
00081         const QHash<QString, QString> & tagNamesByTagLocalIds,
00082         EnexExportTags exportTagsOption,
00083         const QString & version = {}) const = 0;
00084
00085     [[nodiscard]] virtual Result<QList<qevercloud::Note>, ErrorMessage>
00086         importEnex(const QString & enex) const = 0;
00087 };
00088 } // namespace quentier::enml

```

## 6.6 IDecryptedTextCache.h

```

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```



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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <QString>
00024
00025 #include <cstdint>
00026 #include <optional>
00027 #include <utility>
00028
00029 class QDebug;
00030 class QTextStream;
00031
00032 namespace quentier::enml {
00033
00034 class QUENTIER_EXPORT IDecryptedTextCache
00035 {
00036 public:
00037     virtual ~IDecryptedTextCache();
00038
00039     enum class RememberForSession
00040     {
00041         Yes,
00042         No
00043     };
00044
00045     friend QUENTIER_EXPORT QDebug & operator«(
00046         QDebug & dbg, RememberForSession rememberForSession);
00047
00048     friend QUENTIER_EXPORT QTextStream & operator«(
00049         QTextStream & strm, RememberForSession rememberForSession);
00050
00051     virtual void addDecryptexTextInfo(
00052         const QString & encryptedText, const QString & decryptedText,
00053         const QString & passphrase, const QString & cipher,
00054         std::size_t keyLength, RememberForSession rememberForSession) = 0;
00055
00056     [[nodiscard]] virtual std::optional<std::pair<QString, RememberForSession>
00057         findDecryptedTextInfo(const QString & encryptedText) const = 0;
00058
00059     [[nodiscard]] virtual std::optional<QString> updateDecryptedTextInfo(
00060         const QString & originalEncryptedText,
00061         const QString & newDecryptedText) = 0;
00062
00063     virtual void removeDecryptedTextInfo(const QString & encryptedText) = 0;
00064     virtual void clearNonRememberedForSessionEntries() = 0;
00065 };
00066
00067 } // namespace quentier::enml

```

## 6.7 IENMLTagsConverter.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/types/ErrorMessage.h>
00022 #include <quentier/types/Result.h>

```

```

00023 #include <quentier/utility/Linkage.h>
00024
00025 #include <qevercloud/types/Fwd.h>
00026
00027 #include <QString>
00028 #include <QtGlobal>
00029
00030 #include <cstdint>
00031
00032 namespace quentier::enml {
00033
00034     class QUENTIER_EXPORT IENMLTagsConverter
00035     {
00036     public:
00037         virtual ~IENMLTagsConverter();
00038
00039         [[nodiscard]] virtual QString convertEnToDo(
00040             bool checked, quint32 index) const = 0;
00041
00042         [[nodiscard]] virtual QString convertEncryptedText(
00043             const QString & encryptedText, const QString & hint,
00044             const QString & cipher, std::size_t keyLength, quint32 index) const = 0;
00045
00046         [[nodiscard]] virtual QString convertDecryptedText(
00047             const QString & decryptedText, const QString & encryptedText,
00048             const QString & hint, const QString & cipher, std::size_t keyLength,
00049             quint32 index) const = 0;
00050
00051         [[nodiscard]] virtual Result<QString, ErrorString> convertResource(
00052             const qevercloud::Resource & resource) const = 0;
00053     };
00054 } // namespace quentier::enml

```

## 6.8 IHtmlData.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022 #include <quentier/utility/Printable.h>
00023
00024 #include <QString>
00025 #include <QtGlobal>
00026
00027 namespace quentier::enml {
00028
00029     struct QUENTIER_EXPORT IHtmlData : public Printable
00030     {
00031     public:
00032         [[nodiscard]] virtual QString html() const = 0;
00033
00034         [[nodiscard]] virtual quint32 numEnToDoNodes() const = 0;
00035
00036         [[nodiscard]] virtual quint32 numHyperlinkNodes() const = 0;
00037
00038         [[nodiscard]] virtual quint32 numEnCryptNodes() const = 0;
00039
00040         [[nodiscard]] virtual quint32 numEnDecryptedNodes() const = 0;
00041
00042     public: // Printable
00043         QTextStream & print(QTextStream & strm) const override;
00044     };
00045 } // namespace quentier::enml

```

## 6.9 InvalidArgument.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/exception/IQuentierException.h>
00022
00023 namespace quentier {
00024
00025 class QUENTIER_EXPORT InvalidArgument : public IQuentierException
00026 {
00027 public:
00028     explicit InvalidArgument(ErrorString message);
00029
00030     [[nodiscard]] InvalidArgument * clone() const override;
00031     void raise() const override;
00032
00033 protected:
00034     [[nodiscard]] QString exceptionDisplayName() const override;
00035 };
00036
00037 } // namespace quentier

```

## 6.10 IQuentierException.h

```

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00017  */
00018
00019 #ifndef LIB_QUENTIER_EXCEPTION_I_QUENTIER_EXCEPTION_H
00020 #define LIB_QUENTIER_EXCEPTION_I_QUENTIER_EXCEPTION_H
00021
00022 #include <quentier/types/ErrorString.h>
00023 #include <quentier/utility/Printable.h>
00024
00025 #include <QException>
00026
00027 namespace quentier {
00028
00029 class QUENTIER_EXPORT IQuentierException : public Printable, public QException
00030 {
00031 public:
00032     ~IQuentierException() noexcept override;
00033
00034     [[nodiscard]] ErrorString errorMessage() const;
00035     [[nodiscard]] QString localizedErrorMessage() const;
00036     [[nodiscard]] QString nonLocalizedErrorMessage() const;
00037
00038     [[nodiscard]] const char * what() const noexcept override;
00039
00040     QTextStream & print(QTextStream & strm) const override;
00041
00042 };
00043
00044 #endif

```

```

00050 protected:
00051     explicit IQuentierException(ErrorString message);
00052     IQuentierException(const IQuentierException & other);
00053     IQuentierException & operator=(const IQuentierException & other);
00054
00055     [[nodiscard]] virtual QString exceptionDisplayName() const = 0;
00056
00057 private:
00058     ErrorString m_message;
00059     char * m_whatMessage = nullptr;
00060 };
00061
00062 } // namespace quentier
00063
00064 #endif // LIB_QUENTIER_EXCEPTION_I_QUENTIER_EXCEPTION_H

```

## 6.11 OperationCanceled.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/exception/IQuentierException.h>
00022
00023 namespace quentier {
00024
00025     class QUENTIER_EXPORT OperationCanceled : public IQuentierException
00026     {
00027     public:
00028         explicit OperationCanceled();
00029
00030         [[nodiscard]] OperationCanceled * clone() const override;
00031         void raise() const override;
00032
00033     protected:
00034         [[nodiscard]] QString exceptionDisplayName() const override;
00035     };
00036
00037 } // namespace quentier

```

## 6.12 RuntimeError.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/exception/IQuentierException.h>

```

```

00022
00023 namespace quentier {
00024
00025 class QUENTIER_EXPORT RuntimeError : public IQuentierException
00026 {
00027 public:
00028     explicit RuntimeError(ErrorString message);
00029     ~RuntimeError() noexcept override;
00030
00031     [[nodiscard]] RuntimeError * clone() const override;
00032     void raise() const override;
00033
00034 protected:
00035     [[nodiscard]] QString exceptionDisplayName() const override;
00036 };
00037
00038 } // namespace quentier

```

## 6.13 enml/conversion\_rules/Factory.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/enml/conversion_rules/Fwd.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 namespace quentier::enml::conversion_rules {
00025
00026 [[nodiscard]] QUENTIER_EXPORT ISkipRuleBuilderPtr createSkipRuleBuilder();
00027
00028 } // namespace quentier::enml::conversion_rules

```

## 6.14 enml/Factory.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/enml/Fwd.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 namespace quentier::enml {
00025
00026 [[nodiscard]] QUENTIER_EXPORT IDecryptedTextCachePtr createDecryptedTextCache();
00027
00028 [[nodiscard]] QUENTIER_EXPORT IENMLTagsConverterPtr createEnmlTagsConverter();
00029
00030 }

```

```

00035
00043 [[nodiscard]] QUENTIER_EXPORT IConverterPtr
00044     createConverter(IENMLTagsConverterPtr enmlTagsConverter = nullptr);
00045
00046 } // namespace quentier::enml

```

## 6.15 local\_storage/Factory.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/local_storage/Fwd.h>
00022 #include <quentier/threading/Fwd.h>
00023 #include <quentier/types/Fwd.h>
00024 #include <quentier/utility/Linkage.h>
00025
00026 #include <QtGlobal>
00027
00028 class QDir;
00029
00030 namespace quentier::local_storage {
00031
00032 [[nodiscard]] QUENTIER_EXPORT ILocalStoragePtr createSqliteLocalStorage(
00033     const Account & account, const QDir & localStorageDir,
00034     threading::QThreadPtr thread = {});
00035
00036 } // namespace quentier::local_storage

```

## 6.16 synchronization/Factory.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/local_storage/Fwd.h>
00022 #include <quentier/synchronization/Fwd.h>
00023 #include <quentier/threading/Fwd.h>
00024 #include <quentier/utility/Fwd.h>
00025 #include <quentier/utility/Linkage.h>
00026
00027 #include <qevercloud/Fwd.h>
00028
00029 #include <QString>
00030 #include <QUrl>
00031 #include <QtGlobal>
00032

```

```

00033 class QWidget;
00034
00035 namespace quantier::synchronization {
00036
00037 [[nodiscard]] QUENTIER_EXPORT IAuthenticatorPtr createQEverCloudAuthenticator(
00038     QString consumerKey, QString consumerSecret, QUrl serverUrl,
00039     threading::QThreadPtr uiThread, QWidget * parentWidget = nullptr);
00040
00041 [[nodiscard]] QUENTIER_EXPORT ISynchronizerPtr createSynchronizer(
00042     const QUrl & userStoreUrl, IAuthenticatorPtr authenticator,
00043     ISyncStateStoragePtr syncStateStorage = nullptr,
00044     IKeychainServicePtr keychainService = nullptr,
00045     INoteStoreFactoryPtr noteStoreFactory = nullptr,
00046     IUserStoreFactoryPtr userStoreFactory = nullptr,
00047     qevercloud::IRequestContextPtr ctx = nullptr,
00048     qevercloud::IRetryPolicyPtr retryPolicy = nullptr);
00049
00050 [[nodiscard]] QUENTIER_EXPORT ISyncConflictResolverPtr
00051     createSimpleSyncConflictResolver(
00052         local_storage::ILocalStoragePtr localStorage);
00053
00054 [[nodiscard]] QUENTIER_EXPORT ISyncStateStoragePtr
00055     createSyncStateStorage(QObject * parent = nullptr);
00056
00057 } // namespace quantier::synchronization

```

## 6.17 threading/Factory.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/threading/Fwd.h>
00022 #include <quantier/utility/Linkage.h>
00023
00024 namespace quantier::threading {
00025
00029 [[nodiscard]] QUENTIER_EXPORT QThreadPoolPtr globalThreadPool();
00030
00031 } // namespace quantier::threading

```

## 6.18 enml/conversion\_rules/Fwd.h

```

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00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020

```

```

00021 #include <memory>
00022
00023 namespace quantier::enml::conversion_rules {
00024
00025 class ISkipRule;
00026 using ISkipRulePtr = std::shared_ptr<ISkipRule>;
00027
00028 class ISkipRuleBuilder;
00029 using ISkipRuleBuilderPtr = std::shared_ptr<ISkipRuleBuilder>;
00030
00031 } // namespace quantier::enml::conversion_rules

```

## 6.19 enml/Fwd.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <memory>
00022
00023 namespace quantier::enml {
00024
00025 class IConverter;
00026 using IConverterPtr = std::shared_ptr<IConverter>;
00027
00028 class IDecryptedTextCache;
00029 using IDecryptedTextCachePtr = std::shared_ptr<IDecryptedTextCache>;
00030
00031 class IENMLTagsConverter;
00032 using IENMLTagsConverterPtr = std::shared_ptr<IENMLTagsConverter>;
00033
00034 struct IHtmlData;
00035 using IHtmlDataPtr = std::shared_ptr<IHtmlData>;
00036
00037 } // namespace quantier::enml

```

## 6.20 local\_storage/Fwd.h

```

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00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <memory>
00022
00023 namespace quantier::local_storage {
00024
00025 class ILocalStorage;

```



```

00026 using ILocalStoragePtr = std::shared_ptr<ILocalStorage>;
00027
00028 class ILocalStorageNotifier;
00029
00030 class IPatch;
00031 using IPatchPtr = std::shared_ptr<IPatch>;
00032
00033 class NoteSearchQuery;
00034
00035 } // namespace quantier::local_storage

```

## 6.21 synchronization/Fwd.h

```

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00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <memory>
00022
00023 namespace quantier::synchronization {
00024
00025 class IAuthenticator;
00026 using IAuthenticatorPtr = std::shared_ptr<IAuthenticator>;
00027
00028 class INoteStoreFactory;
00029 using INoteStoreFactoryPtr = std::shared_ptr<INoteStoreFactory>;
00030
00031 class ISyncConflictResolver;
00032 using ISyncConflictResolverPtr = std::shared_ptr<ISyncConflictResolver>;
00033
00034 class ISynchronizer;
00035 using ISynchronizerPtr = std::shared_ptr<ISynchronizer>;
00036
00037 class ISyncEventsNotifier;
00038
00039 class ISyncOptions;
00040 using ISyncOptionsPtr = std::shared_ptr<ISyncOptions>;
00041
00042 class ISyncStateStorage;
00043 using ISyncStateStoragePtr = std::shared_ptr<ISyncStateStorage>;
00044
00045 class IUserStoreFactory;
00046 using IUserStoreFactoryPtr = std::shared_ptr<IUserStoreFactory>;
00047
00048 } // namespace quantier::synchronization

```

## 6.22 synchronization/types/Fwd.h

```

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```

```

00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <memory>
00022
00023 namespace quentier::synchronization {
00024
00025 class IAuthenticationInfo;
00026 using IAuthenticationInfoPtr = std::shared_ptr<IAuthenticationInfo>;
00027
00028 class IAuthenticationInfoBuilder;
00029 using IAuthenticationInfoBuilderPtr =
00030     std::shared_ptr<IAuthenticationInfoBuilder>;
00031
00032 class IDownloadNotesStatus;
00033 using IDownloadNotesStatusPtr = std::shared_ptr<IDownloadNotesStatus>;
00034
00035 class IDownloadResourcesStatus;
00036 using IDownloadResourcesStatusPtr = std::shared_ptr<IDownloadResourcesStatus>;
00037
00038 class ISendStatus;
00039 using ISendStatusPtr = std::shared_ptr<ISendStatus>;
00040
00041 struct ISyncChunksDataCounters;
00042 using ISyncChunksDataCountersPtr = std::shared_ptr<ISyncChunksDataCounters>;
00043
00044 class ISyncOptions;
00045 using ISyncOptionsPtr = std::shared_ptr<ISyncOptions>;
00046
00047 class ISyncOptionsBuilder;
00048 using ISyncOptionsBuilderPtr = std::shared_ptr<ISyncOptionsBuilder>;
00049
00050 class ISyncResult;
00051 using ISyncResultPtr = std::shared_ptr<ISyncResult>;
00052
00053 class ISyncState;
00054 using ISyncStatePtr = std::shared_ptr<ISyncState>;
00055
00056 class ISyncStateBuilder;
00057 using ISyncStateBuilderPtr = std::shared_ptr<ISyncStateBuilder>;
00058
00059 } // namespace quentier::synchronization

```

## 6.23 threading/Fwd.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <memory>
00022
00023 class QMutex;
00024 class QThread;
00025 class QThreadPool;
00026
00027 namespace quentier::threading {
00028
00029 using QMutexPtr = std::shared_ptr<QMutex>;
00030 using QThreadPtr = std::shared_ptr<QThread>;
00031 using QThreadPoolPtr = std::shared_ptr<QThreadPool>;
00032
00033 } // namespace quentier::threading

```

## 6.24 types/Fwd.h

```

00001 /*
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00014  *
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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 namespace quentier {
00022
00023     class Account;
00024     class ErrorString;
00025     class ResourceRecognitionIndexItem;
00026     class ResourceRecognitionIndices;
00027
00028 } // namespace quentier

```

## 6.25 utility/cancelers/Fwd.h

```

00001 /*
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00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <memory>
00022
00023 namespace quentier::utility::cancelers {
00024
00025     class AnyOfCanceler;
00026     using AnyOfCancelerPtr = std::shared_ptr<AnyOfCanceler>;
00027
00028     class ICanceler;
00029     using ICancelerPtr = std::shared_ptr<ICanceler>;
00030
00031     class ManualCanceler;
00032     using ManualCancelerPtr = std::shared_ptr<ManualCanceler>;
00033
00034 } // namespace quentier::utility::cancelers

```

## 6.26 utility/Fwd.h

```

00001 /*
00002  * Copyright 2020-2024 Dmitry Ivanov
00003  *
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00009  *

```

```

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00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <memory>
00022
00023 namespace quentier {
00024
00025 class IKeychainService;
00026 using IKeychainServicePtr = std::shared_ptr<IKeychainService>;
00027
00028 } // namespace quentier

```

## 6.27 ILocalStorage.h

```

00001 /*
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00003  *
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00014  *
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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/local_storage/Fwd.h>
00022 #include <quentier/local_storage/NoteSearchQuery.h>
00023 #include <quentier/types/Fwd.h>
00024 #include <quentier/utility/Linkage.h>
00025
00026 #include <qevercloud/types/LinkedNotebook.h>
00027 #include <qevercloud/types/Note.h>
00028 #include <qevercloud/types/Notebook.h>
00029 #include <qevercloud/types/Resource.h>
00030 #include <qevercloud/types/SavedSearch.h>
00031 #include <qevercloud/types/SharedNotebook.h>
00032 #include <qevercloud/types/Tag.h>
00033 #include <qevercloud/types/User.h>
00034
00035 #include <QFlags>
00036 #include <QFuture>
00037 #include <QHash>
00038 #include <QList>
00039 #include <QStringList>
00040 #include <QThreadPool>
00041
00042 #include <optional>
00043 #include <utility>
00044
00045 class QDebug;
00046 class QTextStream;
00047 class QThreadPool;
00048
00049 namespace quentier::local_storage {
00050
00051 class QUENTIER_EXPORT ILocalStorage
00052 {
00053 public:
00054     virtual ~ILocalStorage() = default;
00055
00056 public:
00057     enum class StartupOption
00058     {
00059         ClearDatabase = 1 « 1,
00060         OverrideLock = 1 « 2
00061     };

```

```

00062     Q_DECLARE_FLAGS(StartupOptions, StartupOption);
00063
00064     friend QUENTIER_EXPORT QTextStream & operator<<(
00065         QTextStream & strm, StartupOption option);
00066
00067     friend QUENTIER_EXPORT QDebug & operator<<(
00068         QDebug & dbg, StartupOption option);
00069
00070     friend QUENTIER_EXPORT QTextStream & operator<<(
00071         QTextStream & strm, StartupOptions options);
00072
00073     friend QUENTIER_EXPORT QDebug & operator<<(
00074         QDebug & dbg, StartupOptions options);
00075
00076
00077
00078     enum class ListObjectsFilter
00079     {
00080         Include,
00081         Exclude
00082     };
00083
00084     friend QUENTIER_EXPORT QTextStream & operator<<(
00085         QTextStream & strm, ListObjectsFilter filter);
00086
00087     friend QUENTIER_EXPORT QDebug & operator<<(
00088         QDebug & dbg, ListObjectsFilter filter);
00089
00090
00091
00092     struct QUENTIER_EXPORT ListObjectsFilters
00093     {
00094         std::optional<ListObjectsFilter> m_locallyModifiedFilter;
00095         std::optional<ListObjectsFilter> m_withGuidFilter;
00096         std::optional<ListObjectsFilter> m_localOnlyFilter;
00097         std::optional<ListObjectsFilter> m_locallyFavoritedFilter;
00098     };
00099
00100     friend QUENTIER_EXPORT QTextStream & operator<<(
00101         QTextStream & strm, const ListObjectsFilters & filters);
00102
00103     friend QUENTIER_EXPORT QDebug & operator<<(
00104         QDebug & dbg, const ListObjectsFilters & filters);
00105
00106
00107
00108     struct QUENTIER_EXPORT ListGuidsFilters
00109     {
00110         std::optional<ListObjectsFilter> m_locallyModifiedFilter;
00111         std::optional<ListObjectsFilter> m_locallyFavoritedFilter;
00112     };
00113
00114     friend QUENTIER_EXPORT QTextStream & operator<<(
00115         QTextStream & strm, const ListGuidsFilters & filters);
00116
00117     friend QUENTIER_EXPORT QDebug & operator<<(
00118         QDebug & dbg, const ListGuidsFilters & filters);
00119
00120
00121
00122     enum class OrderDirection
00123     {
00124         Ascending,
00125         Descending
00126     };
00127
00128     friend QUENTIER_EXPORT QTextStream & operator<<(
00129         QTextStream & strm, OrderDirection orderDirection);
00130
00131     friend QUENTIER_EXPORT QDebug & operator<<(
00132         QDebug & dbg, OrderDirection orderDirection);
00133
00134
00135
00136     enum class ListNotebooksOrder
00137     {
00138         NoOrder,
00139         ByUpdateSequenceNumber,
00140         ByNotebookName,
00141         ByCreationTimestamp,
00142         ByModificationTimestamp
00143     };
00144
00145     friend QUENTIER_EXPORT QTextStream & operator<<(
00146         QTextStream & strm, ListNotebooksOrder order);
00147
00148     friend QUENTIER_EXPORT QDebug & operator<<(
00149         QDebug & dbg, ListNotebooksOrder order);
00150
00151
00152
00153     enum class ListLinkedNotebooksOrder
00154     {

```

```

00155         NoOrder,
00156         ByUpdateSequenceNumber,
00157         ByShareName,
00158         ByUsername,
00159     };
00160
00161     friend QUINTIER_EXPORT QTextStream & operator<
00162         (QTextStream & strm, ListLinkedNotebooksOrder order);
00163
00164     friend QUINTIER_EXPORT QDebug & operator<<
00165         (QDebug & dbg, ListLinkedNotebooksOrder order);
00166
00167     enum class ListTagsOrder
00168     {
00169     {
00170         NoOrder,
00171         ByUpdateSequenceNumber,
00172         ByName
00173     };
00174
00175     friend QUINTIER_EXPORT QTextStream & operator<
00176         (QTextStream & strm, ListTagsOrder order);
00177
00178     friend QUINTIER_EXPORT QDebug & operator<<
00179         (QDebug & dbg, ListTagsOrder order);
00180
00181
00182     enum class ListNotesOrder
00183     {
00184     {
00185         NoOrder,
00186         ByUpdateSequenceNumber,
00187         ByTitle,
00188         ByCreationTimestamp,
00189         ByModificationTimestamp,
00190         ByDeletionTimestamp,
00191         ByAuthor,
00192         BySource,
00193         BySourceApplication,
00194         ByReminderTime,
00195         ByPlaceName
00196     };
00197
00198     friend QUINTIER_EXPORT QTextStream & operator<
00199         (QTextStream & strm, ListNotesOrder order);
00200
00201     friend QUINTIER_EXPORT QDebug & operator<<
00202         (QDebug & dbg, ListNotesOrder order);
00203
00204
00205     enum class ListSavedSearchesOrder
00206     {
00207     {
00208         NoOrder,
00209         ByUpdateSequenceNumber,
00210         ByName,
00211         ByFormat
00212     };
00213
00214     friend QUINTIER_EXPORT QTextStream & operator<
00215         (QTextStream & strm, ListSavedSearchesOrder order);
00216
00217     friend QUINTIER_EXPORT QDebug & operator<<
00218         (QDebug & dbg, ListSavedSearchesOrder order);
00219
00220
00221     enum class Affiliation
00222     {
00223     {
00224         Any,
00225         User,
00226         AnyLinkedNotebook,
00227         ParticularLinkedNotebooks
00228     };
00229
00230     friend QUINTIER_EXPORT QTextStream & operator<
00231         (QTextStream & strm, Affiliation affiliation);
00232
00233     friend QUINTIER_EXPORT QDebug & operator<<
00234         (QDebug & dbg, Affiliation affiliation);
00235
00236
00237     struct QUINTIER_EXPORT ListOptionsBase
00238     {
00239     {
00240         ListOptionsBase() noexcept {}; // NOLINT
00241
00242         ListObjectsFilters m_filters = {};
00243         quint64 m_limit = 0UL;
00244         quint64 m_offset = 0UL;
00245         OrderDirection m_direction = OrderDirection::Ascending;

```

```

00249     };
00250
00251     struct QUINTIER_EXPORT ListNotebooksOptions : public ListOptionsBase
00252     {
00253         ListNotebooksOptions() noexcept {}; // NOLINT
00254
00255         ListNotebooksOrder m_order = ListNotebooksOrder::NoOrder;
00256         Affiliation m_affiliation = Affiliation::Any;
00257         QList<qevercloud::Guid> m_linkedNotebookGuids;
00258     };
00259
00260     friend QUINTIER_EXPORT QTextStream & operator<<(
00261         QTextStream & strm, const ListNotebooksOptions & options);
00262
00263     friend QUINTIER_EXPORT QDebug & operator<<(
00264         QDebug & dbg, const ListNotebooksOptions & options);
00265
00266     struct QUINTIER_EXPORT ListLinkedNotebooksOptions : public ListOptionsBase
00267     {
00268         ListLinkedNotebooksOptions() noexcept {}; // NOLINT
00269
00270         ListLinkedNotebooksOrder m_order = ListLinkedNotebooksOrder::NoOrder;
00271     };
00272
00273     friend QUINTIER_EXPORT QTextStream & operator<<(
00274         QTextStream & strm, const ListLinkedNotebooksOptions & options);
00275
00276     friend QUINTIER_EXPORT QDebug & operator<<(
00277         QDebug & dbg, const ListLinkedNotebooksOptions & options);
00278
00279     struct QUINTIER_EXPORT ListSavedSearchesOptions : public ListOptionsBase
00280     {
00281         ListSavedSearchesOptions() noexcept {}; // NOLINT
00282
00283         ListSavedSearchesOrder m_order = ListSavedSearchesOrder::NoOrder;
00284     };
00285
00286     friend QUINTIER_EXPORT QTextStream & operator<<(
00287         QTextStream & strm, const ListSavedSearchesOptions & options);
00288
00289     friend QUINTIER_EXPORT QDebug & operator<<(
00290         QDebug & dbg, const ListSavedSearchesOptions & options);
00291
00292     struct QUINTIER_EXPORT ListNotesOptions : public ListOptionsBase
00293     {
00294         ListNotesOptions() noexcept {}; // NOLINT
00295
00296         ListNotesOrder m_order = ListNotesOrder::NoOrder;
00297     };
00298
00299     friend QUINTIER_EXPORT QTextStream & operator<<(
00300         QTextStream & strm, const ListNotesOptions & options);
00301
00302     friend QUINTIER_EXPORT QDebug & operator<<(
00303         QDebug & dbg, const ListNotesOptions & options);
00304
00307     enum class TagNotesRelation
00308     {
00310         Any,
00312         WithNotes,
00314         WithoutNotes
00315     };
00316
00317     struct QUINTIER_EXPORT ListTagsOptions : public ListOptionsBase
00318     {
00319         ListTagsOptions() noexcept {}; // NOLINT
00320
00321         ListTagsOrder m_order = ListTagsOrder::NoOrder;
00322         Affiliation m_affiliation = Affiliation::Any;
00323         QList<qevercloud::Guid> m_linkedNotebookGuids;
00324         TagNotesRelation m_tagNotesRelation = TagNotesRelation::Any;
00325     };
00326
00327     friend QUINTIER_EXPORT QTextStream & operator<<(
00328         QTextStream & strm, const ListTagsOptions & options);
00329
00330     friend QUINTIER_EXPORT QDebug & operator<<(
00331         QDebug & dbg, const ListTagsOptions & options);
00332
00334
00335     enum class NoteCountOption
00336     {
00337         IncludeNonDeletedNotes = 1 << 1,
00338         IncludeDeletedNotes = 1 << 2
00339     };
00340     Q_DECLARE_FLAGS(NoteCountOptions, NoteCountOption)
00341

```

```

00342     friend QUINTIER_EXPORT QTextStream & operator<<
00343         QTextStream & strm, NoteCountOption option);
00344
00345     friend QUINTIER_EXPORT QDebug & operator<<
00346         QDebug & dbg, NoteCountOption option);
00347
00348     friend QUINTIER_EXPORT QTextStream & operator<<
00349         QTextStream & strm, NoteCountOptions options);
00350
00351     friend QUINTIER_EXPORT QDebug & operator<<
00352         QDebug & dbg, NoteCountOptions options);
00353
00354     enum class UpdateNoteOption
00355     {
00356         UpdateResourceMetadata = 1 << 1,
00357         UpdateResourceBinaryData = 1 << 2,
00358         UpdateTags = 1 << 3
00359     };
00360     Q_DECLARE_FLAGS(UpdateNoteOptions, UpdateNoteOption)
00361
00362     friend QUINTIER_EXPORT QTextStream & operator<<
00363         QTextStream & strm, UpdateNoteOption option);
00364
00365     friend QUINTIER_EXPORT QDebug & operator<<
00366         QDebug & dbg, UpdateNoteOption option);
00367
00368     friend QUINTIER_EXPORT QTextStream & operator<<
00369         QTextStream & strm, UpdateNoteOptions options);
00370
00371     friend QUINTIER_EXPORT QDebug & operator<<
00372         QDebug & dbg, UpdateNoteOptions options);
00373
00374     enum class FetchNoteOption
00375     {
00376         WithResourceMetadata = 1 << 1,
00377         WithResourceBinaryData = 1 << 2
00378     };
00379     Q_DECLARE_FLAGS(FetchNoteOptions, FetchNoteOption)
00380
00381     friend QUINTIER_EXPORT QTextStream & operator<<
00382         QTextStream & strm, FetchNoteOption option);
00383
00384     friend QUINTIER_EXPORT QDebug & operator<<
00385         QDebug & dbg, FetchNoteOption option);
00386
00387     friend QUINTIER_EXPORT QTextStream & operator<<
00388         QTextStream & strm, FetchNoteOptions options);
00389
00390     friend QUINTIER_EXPORT QDebug & operator<<
00391         QDebug & dbg, FetchNoteOptions options);
00392
00393     enum class FetchResourceOption
00394     {
00395         WithBinaryData = 1 << 1
00396     };
00397     Q_DECLARE_FLAGS(FetchResourceOptions, FetchResourceOption)
00398
00399     friend QUINTIER_EXPORT QTextStream & operator<<
00400         QTextStream & strm, FetchResourceOption option);
00401
00402     friend QUINTIER_EXPORT QDebug & operator<<
00403         QDebug & dbg, FetchResourceOption option);
00404
00405     friend QUINTIER_EXPORT QTextStream & operator<<
00406         QTextStream & strm, FetchResourceOptions options);
00407
00408     friend QUINTIER_EXPORT QDebug & operator<<
00409         QDebug & dbg, FetchResourceOptions options);
00410
00411     enum class HighestUsnOption
00412     {
00413         WithinUserOwnContent,
00414         WithinUserOwnContentAndLinkedNotebooks
00415     };
00416
00417     friend QUINTIER_EXPORT QTextStream & operator<<
00418         QTextStream & strm, HighestUsnOption option);
00419
00420     friend QUINTIER_EXPORT QDebug & operator<<
00421         QDebug & dbg, HighestUsnOption option);
00422
00423 public:
00424     // Versions/upgrade API

```



```

00433 [[nodiscard]] virtual QFuture<bool> isVersionTooHigh() const = 0;
00434 [[nodiscard]] virtual QFuture<bool> requiresUpgrade() const = 0;
00435 [[nodiscard]] virtual QFuture<QList<IPatchPtr>> requiredPatches() const = 0;
00436 [[nodiscard]] virtual QFuture<qint32> version() const = 0;
00437 [[nodiscard]] virtual QFuture<qint32> highestSupportedVersion() const = 0;
00438
00439 // Users API
00440 [[nodiscard]] virtual QFuture<qint32> userCount() const = 0;
00441 [[nodiscard]] virtual QFuture<void> putUser(qevercloud::User user) = 0;
00442
00443 [[nodiscard]] virtual QFuture<std::optional<qevercloud::User>> findUserById(
00444     qevercloud::UserID userId) const = 0;
00445
00446 [[nodiscard]] virtual QFuture<void> expungeUserById(
00447     qevercloud::UserID userId) = 0;
00448
00449 // Notebooks API
00450 [[nodiscard]] virtual QFuture<qint32> notebookCount() const = 0;
00451
00452 [[nodiscard]] virtual QFuture<void> putNotebook(
00453     qevercloud::Notebook notebook) = 0;
00454
00455 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Notebook>>
00456     findNotebookByLocalId(QString notebookLocalId) const = 0;
00457
00458 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Notebook>>
00459     findNotebookByGuid(qevercloud::Guid guid) const = 0;
00460
00461 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Notebook>>
00462     findNotebookByName(
00463         QString notebookName,
00464         std::optional<qevercloud::Guid> linkedNotebookGuid =
00465             std::nullopt) const = 0;
00466
00467 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Notebook>>
00468     findDefaultNotebook() const = 0;
00469
00470 [[nodiscard]] virtual QFuture<void> expungeNotebookByLocalId(
00471     QString notebookLocalId) = 0;
00472
00473 [[nodiscard]] virtual QFuture<void> expungeNotebookByGuid(
00474     qevercloud::Guid notebookGuid) = 0;
00475
00476 [[nodiscard]] virtual QFuture<void> expungeNotebookByName(
00477     QString name,
00478     std::optional<qevercloud::Guid> linkedNotebookGuid = std::nullopt) = 0;
00479
00480 [[nodiscard]] virtual QFuture<QList<qevercloud::Notebook>> listNotebooks(
00481     ListNotebooksOptions options = {}) const = 0;
00482
00483 [[nodiscard]] virtual QFuture<QList<qevercloud::SharedNotebook>>
00484     listSharedNotebooks(qevercloud::Guid notebookGuid = {}) const = 0;
00485
00486 [[nodiscard]] virtual QFuture<QSet<qevercloud::Guid>> listNotebookGuids(
00487     ListGuidsFilters filters,
00488     std::optional<qevercloud::Guid> linkedNotebookGuid = {}) const = 0;
00489
00490 // Linked notebooks API
00491 [[nodiscard]] virtual QFuture<qint32> linkedNotebookCount() const = 0;
00492
00493 [[nodiscard]] virtual QFuture<void> putLinkedNotebook(
00494     qevercloud::LinkedNotebook linkedNotebook) = 0;
00495
00496 [[nodiscard]] virtual QFuture<std::optional<qevercloud::LinkedNotebook>>
00497     findLinkedNotebookByGuid(qevercloud::Guid guid) const = 0;
00498
00499 [[nodiscard]] virtual QFuture<void> expungeLinkedNotebookByGuid(
00500     qevercloud::Guid guid) = 0;
00501
00502 [[nodiscard]] virtual QFuture<QList<qevercloud::LinkedNotebook>>
00503     listLinkedNotebooks(ListLinkedNotebooksOptions options = {}) const = 0;
00504
00505 // Notes API
00506 [[nodiscard]] virtual QFuture<qint32> noteCount(
00507     NoteCountOptions options = NoteCountOptions(
00508         NoteCountOption::IncludeNonDeletedNotes)) const = 0;
00509
00510 [[nodiscard]] virtual QFuture<qint32> noteCountPerNotebookLocalId(
00511     QString notebookLocalId,
00512     NoteCountOptions options = NoteCountOptions(
00513         NoteCountOption::IncludeNonDeletedNotes)) const = 0;
00514
00515 [[nodiscard]] virtual QFuture<qint32> noteCountPerTagLocalId(
00516     QString tagLocalId,
00517     NoteCountOptions options = NoteCountOptions(
00518         NoteCountOption::IncludeNonDeletedNotes)) const = 0;
00519

```

```

00520 [[nodiscard]] virtual QFuture<QHash<QString, quint32> noteCountsPerTags(
00521     ListTagsOptions listTagsOptions = {},
00522     NoteCountOptions options = NoteCountOptions(
00523         NoteCountOption::IncludeNonDeletedNotes)) const = 0;
00524
00525 [[nodiscard]] virtual QFuture<quint32> noteCountPerNotebookAndTagLocalIds(
00526     QStringList notebookLocalIds, QStringList tagLocalIds,
00527     NoteCountOptions options = NoteCountOptions(
00528         NoteCountOption::IncludeNonDeletedNotes)) const = 0;
00529
00530 [[nodiscard]] virtual QFuture<void> putNote(qevercloud::Note note) = 0;
00531
00532 [[nodiscard]] virtual QFuture<void> updateNote(
00533     qevercloud::Note note, UpdateNoteOptions options) = 0;
00534
00535 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Note>
00536     findNoteByLocalId(
00537         QString noteLocalId, FetchNoteOptions options) const = 0;
00538
00539 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Note>
00540     findNoteByGuid(
00541         qevercloud::Guid noteGuid, FetchNoteOptions options) const = 0;
00542
00543 [[nodiscard]] virtual QFuture<QList<qevercloud::Note> listNotes(
00544     FetchNoteOptions fetchOptions,
00545     ListNotesOptions listOptions = {}) const = 0;
00546
00547 [[nodiscard]] virtual QFuture<QList<qevercloud::Note>
00548     listNotesPerNotebookLocalId(
00549         QString notebookLocalId, FetchNoteOptions fetchOptions,
00550         ListNotesOptions listOptions = {}) const = 0;
00551
00552 [[nodiscard]] virtual QFuture<QList<qevercloud::Note>
00553     listNotesPerTagLocalId(
00554         QString tagLocalId, FetchNoteOptions fetchOptions,
00555         ListNotesOptions listOptions = {}) const = 0;
00556
00557 [[nodiscard]] virtual QFuture<QList<qevercloud::Note>
00558     listNotesPerNotebookAndTagLocalIds(
00559         QStringList notebookLocalIds, QStringList tagLocalIds,
00560         FetchNoteOptions fetchOptions,
00561         ListNotesOptions listOptions = {}) const = 0;
00562
00563 [[nodiscard]] virtual QFuture<QList<qevercloud::Note> listNotesByLocalIds(
00564     QStringList noteLocalIds, FetchNoteOptions fetchOptions,
00565     ListNotesOptions listOptions = {}) const = 0;
00566
00567 [[nodiscard]] virtual QFuture<QSet<qevercloud::Guid> listNoteGuids(
00568     ListGuidsFilters filters,
00569     std::optional<qevercloud::Guid> linkedNotebookGuid = {}) const = 0;
00570
00571 [[nodiscard]] virtual QFuture<QList<qevercloud::Note> queryNotes(
00572     NoteSearchQuery query, FetchNoteOptions fetchOptions) const = 0;
00573
00574 [[nodiscard]] virtual QFuture<QStringList> queryNoteLocalIds(
00575     NoteSearchQuery query) const = 0;
00576
00577 [[nodiscard]] virtual QFuture<void> expungeNoteByLocalId(
00578     QString noteLocalId) = 0;
00579
00580 [[nodiscard]] virtual QFuture<void> expungeNoteByGuid(
00581     qevercloud::Guid noteGuid) = 0;
00582
00583 // Tags API
00584 [[nodiscard]] virtual QFuture<quint32> tagCount() const = 0;
00585 [[nodiscard]] virtual QFuture<void> putTag(qevercloud::Tag tag) = 0;
00586
00587 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Tag>
00588     findTagByLocalId(QString tagLocalId) const = 0;
00589
00590 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Tag> findTagByGuid(
00591     qevercloud::Guid tagGuid) const = 0;
00592
00593 [[nodiscard]] virtual QFuture<std::optional<qevercloud::Tag> findTagByName(
00594     QString tagName,
00595     std::optional<qevercloud::Guid> linkedNotebookGuid =
00596         std::nullopt) const = 0;
00597
00598 [[nodiscard]] virtual QFuture<QList<qevercloud::Tag> listTags(
00599     ListTagsOptions options = {}) const = 0;
00600
00601 [[nodiscard]] virtual QFuture<QList<qevercloud::Tag>
00602     listTagsPerNoteLocalId(
00603         QString noteLocalId, ListTagsOptions options = {}) const = 0;
00604
00605 [[nodiscard]] virtual QFuture<QSet<qevercloud::Guid> listTagGuids(
00606     ListGuidsFilters filters,

```

```

00607         std::optional<qevercloud::Guid> linkedNotebookGuid = {}) const = 0;
00608
00609     [[nodiscard]] virtual QFuture<void> expungeTagByLocalId(
00610         QString tagLocalId) = 0;
00611
00612     [[nodiscard]] virtual QFuture<void> expungeTagByGuid(
00613         qevercloud::Guid tagGuid) = 0;
00614
00615     [[nodiscard]] virtual QFuture<void> expungeTagByName(
00616         QString name,
00617         std::optional<qevercloud::Guid> linkedNotebookGuid = std::nullopt) = 0;
00618
00619     // Resources API
00620     [[nodiscard]] virtual QFuture<quint32> resourceCount(
00621         NoteCountOptions options = NoteCountOptions(
00622             NoteCountOption::IncludeNonDeletedNotes)) const = 0;
00623
00624     [[nodiscard]] virtual QFuture<quint32> resourceCountPerNoteLocalId(
00625         QString noteLocalId) const = 0;
00626
00627     [[nodiscard]] virtual QFuture<void> putResource(
00628         qevercloud::Resource resource) = 0;
00629
00630     [[nodiscard]] virtual QFuture<std::optional<qevercloud::Resource>
00631         findResourceByLocalId(
00632             QString resourceLocalId,
00633             FetchResourceOptions options = {}) const = 0;
00634
00635     [[nodiscard]] virtual QFuture<std::optional<qevercloud::Resource>
00636         findResourceByGuid(
00637             qevercloud::Guid resourceGuid,
00638             FetchResourceOptions options = {}) const = 0;
00639
00640     [[nodiscard]] virtual QFuture<void> expungeResourceByLocalId(
00641         QString resourceLocalId) = 0;
00642
00643     [[nodiscard]] virtual QFuture<void> expungeResourceByGuid(
00644         qevercloud::Guid resourceGuid) = 0;
00645
00646     // Saved searches API
00647     [[nodiscard]] virtual QFuture<quint32> savedSearchCount() const = 0;
00648
00649     [[nodiscard]] virtual QFuture<void> putSavedSearch(
00650         qevercloud::SavedSearch search) = 0;
00651
00652     [[nodiscard]] virtual QFuture<std::optional<qevercloud::SavedSearch>
00653         findSavedSearchByLocalId(QString savedSearchLocalId) const = 0;
00654
00655     [[nodiscard]] virtual QFuture<std::optional<qevercloud::SavedSearch>
00656         findSavedSearchByGuid(qevercloud::Guid guid) const = 0;
00657
00658     [[nodiscard]] virtual QFuture<std::optional<qevercloud::SavedSearch>
00659         findSavedSearchByName(QString name) const = 0;
00660
00661     [[nodiscard]] virtual QFuture<QList<qevercloud::SavedSearch>
00662         listSavedSearches(ListSavedSearchesOptions options = {}) const = 0;
00663
00664     [[nodiscard]] virtual QFuture<QSet<qevercloud::Guid> listSavedSearchGuids(
00665         ListGuidsFilters filters) const = 0;
00666
00667     [[nodiscard]] virtual QFuture<void> expungeSavedSearchByLocalId(
00668         QString savedSearchLocalId) = 0;
00669
00670     [[nodiscard]] virtual QFuture<void> expungeSavedSearchByGuid(
00671         qevercloud::Guid guid) = 0;
00672
00673     // Synchronization API
00674     [[nodiscard]] virtual QFuture<qint32> highestUpdateSequenceNumber(
00675         HighestUsnOption option) const = 0;
00676
00677     [[nodiscard]] virtual QFuture<qint32> highestUpdateSequenceNumber(
00678         qevercloud::Guid linkedNotebookGuid) const = 0;
00679
00680     [[nodiscard]] virtual ILocalStorageNotifier * notifier() const = 0;
00681 };
00682
00683 [[nodiscard]] QUENTIER_EXPORT bool operator==(
00684     const ILocalStorage::ListObjectsFilters & lhs,
00685     const ILocalStorage::ListObjectsFilters & rhs) noexcept;
00686
00687 [[nodiscard]] QUENTIER_EXPORT bool operator==(
00688     const ILocalStorage::ListOptionsBase & lhs,
00689     const ILocalStorage::ListOptionsBase & rhs) noexcept;
00690
00691 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
00692     const ILocalStorage::ListOptionsBase & lhs,
00693     const ILocalStorage::ListOptionsBase & rhs) noexcept;

```

```

00700
00701 [[nodiscard]] QUENTIER_EXPORT bool operator==(
00702     const ILocalStorage::ListNotebooksOptions & lhs,
00703     const ILocalStorage::ListNotebooksOptions & rhs) noexcept;
00704
00705 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
00706     const ILocalStorage::ListNotebooksOptions & lhs,
00707     const ILocalStorage::ListNotebooksOptions & rhs) noexcept;
00708
00709 [[nodiscard]] QUENTIER_EXPORT bool operator==(
00710     const ILocalStorage::ListLinkedNotebooksOptions & lhs,
00711     const ILocalStorage::ListLinkedNotebooksOptions & rhs) noexcept;
00712
00713 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
00714     const ILocalStorage::ListLinkedNotebooksOptions & lhs,
00715     const ILocalStorage::ListLinkedNotebooksOptions & rhs) noexcept;
00716
00717 [[nodiscard]] QUENTIER_EXPORT bool operator==(
00718     const ILocalStorage::ListSavedSearchesOptions & lhs,
00719     const ILocalStorage::ListSavedSearchesOptions & rhs) noexcept;
00720
00721 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
00722     const ILocalStorage::ListSavedSearchesOptions & lhs,
00723     const ILocalStorage::ListSavedSearchesOptions & rhs) noexcept;
00724
00725 [[nodiscard]] QUENTIER_EXPORT bool operator==(
00726     const ILocalStorage::ListNotesOptions & lhs,
00727     const ILocalStorage::ListNotesOptions & rhs) noexcept;
00728
00729 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
00730     const ILocalStorage::ListNotesOptions & lhs,
00731     const ILocalStorage::ListNotesOptions & rhs) noexcept;
00732
00733 [[nodiscard]] QUENTIER_EXPORT bool operator==(
00734     const ILocalStorage::ListTagsOptions & lhs,
00735     const ILocalStorage::ListTagsOptions & rhs) noexcept;
00736
00737 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
00738     const ILocalStorage::ListTagsOptions & lhs,
00739     const ILocalStorage::ListTagsOptions & rhs) noexcept;
00740
00741 [[nodiscard]] QUENTIER_EXPORT bool operator==(
00742     const ILocalStorage::ListGuidsFilters & lhs,
00743     const ILocalStorage::ListGuidsFilters & rhs) noexcept;
00744
00745 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
00746     const ILocalStorage::ListGuidsFilters & lhs,
00747     const ILocalStorage::ListGuidsFilters & rhs) noexcept;
00748
00749 } // namespace quentier::local_storage

```

## 6.28 ILocalStorageNotifier.h

```

00001 /*
00002  * Copyright 2020-2024 Dmitry Ivanov
00003  *
00004  * This file is part of libquentier
00005  *
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00007  * it under the terms of the GNU Lesser General Public License as published by
00008  * the Free Software Foundation, version 3 of the License.
00009  *
00010  * libquentier is distributed in the hope that it will be useful,
00011  * but WITHOUT ANY WARRANTY; without even the implied warranty of
00012  * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/local_storage/ILocalStorage.h>
00022
00023 #include <QObject>
00024
00025 namespace quentier::local_storage {
00026
00027 class QUENTIER_EXPORT ILocalStorageNotifier : public QObject
00028 {
00029     Q_OBJECT
00030 protected:

```

```

00031     explicit ILocalStorageNotifier(QObject * parent = nullptr);
00032
00033 public:
00034     ~ILocalStorageNotifier() override;
00035
00036 Q_SIGNALS:
00037     // Notifications about user related events
00038     void userPut(qevercloud::User user);
00039     void userExpunged(qevercloud::UserID userId);
00040
00041     // Notifications about notebook related events
00042     void notebookPut(qevercloud::Notebook notebook);
00043     void notebookExpunged(QString notebookLocalId);
00044
00045     // Notifications about linked notebooks
00046     void linkedNotebookPut(qevercloud::LinkedNotebook linkedNotebook);
00047     void linkedNotebookExpunged(qevercloud::Guid linkedNotebookGuid);
00048
00049     // Notifications about note related events
00050     void notePut(qevercloud::Note note);
00051
00052     void noteUpdated(
00053         qevercloud::Note note, ILocalStorage::UpdateNoteOptions options);
00054
00055     void noteExpunged(QString noteLocalId);
00056
00057     // Notifications about tag related events
00058     void tagPut(qevercloud::Tag tag);
00059
00060     void tagExpunged(QString tagLocalId, QStringList expungedChildTagLocalIds);
00061
00062     // Notifications about resource related events
00063     void resourcePut(qevercloud::Resource resource);
00064     void resourceMetadataPut(qevercloud::Resource resource);
00065     void resourceExpunged(QString resourceLocalId);
00066
00067     // Notifications about saved search related events
00068     void savedSearchPut(qevercloud::SavedSearch savedSearch);
00069     void savedSearchExpunged(QString savedSearchLocalId);
00070 };
00071
00072 } // namespace quantier::local_storage

```

## 6.29 IPatch.h

```

00001 /*
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00003  *
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00008  * the Free Software Foundation, version 3 of the License.
00009  *
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00011  * but WITHOUT ANY WARRANTY; without even the implied warranty of
00012  * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/utility/Linkage.h>
00022
00023 #include <QFuture>
00024
00025 namespace quantier::local_storage {
00026
00027 class QUENTIER_EXPORT IPatch
00028 {
00029 public:
00030     virtual ~IPatch() noexcept;
00031
00032     [[nodiscard]] virtual int fromVersion() const noexcept = 0;
00033
00034     [[nodiscard]] virtual int toVersion() const noexcept = 0;
00035
00036     [[nodiscard]] virtual QString patchShortDescription() const = 0;
00037
00038     [[nodiscard]] virtual QString patchLongDescription() const = 0;

```

```

00059
00069     [[nodiscard]] virtual QFuture<void> backupLocalStorage() = 0;
00070
00080     [[nodiscard]] virtual QFuture<void> restoreLocalStorageFromBackup() = 0;
00081
00092     [[nodiscard]] virtual QFuture<void> removeLocalStorageBackup() = 0;
00093
00101     [[nodiscard]] virtual QFuture<void> apply() = 0;
00102 };
00103
00104 } // namespace quentier::local_storage

```

## 6.30 LocalStorageOpenException.h

```

00001 /*
00002  * Copyright 2016-2024 Dmitry Ivanov
00003  *
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00005  *
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00008  * the Free Software Foundation, version 3 of the License.
00009  *
00010  * libquentier is distributed in the hope that it will be useful,
00011  * but WITHOUT ANY WARRANTY; without even the implied warranty of
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00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/exception/IQuentierException.h>
00022
00023 namespace quentier::local_storage {
00024
00029 class QUENTIER_EXPORT LocalStorageOpenException : public IQuentierException
00030 {
00031 public:
00032     explicit LocalStorageOpenException(const ErrorString & message);
00033
00034     [[nodiscard]] LocalStorageOpenException * clone() const override;
00035     void raise() const override;
00036
00037 protected:
00038     [[nodiscard]] QString exceptionDisplayName() const override;
00039 };
00040
00041 } // namespace quentier::local_storage

```

## 6.31 LocalStorageOperationException.h

```

00001 /*
00002  * Copyright 2016-2024 Dmitry Ivanov
00003  *
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00005  *
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00009  *
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00011  * but WITHOUT ANY WARRANTY; without even the implied warranty of
00012  * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/exception/IQuentierException.h>
00022
00023 namespace quentier::local_storage {
00024
00029 class QUENTIER_EXPORT LocalStorageOperationException : public IQuentierException

```

```

00030 {
00031 public:
00032     explicit LocalStorageOperationException(ErrorString message);
00033
00034     [[nodiscard]] LocalStorageOperationException * clone() const override;
00035     void raise() const override;
00036
00037 protected:
00038     [[nodiscard]] QString exceptionDisplayName() const override;
00039 };
00040
00041 } // namespace quantier::local_storage

```

## 6.32 NoteSearchQuery.h

```

00001 /*
00002  * Copyright 2016–2023 Dmitry Ivanov
00003  *
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00008  * the Free Software Foundation, version 3 of the License.
00009  *
00010  * libquantier is distributed in the hope that it will be useful,
00011  * but WITHOUT ANY WARRANTY; without even the implied warranty of
00012  * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/types/ErrorString.h>
00022
00023 #include <QList>
00024 #include <QSharedDataPointer>
00025
00026 namespace quantier::local_storage {
00027
00028 class QUENTIER_EXPORT NoteSearchQuery : public Printable
00029 {
00030 public:
00031     explicit NoteSearchQuery();
00032
00033     NoteSearchQuery(const NoteSearchQuery & other);
00034     NoteSearchQuery(NoteSearchQuery && other) noexcept;
00035
00036     NoteSearchQuery & operator=(const NoteSearchQuery & other);
00037     NoteSearchQuery & operator=(NoteSearchQuery && other) noexcept;
00038
00039     ~NoteSearchQuery() override;
00040
00041     [[nodiscard]] bool isEmpty() const;
00042
00043     void clear();
00044
00045     [[nodiscard]] QString queryString() const;
00046
00047     [[nodiscard]] bool setQueryString(
00048         const QString & queryString, ErrorString & error);
00049
00050     [[nodiscard]] QString notebookModifier() const;
00051
00052     [[nodiscard]] bool hasAnyModifier() const;
00053
00054     [[nodiscard]] const QStringList & tagNames() const;
00055     [[nodiscard]] const QStringList & negatedTagNames() const;
00056     [[nodiscard]] bool hasAnyTag() const;
00057     [[nodiscard]] bool hasNegatedAnyTag() const;
00058
00059     [[nodiscard]] const QStringList & titleNames() const;
00060     [[nodiscard]] const QStringList & negatedTitleNames() const;
00061     [[nodiscard]] bool hasAnyTitleName() const;
00062     [[nodiscard]] bool hasNegatedAnyTitleName() const;
00063
00064     [[nodiscard]] const QList<qint64> & creationTimestamps() const;
00065     [[nodiscard]] const QList<qint64> & negatedCreationTimestamps() const;
00066     [[nodiscard]] bool hasAnyCreationTimestamp() const;
00067     [[nodiscard]] bool hasNegatedAnyCreationTimestamp() const;
00068
00069 };

```

```

00077 [[nodiscard]] const QList<qint64> & modificationTimestamps() const;
00078 [[nodiscard]] const QList<qint64> & negatedModificationTimestamps() const;
00079 [[nodiscard]] bool hasAnyModificationTimestamp() const;
00080 [[nodiscard]] bool hasNegatedAnyModificationTimestamp() const;
00081
00082 [[nodiscard]] const QStringList & resourceMimeTypes() const;
00083 [[nodiscard]] const QStringList & negatedResourceMimeTypes() const;
00084 [[nodiscard]] bool hasAnyResourceMimeType() const;
00085 [[nodiscard]] bool hasNegatedAnyResourceMimeType() const;
00086
00087 [[nodiscard]] const QList<qint64> & subjectDateTimestamps() const;
00088 [[nodiscard]] const QList<qint64> & negatedSubjectDateTimestamps() const;
00089 [[nodiscard]] bool hasAnySubjectDateTimestamp() const;
00090 [[nodiscard]] bool hasNegatedAnySubjectDateTimestamp() const;
00091
00092 [[nodiscard]] const QList<double> & latitudes() const;
00093 [[nodiscard]] const QList<double> & negatedLatitudes() const;
00094 [[nodiscard]] bool hasAnyLatitude() const;
00095 [[nodiscard]] bool hasNegatedAnyLatitude() const;
00096
00097 [[nodiscard]] const QList<double> & longitudes() const;
00098 [[nodiscard]] const QList<double> & negatedLongitudes() const;
00099 [[nodiscard]] bool hasAnyLongitude() const;
00100 [[nodiscard]] bool hasNegatedAnyLongitude() const;
00101
00102 [[nodiscard]] const QList<double> & altitudes() const;
00103 [[nodiscard]] const QList<double> & negatedAltitudes() const;
00104 [[nodiscard]] bool hasAnyAltitude() const;
00105 [[nodiscard]] bool hasNegatedAnyAltitude() const;
00106
00107 [[nodiscard]] const QStringList & authors() const;
00108 [[nodiscard]] const QStringList & negatedAuthors() const;
00109 [[nodiscard]] bool hasAnyAuthor() const;
00110 [[nodiscard]] bool hasNegatedAnyAuthor() const;
00111
00112 [[nodiscard]] const QStringList & sources() const;
00113 [[nodiscard]] const QStringList & negatedSources() const;
00114 [[nodiscard]] bool hasAnySource() const;
00115 [[nodiscard]] bool hasNegatedAnySource() const;
00116
00117 [[nodiscard]] const QStringList & sourceApplications() const;
00118 [[nodiscard]] const QStringList & negatedSourceApplications() const;
00119 [[nodiscard]] bool hasAnySourceApplication() const;
00120 [[nodiscard]] bool hasNegatedAnySourceApplication() const;
00121
00122 [[nodiscard]] const QStringList & contentClasses() const;
00123 [[nodiscard]] const QStringList & negatedContentClasses() const;
00124 [[nodiscard]] bool hasAnyContentClass() const;
00125 [[nodiscard]] bool hasNegatedAnyContentClass() const;
00126
00127 [[nodiscard]] const QStringList & placeNames() const;
00128 [[nodiscard]] const QStringList & negatedPlaceNames() const;
00129 [[nodiscard]] bool hasAnyPlaceName() const;
00130 [[nodiscard]] bool hasNegatedAnyPlaceName() const;
00131
00132 [[nodiscard]] const QStringList & applicationData() const;
00133 [[nodiscard]] const QStringList & negatedApplicationData() const;
00134 [[nodiscard]] bool hasAnyApplicationData() const;
00135 [[nodiscard]] bool hasNegatedAnyApplicationData() const;
00136
00137 [[nodiscard]] const QList<qint64> & reminderOrders() const;
00138 [[nodiscard]] const QList<qint64> & negatedReminderOrders() const;
00139 [[nodiscard]] bool hasAnyReminderOrder() const;
00140 [[nodiscard]] bool hasNegatedAnyReminderOrder() const;
00141
00142 [[nodiscard]] const QList<qint64> & reminderTimes() const;
00143 [[nodiscard]] const QList<qint64> & negatedReminderTimes() const;
00144 [[nodiscard]] bool hasAnyReminderTime() const;
00145 [[nodiscard]] bool hasNegatedAnyReminderTime() const;
00146
00147 [[nodiscard]] const QList<qint64> & reminderDoneTimes() const;
00148 [[nodiscard]] const QList<qint64> & negatedReminderDoneTimes() const;
00149 [[nodiscard]] bool hasAnyReminderDoneTime() const;
00150 [[nodiscard]] bool hasNegatedAnyReminderDoneTime() const;
00151
00152 [[nodiscard]] bool hasUnfinishedToDo() const;
00153 [[nodiscard]] bool hasNegatedUnfinishedToDo() const;
00154
00155 [[nodiscard]] bool hasFinishedToDo() const;
00156 [[nodiscard]] bool hasNegatedFinishedToDo() const;
00157
00158 [[nodiscard]] bool hasAnyToDo() const;
00159 [[nodiscard]] bool hasNegatedAnyToDo() const;
00160
00161 [[nodiscard]] bool hasEncryption() const;
00162 [[nodiscard]] bool hasNegatedEncryption() const;
00163

```



```

00164     [[nodiscard]] const QStringList & contentSearchTerms() const;
00165     [[nodiscard]] const QStringList & negatedContentSearchTerms() const;
00166     [[nodiscard]] bool hasAnyContentSearchTerms() const;
00167
00168     [[nodiscard]] bool isMatcheable() const;
00169
00170     QTextStream & print(QTextStream & strm) const override;
00171
00172 private:
00173     class Data;
00174     QSharedDataPointer<Data> d;
00175 };
00176
00177 [[nodiscard]] QUENTIER_EXPORT bool operator==(
00178     const NoteSearchQuery & lhs, const NoteSearchQuery & rhs) noexcept;
00179
00180 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
00181     const NoteSearchQuery & lhs, const NoteSearchQuery & rhs) noexcept;
00182
00183 } // namespace quantier::local_storage

```

## 6.33 MockILocalStorage.h

```

00001 /*
00002  * Copyright 2021-2024 Dmitry Ivanov
00003  *
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00007  * it under the terms of the GNU Lesser General Public License as published by
00008  * the Free Software Foundation, version 3 of the License.
00009  *
00010  * libquantier is distributed in the hope that it will be useful,
00011  * but WITHOUT ANY WARRANTY; without even the implied warranty of
00012  * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/local_storage/ILocalStorage.h>
00022
00023 #include <gmock/gmock.h>
00024
00025 namespace quantier::local_storage::tests::mocks {
00026
00027     class MockILocalStorage : public ILocalStorage
00028     {
00029     public:
00030         MOCK_METHOD(QFuture<bool>, isVersionTooHigh, (), (const, override));
00031         MOCK_METHOD(QFuture<bool>, requiresUpgrade, (), (const, override));
00032
00033         MOCK_METHOD(
00034             QFuture<QList<IPatchPtr>>, requiredPatches, (), (const, override));
00035
00036         MOCK_METHOD(QFuture<qint32>, version, (), (const, override));
00037
00038         MOCK_METHOD(
00039             QFuture<qint32>, highestSupportedVersion, (), (const, override));
00040
00041         MOCK_METHOD(QFuture<quint32>, userCount, (), (const, override));
00042         MOCK_METHOD(QFuture<void>, putUser, (qevercloud::User user), (override));
00043
00044         MOCK_METHOD(
00045             QFuture<std::optional<qevercloud::User>>, findUserById,
00046             (qevercloud::UserID userId), (const, override));
00047
00048         MOCK_METHOD(
00049             QFuture<void>, expungeUserById, (qevercloud::UserID userId),
00050             (override));
00051
00052         MOCK_METHOD(QFuture<quint32>, notebookCount, (), (const, override));
00053
00054         MOCK_METHOD(
00055             QFuture<void>, putNotebook, (qevercloud::Notebook notebook),
00056             (override));
00057
00058         MOCK_METHOD(
00059             QFuture<std::optional<qevercloud::Notebook>>, findNotebookByLocalId,
00060             (QString localId), (const, override));

```

```

00061
00062     MOCK_METHOD (
00063         QFuture<std::optional<qevercloud::Notebook>, findNotebookByGuid,
00064         (qevercloud::Guid guid), (const, override));
00065
00066     MOCK_METHOD (
00067         QFuture<std::optional<qevercloud::Notebook>, findNotebookByName,
00068         (QString name, std::optional<qevercloud::Guid> linkedNotebookGuid),
00069         (const, override));
00070
00071     MOCK_METHOD (
00072         QFuture<std::optional<qevercloud::Notebook>, findDefaultNotebook, (),
00073         (const, override));
00074
00075     MOCK_METHOD (
00076         QFuture<void>, expungeNotebookByLocalId, (QString localId), (override));
00077
00078     MOCK_METHOD (
00079         QFuture<void>, expungeNotebookByGuid, (qevercloud::Guid guid),
00080         (override));
00081
00082     MOCK_METHOD (
00083         QFuture<void>, expungeNotebookByName,
00084         (QString name, std::optional<qevercloud::Guid> linkedNotebookGuid),
00085         (override));
00086
00087     MOCK_METHOD (
00088         QFuture<QList<qevercloud::Notebook>>, listNotebooks,
00089         (ListNotebooksOptions options), (const, override));
00090
00091     MOCK_METHOD (
00092         QFuture<QList<qevercloud::SharedNotebook>>, listSharedNotebooks,
00093         (qevercloud::Guid notebookGuid), (const, override));
00094
00095     MOCK_METHOD (
00096         QFuture<QSet<qevercloud::Guid>>, listNotebookGuids,
00097         (ListGuidsFilters filters,
00098         std::optional<qevercloud::Guid> linkedNotebookGuid),
00099         (const, override));
00100
00101     MOCK_METHOD (QFuture<quint32>, linkedNotebookCount, (), (const, override));
00102
00103     MOCK_METHOD (
00104         QFuture<void>, putLinkedNotebook,
00105         (qevercloud::LinkedNotebook linkedNotebook), (override));
00106
00107     MOCK_METHOD (
00108         QFuture<std::optional<qevercloud::LinkedNotebook>,
00109         findLinkedNotebookByGuid, (qevercloud::Guid guid), (const, override));
00110
00111     MOCK_METHOD (
00112         QFuture<void>, expungeLinkedNotebookByGuid, (qevercloud::Guid guid),
00113         (override));
00114
00115     MOCK_METHOD (
00116         QFuture<QList<qevercloud::LinkedNotebook>>, listLinkedNotebooks,
00117         (ListLinkedNotebooksOptions options), (const, override));
00118
00119     MOCK_METHOD (
00120         QFuture<quint32>, noteCount, (NoteCountOptions options),
00121         (const, override));
00122
00123     MOCK_METHOD (
00124         QFuture<quint32>, noteCountPerNotebookLocalId,
00125         (QString notebookLocalId, NoteCountOptions options), (const, override));
00126
00127     MOCK_METHOD (
00128         QFuture<quint32>, noteCountPerTagLocalId,
00129         (QString tagLocalId, NoteCountOptions options), (const, override));
00130
00131     MOCK_METHOD (
00132         (QFuture<QHash<QString, quint32>>), noteCountsPerTags,
00133         (ListTagsOptions listTagsOptions, NoteCountOptions options),
00134         (const, override));
00135
00136     MOCK_METHOD (
00137         QFuture<quint32>, noteCountPerNotebookAndTagLocalIds,
00138         (QStringList notebookLocalIds, QStringList tagLocalIds,
00139         NoteCountOptions options),
00140         (const, override));
00141
00142     MOCK_METHOD (QFuture<void>, putNote, (qevercloud::Note note), (override));
00143
00144     MOCK_METHOD (
00145         QFuture<void>, updateNote,
00146         (qevercloud::Note note, UpdateNoteOptions options), (override));
00147

```

```

00148     MOCK_METHOD (
00149         QFuture<std::optional<qevercloud::Note>, findNoteByLocalId,
00150         (QString localId, FetchNoteOptions options), (const, override));
00151
00152     MOCK_METHOD (
00153         QFuture<std::optional<qevercloud::Note>, findNoteByGuid,
00154         (qevercloud::Guid guid, FetchNoteOptions options), (const, override));
00155
00156     MOCK_METHOD (
00157         QFuture<void>, expungeNoteByLocalId, (QString localId), (override));
00158
00159     MOCK_METHOD (
00160         QFuture<void>, expungeNoteByGuid, (qevercloud::Guid guid), (override));
00161
00162     MOCK_METHOD (
00163         QFuture<QList<qevercloud::Note>>, listNotes,
00164         (FetchNoteOptions fetchOptions, ListNotesOptions options),
00165         (const, override));
00166
00167     MOCK_METHOD (
00168         QFuture<QList<qevercloud::Note>>, listNotesPerNotebookLocalId,
00169         (QString notebookLocalId, FetchNoteOptions fetchOptions,
00170         ListNotesOptions options),
00171         (const, override));
00172
00173     MOCK_METHOD (
00174         QFuture<QList<qevercloud::Note>>, listNotesPerTagLocalId,
00175         (QString tagLocalId, FetchNoteOptions fetchOptions,
00176         ListNotesOptions options),
00177         (const, override));
00178
00179     MOCK_METHOD (
00180         QFuture<QList<qevercloud::Note>>, listNotesPerNotebookAndTagLocalIds,
00181         (QStringList notebookLocalIds, QStringList tagLocalIds,
00182         FetchNoteOptions fetchOptions, ListNotesOptions options),
00183         (const, override));
00184
00185     MOCK_METHOD (
00186         QFuture<QList<qevercloud::Note>>, listNotesByLocalIds,
00187         (QStringList noteLocalIds, FetchNoteOptions fetchOptions,
00188         ListNotesOptions options),
00189         (const, override));
00190
00191     MOCK_METHOD (
00192         QFuture<QSet<qevercloud::Guid>>, listNoteGuids,
00193         (ListGuidsFilters filters,
00194         std::optional<qevercloud::Guid> linkedNotebookGuid),
00195         (const, override));
00196
00197     MOCK_METHOD (
00198         QFuture<QList<qevercloud::Note>>, queryNotes,
00199         (NoteSearchQuery query, FetchNoteOptions fetchOptions),
00200         (const, override));
00201
00202     MOCK_METHOD (
00203         QFuture<QStringList>, queryNoteLocalIds, (NoteSearchQuery query),
00204         (const, override));
00205
00206     MOCK_METHOD (QFuture<quint32>, tagCount, (), (const, override));
00207     MOCK_METHOD (QFuture<void>, putTag, (qevercloud::Tag tag), (override));
00208
00209     MOCK_METHOD (
00210         QFuture<std::optional<qevercloud::Tag>, findTagByLocalId,
00211         (QString tagLocalId), (const, override));
00212
00213     MOCK_METHOD (
00214         QFuture<std::optional<qevercloud::Tag>, findTagByGuid,
00215         (qevercloud::Guid tagGuid), (const, override));
00216
00217     MOCK_METHOD (
00218         QFuture<std::optional<qevercloud::Tag>, findTagByName,
00219         (QString tagName, std::optional<QString> linkedNotebookGuid),
00220         (const, override));
00221
00222     MOCK_METHOD (
00223         QFuture<QList<qevercloud::Tag>>, listTags, (ListTagsOptions options),
00224         (const, override));
00225
00226     MOCK_METHOD (
00227         QFuture<QList<qevercloud::Tag>>, listTagsPerNoteLocalId,
00228         (QString noteLocalId, ListTagsOptions options), (const, override));
00229
00230     MOCK_METHOD (
00231         QFuture<QSet<qevercloud::Guid>>, listTagGuids,
00232         (ListGuidsFilters filters,
00233         std::optional<qevercloud::Guid> linkedNotebookGuid),
00234         (const, override));

```

```

00235
00236     MOCK_METHOD (
00237         QFuture<void>, expungeTagByLocalId, (QString tagLocalId), (override));
00238
00239     MOCK_METHOD (
00240         QFuture<void>, expungeTagByGuid, (qevercloud::Guid tagGuid),
00241         (override));
00242
00243     MOCK_METHOD (
00244         QFuture<void>, expungeTagByName,
00245         (QString name, std::optional<qevercloud::Guid> linkedNotebookGuid),
00246         (override));
00247
00248     MOCK_METHOD (
00249         QFuture<quint32>, resourceCount, (NoteCountOptions options),
00250         (const, override));
00251
00252     MOCK_METHOD (
00253         QFuture<quint32>, resourceCountPerNoteLocalId, (QString noteLocalId),
00254         (const, override));
00255
00256     MOCK_METHOD (
00257         QFuture<void>, putResource, (qevercloud::Resource resource),
00258         (override));
00259
00260     MOCK_METHOD (
00261         QFuture<std::optional<qevercloud::Resource>, findResourceByLocalId,
00262         (QString resourceLocalId, FetchResourceOptions options),
00263         (const, override));
00264
00265     MOCK_METHOD (
00266         QFuture<std::optional<qevercloud::Resource>, findResourceByGuid,
00267         (qevercloud::Guid resourceGuid, FetchResourceOptions options),
00268         (const, override));
00269
00270     MOCK_METHOD (
00271         QFuture<void>, expungeResourceByLocalId, (QString resourceLocalId),
00272         (override));
00273
00274     MOCK_METHOD (
00275         QFuture<void>, expungeResourceByGuid, (qevercloud::Guid resourceGuid),
00276         (override));
00277
00278     MOCK_METHOD (QFuture<quint32>, savedSearchCount, (), (const, override));
00279
00280     MOCK_METHOD (
00281         QFuture<void>, putSavedSearch, (qevercloud::SavedSearch search),
00282         (override));
00283
00284     MOCK_METHOD (
00285         QFuture<std::optional<qevercloud::SavedSearch>,
00286         findSavedSearchByLocalId, (QString localId), (const, override));
00287
00288     MOCK_METHOD (
00289         QFuture<std::optional<qevercloud::SavedSearch>, findSavedSearchByGuid,
00290         (qevercloud::Guid guid), (const, override));
00291
00292     MOCK_METHOD (
00293         QFuture<std::optional<qevercloud::SavedSearch>, findSavedSearchByName,
00294         (QString name), (const, override));
00295
00296     MOCK_METHOD (
00297         QFuture<QList<qevercloud::SavedSearch>>, listSavedSearches,
00298         (ListSavedSearchesOptions options), (const, override));
00299
00300     MOCK_METHOD (
00301         QFuture<QSet<qevercloud::Guid>>, listSavedSearchGuids,
00302         (ListGuidsFilters filters), (const, override));
00303
00304     MOCK_METHOD (
00305         QFuture<void>, expungeSavedSearchByLocalId, (QString localId),
00306         (override));
00307
00308     MOCK_METHOD (
00309         QFuture<void>, expungeSavedSearchByGuid, (qevercloud::Guid guid),
00310         (override));
00311
00312     MOCK_METHOD (
00313         QFuture<qint32>, highestUpdateSequenceNumber, (HighestUsnOption option),
00314         (const, override));
00315
00316     MOCK_METHOD (
00317         QFuture<qint32>, highestUpdateSequenceNumber,
00318         (qevercloud::Guid linkedNotebookGuid), (const, override));
00319
00320     MOCK_METHOD (ILocalStorageNotifier *, notifier, (), (const, override));
00321 };

```

```

00322
00323 } // namespace quentier::local_storage::tests::mocks

```

## 6.34 QuentierLogger.h

```

00001 /*
00002  * Copyright 2016-2024 Dmitry Ivanov
00003  *
00004  * This file is part of libquentier
00005  *
00006  * libquentier is free software; you can redistribute it and/or modify
00007  * it under the terms of the GNU Lesser General Public License as published by
00008  * the Free Software Foundation, version 3 of the License.
00009  *
00010  * libquentier is distributed in the hope that it will be useful,
00011  * but WITHOUT ANY WARRANTY; without even the implied warranty of
00012  * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <QDebug>
00024 #include <QRegularExpression>
00025 #include <QString>
00026 #include <QTextStream>
00027
00028 namespace quentier {
00029
00034 enum class LogLevel
00035 {
00036     Trace,
00037     Debug,
00038     Info,
00039     Warning,
00040     Error
00041 };
00042
00043 QUINTIER_EXPORT QDebug & operator<<(QDebug & dbg, LogLevel logLevel);
00044
00045 QUINTIER_EXPORT QTextStream & operator<<(QTextStream & strm, LogLevel logLevel);
00046
00054 void QUINTIER_EXPORT QuentierInitializeLogging();
00055
00059 void QUINTIER_EXPORT QuentierAddLogEntry(
00060     const QString & sourceFileName, int sourceFileLineNumber,
00061     const QString & component, const QString & message, LogLevel logLevel);
00062
00068 LogLevel QUINTIER_EXPORT QuentierMinLogLevel();
00069
00073 void QUINTIER_EXPORT QuentierSetMinLogLevel(LogLevel logLevel);
00074
00079 void QUINTIER_EXPORT QuentierAddStdOutLogDestination();
00080
00085 [[nodiscard]] bool QUINTIER_EXPORT QuentierIsLogLevelActive(LogLevel logLevel);
00086
00090 [[nodiscard]] QString QUINTIER_EXPORT QuentierLogFilesDirPath();
00091
00095 void QUINTIER_EXPORT QuentierRestartLogging();
00096
00100 [[nodiscard]] QRegularExpression QUINTIER_EXPORT QuentierLogComponentFilter();
00101
00105 void QUINTIER_EXPORT
00106     QuentierSetLogComponentFilter(const QRegularExpression & filter);
00107
00108 } // namespace quentier
00109
00110 #define QNLOG_PRIVATE_BASE(component, message, level)
00111     if (quentier::QuentierIsLogLevelActive(quentier::LogLevel::level)) {
00112         QString msg;
00113         QDebug dbg(&msg);
00114         dbg.nospace();
00115         dbg.noquote();
00116         dbg << message;
00117         quentier::QuentierAddLogEntry(
00118             QStringLiteral(__FILE__), __LINE__, QString::fromUtf8(component),
00119             msg, quentier::LogLevel::level);
00120     }

```

```

00121 // QNLOG_PRIVATE_BASE
00122
00123 #define QNTRACE(component, message) \
00124     QNLOG_PRIVATE_BASE(component, message, Trace) \
00125 // QNTRACE
00126
00127 #define QNDEBUG(component, message) \
00128     QNLOG_PRIVATE_BASE(component, message, Debug) \
00129 // QNDEBUG
00130
00131 #define QNINFO(component, message) \
00132     QNLOG_PRIVATE_BASE(component, message, Info) \
00133 // QNINFO
00134
00135 #define QNWARNING(component, message) \
00136     QNLOG_PRIVATE_BASE(component, message, Warning) \
00137 // QNWARNING
00138
00139 #define QNERROR(component, message) \
00140     QNLOG_PRIVATE_BASE(component, message, Error) \
00141 // QNERROR
00142
00143 #define QUENTIER_SET_MIN_LOG_LEVEL(level) \
00144     quentier::QuentierSetMinLogLevel(quentier::LogLevel::level) \
00145 // QUENTIER_SET_MIN_LOG_LEVEL
00146
00147 #define QUENTIER_INITIALIZE_LOGGING() quentier::QuentierInitializeLogging()
00148 // QUENTIER_INITIALIZE_LOGGING
00149
00150 // clang-format off
00151 #define QUENTIER_ADD_STDOUT_LOG_DESTINATION() \
00152     quentier::QuentierAddStdOutLogDestination() \
00153 // QUENTIER_ADD_STDOUT_LOG_DESTINATION
00154 // clang-format on
00155
00156 #define QNLOG_FILE_LINENUMBER_DELIMITER ":"

```

## 6.35 INoteEditorBackend.h

```

00001 /*
00002  * Copyright 2016-2024 Dmitry Ivanov
00003  *
00004  * This file is part of libquentier
00005  *
00006  * libquentier is free software; you can redistribute it and/or modify
00007  * it under the terms of the GNU Lesser General Public License as published by
00008  * the Free Software Foundation, version 3 of the License.
00009  *
00010  * libquentier is distributed in the hope that it will be useful,
00011  * but WITHOUT ANY WARRANTY; without even the implied warranty of
00012  * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/local_storage/Fwd.h>
00022 #include <quentier/utility/Linkage.h>
00023 #include <quentier/utility/Printable.h>
00024
00025 #include <QPalette>
00026 #include <QPrinter>
00027 #include <QStringList>
00028 #include <QThread>
00029 #include <QWidget>
00030
00031 class QUndoStack;
00032
00033 namespace quentier {
00034
00035     class Account;
00036     class ErrorString;
00037     class NoteEditor;
00038     class SpellChecker;
00039
00040     class QUENTIER_EXPORT INoteEditorBackend
00041     {
00042     public:
00043         virtual ~INoteEditorBackend() noexcept;
00044

```

```

00045     virtual void initialize(
00046         local_storage::ILocalStoragePtr localStorage,
00047         SpellChecker & spellChecker, const Account & account,
00048         QThread * pBackgroundJobsThread) = 0;
00049
00050     [[nodiscard]] virtual QObject * object() = 0; // provide QObject interface
00051     [[nodiscard]] virtual QWidget * widget() = 0; // provide QWidget interface
00052
00053     virtual void setAccount(const Account & account) = 0;
00054     virtual void setUndoStack(QUndoStack * pUndoStack) = 0;
00055
00056     virtual void setInitialPageHtml(const QString & html) = 0;
00057     virtual void setNoteNotFoundPageHtml(const QString & html) = 0;
00058     virtual void setNoteDeletedPageHtml(const QString & html) = 0;
00059     virtual void setNoteLoadingPageHtml(const QString & html) = 0;
00060
00061     [[nodiscard]] virtual bool isNoteLoaded() const = 0;
00062     [[nodiscard]] virtual qint64 idleTime() const = 0;
00063
00064     virtual void convertToNote() = 0;
00065     virtual void saveNoteToLocalStorage() = 0;
00066     virtual void setNoteTitle(const QString & noteTitle) = 0;
00067
00068     virtual void setTagIds(
00069         const QStringList & tagLocalUids, const QStringList & tagGuids) = 0;
00070
00071     virtual void undo() = 0;
00072     virtual void redo() = 0;
00073     virtual void cut() = 0;
00074     virtual void copy() = 0;
00075     virtual void paste() = 0;
00076     virtual void pasteUnformatted() = 0;
00077     virtual void selectAll() = 0;
00078
00079     virtual void formatSelectionAsSourceCode() = 0;
00080
00081     virtual void fontMenu() = 0;
00082     virtual void textBold() = 0;
00083     virtual void textItalic() = 0;
00084     virtual void textUnderline() = 0;
00085     virtual void textStrikethrough() = 0;
00086     virtual void textHighlight() = 0;
00087
00088     virtual void alignLeft() = 0;
00089     virtual void alignCenter() = 0;
00090     virtual void alignRight() = 0;
00091     virtual void alignFull() = 0;
00092
00093     [[nodiscard]] virtual QString selectedText() const = 0;
00094     [[nodiscard]] virtual bool hasSelection() const = 0;
00095
00096     virtual void findNext(const QString & text, bool matchCase) const = 0;
00097
00098     virtual void findPrevious(const QString & text, bool matchCase) const = 0;
00099
00100     virtual void replace(
00101         const QString & textToReplace, const QString & replacementText,
00102         bool matchCase) = 0;
00103
00104     virtual void replaceAll(
00105         const QString & textToReplace, const QString & replacementText,
00106         bool matchCase) = 0;
00107
00108     virtual void insertToDoCheckbox() = 0;
00109
00110     virtual void insertInAppNoteLink(
00111         const QString & userId, const QString & shardId,
00112         const QString & noteGuid, const QString & linkText) = 0;
00113
00114     virtual void setSpellcheck(bool enabled) = 0;
00115     [[nodiscard]] virtual bool spellCheckEnabled() const = 0;
00116
00117     virtual void setFont(const QFont & font) = 0;
00118     virtual void setFontHeight(int height) = 0;
00119     virtual void setFontColor(const QColor & color) = 0;
00120     virtual void setBackgroundColor(const QColor & color) = 0;
00121
00122     [[nodiscard]] virtual QPalette defaultPalette() const = 0;
00123     virtual void setDefaultPalette(const QPalette & pal) = 0;
00124
00125     [[nodiscard]] virtual const QFont * defaultFont() const = 0;
00126     virtual void setDefaultFont(const QFont & font) = 0;
00127
00128     virtual void insertHorizontalLine() = 0;
00129
00130     virtual void increaseFontSize() = 0;
00131     virtual void decreaseFontSize() = 0;

```

```

00132
00133     virtual void increaseIndentation() = 0;
00134     virtual void decreaseIndentation() = 0;
00135
00136     virtual void insertBulletedList() = 0;
00137     virtual void insertNumberedList() = 0;
00138
00139     virtual void insertTableDialog() = 0;
00140
00141     virtual void insertFixedWidthTable(
00142         int rows, int columns, int widthInPixels) = 0;
00143
00144     virtual void insertRelativeWidthTable(
00145         int rows, int columns, double relativeWidth) = 0;
00146
00147     virtual void insertTableRow() = 0;
00148     virtual void insertTableColumn() = 0;
00149     virtual void removeTableRow() = 0;
00150     virtual void removeTableColumn() = 0;
00151
00152     virtual void addAttachmentDialog() = 0;
00153     virtual void saveAttachmentDialog(const QByteArray & resourceHash) = 0;
00154     virtual void saveAttachmentUnderCursor() = 0;
00155     virtual void openAttachment(const QByteArray & resourceHash) = 0;
00156     virtual void openAttachmentUnderCursor() = 0;
00157     virtual void copyAttachment(const QByteArray & resourceHash) = 0;
00158     virtual void copyAttachmentUnderCursor() = 0;
00159     virtual void removeAttachment(const QByteArray & resourceHash) = 0;
00160     virtual void removeAttachmentUnderCursor() = 0;
00161     virtual void renameAttachment(const QByteArray & resourceHash) = 0;
00162     virtual void renameAttachmentUnderCursor() = 0;
00163
00164     enum class Rotation
00165     {
00166         Clockwise,
00167         Counterclockwise
00168     };
00169
00170     friend QUINTIER_EXPORT QTextStream & operator<<(
00171         QTextStream & strm, Rotation rotation);
00172
00173     friend QUINTIER_EXPORT QDebug & operator<<(QDebug & dbg, Rotation rotation);
00174
00175     virtual void rotateImageAttachment(
00176         const QByteArray & resourceHash, Rotation rotationDirection) = 0;
00177
00178     virtual void rotateImageAttachmentUnderCursor(
00179         Rotation rotationDirection) = 0;
00180
00181     virtual void encryptSelectedText() = 0;
00182
00183     virtual void decryptEncryptedTextUnderCursor() = 0;
00184
00185     virtual void decryptEncryptedText(
00186         QString encryptedText, QString cipher, QString keyLength, QString hint,
00187         QString enCryptIndex) = 0;
00188
00189     virtual void hideDecryptedTextUnderCursor() = 0;
00190
00191     virtual void hideDecryptedText(
00192         QString encryptedText, QString decryptedText, QString cipher,
00193         QString keyLength, QString hint, QString enDecryptedIndex) = 0;
00194
00195     virtual void editHyperlinkDialog() = 0;
00196     virtual void copyHyperlink() = 0;
00197     virtual void removeHyperlink() = 0;
00198
00199     virtual void onNoteLoadCancelled() = 0;
00200
00201     [[nodiscard]] virtual bool print(
00202         QPrinter & printer, ErrorString & errorDescription) = 0;
00203
00204     [[nodiscard]] virtual bool exportToPdf(
00205         const QString & absoluteFilePath, ErrorString & errorDescription) = 0;
00206
00207     [[nodiscard]] virtual bool exportToEnex(
00208         const QStringList & tagNames, QString & enex,
00209         ErrorString & errorDescription) = 0;
00210
00211     [[nodiscard]] virtual QString currentNoteLocalId() const = 0;
00212     virtual void setCurrentNoteLocalId(const QString & noteLocalUid) = 0;
00213
00214     virtual void clear() = 0;
00215
00216     [[nodiscard]] virtual bool isModified() const = 0;
00217     [[nodiscard]] virtual bool isEditorPageModified() const = 0;
00218

```



```

00219     virtual void setFocusToEditor() = 0;
00220
00221 protected:
00222     INoteEditorBackend(NoteEditor * parent);
00223     NoteEditor * m_pNoteEditor;
00224 };
00225
00226 } // namespace quentier

```

## 6.36 NoteEditor.h

```

00001 /*
00002  * Copyright 2016-2024 Dmitry Ivanov
00003  *
00004  * This file is part of libquentier
00005  *
00006  * libquentier is free software; you can redistribute it and/or modify
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00014  *
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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/local_storage/Fwd.h>
00022 #include <quentier/types/ErrorMessage.h>
00023 #include <quentier/utility/Linkage.h>
00024
00025 #include <qevercloud/types/Note.h>
00026 #include <qevercloud/types/Notebook.h>
00027
00028 #include <QPrinter>
00029 #include <QStringList>
00030 #include <QThread>
00031 #include <QWidget>
00032
00033 class QUndoStack;
00034
00035 namespace quentier {
00036
00037     class Account;
00038     class INoteEditorBackend;
00039     class SpellChecker;
00040
00041     class QUENTIER_EXPORT NoteEditor : public QWidget
00042     {
00043     public:
00044         explicit NoteEditor(
00045             QWidget * parent = nullptr,
00046             #if QT_VERSION >= QT_VERSION_CHECK(5, 15, 0)
00047             Qt::WindowFlags flags = {});
00048         #else
00049             Qt::WindowFlags flags = 0); // NOLINT
00050         #endif
00051
00052         ~NoteEditor() noexcept override;
00053
00054         void initialize(
00055             local_storage::ILocalStoragePtr localStorage,
00056             SpellChecker & spellChecker, const Account & account,
00057             QThread * pBackgroundJobsThread = nullptr);
00058
00059         [[nodiscard]] INoteEditorBackend * backend() noexcept;
00060
00061         void setBackend(INoteEditorBackend * backend);
00062
00063         void setAccount(const Account & account);
00064
00065         [[nodiscard]] const QUndoStack * undoStack() const noexcept;
00066
00067         void setUndoStack(QUndoStack * pUndoStack);
00068
00069         void setInitialPageHtml(const QString & html);
00070
00071         void setNoteNotFoundPageHtml(const QString & html);
00072
00073     };
00074
00075 }

```

```

00117
00123     void setNoteDeletedPageHtml(const QString & html);
00124
00129     void setNoteLoadingPageHtml(const QString & html);
00130
00134     [[nodiscard]] QString currentNoteLocalId() const;
00135
00143     void setCurrentNoteLocalId(const QString & noteLocalId);
00144
00148     void clear();
00149
00154     [[nodiscard]] bool isModified() const noexcept;
00155
00160     [[nodiscard]] bool isEditorPageModified() const noexcept;
00161
00166     [[nodiscard]] bool isNoteLoaded() const noexcept;
00167
00173     [[nodiscard]] quint64 idleTime() const noexcept;
00174
00178     void setFocus();
00179
00180     [[nodiscard]] QString selectedText() const noexcept;
00181     [[nodiscard]] bool hasSelection() const noexcept;
00182
00183     [[nodiscard]] bool spellCheckEnabled() const noexcept;
00184
00185     [[nodiscard]] bool print(
00186         QPrinter & printer, ErrorString & errorDescription);
00187
00188     [[nodiscard]] bool exportToPdf(
00189         const QString & absoluteFilePath, ErrorString & errorDescription);
00190
00191     [[nodiscard]] bool exportToEnex(
00192         const QStringList & tagNames, QString & enex,
00193         ErrorString & errorDescription);
00194
00202     [[nodiscard]] QPalette defaultPalette() const;
00203
00208     [[nodiscard]] const QFont * defaultFont() const;
00209
00210     Q_SIGNALS:
00215     void contentChanged();
00216
00222     void noteAndNotebookFoundInLocalStorage(
00223         qevercloud::Note note, qevercloud::Notebook notebook);
00224
00229     void noteNotFound(QString noteLocalId);
00230
00236     void noteDeleted(QString noteLocalId);
00237
00243     void noteModified();
00244
00249     void notifyError(ErrorString error);
00250
00255     void inAppNoteLinkClicked(
00256         QString userId, QString shardId, QString noteGuid);
00257
00269     void inAppNoteLinkPasteRequested(
00270         QString url, QString userId, QString shardId, QString noteGuid);
00271
00272     void convertedToNote(qevercloud::Note note);
00273     void cantConvertToNote(ErrorString error);
00274
00275     void noteEditorHtmlUpdated(QString html);
00276
00277     void currentNoteChanged(qevercloud::Note note);
00278
00279     void spellCheckerNotReady();
00280     void spellCheckerReady();
00281
00282     void noteLoaded();
00283
00290     void noteSavedToLocalStorage(QString noteLocalId);
00291
00296     void failedToSaveNoteToLocalStorage(
00297         ErrorString errorDescription, QString noteLocalId);
00298
00299     // Signals to notify anyone interested of the formatting at the current
00300     // cursor position
00301     void textBoldState(bool state);
00302     void textItalicState(bool state);
00303     void textUnderlineState(bool state);
00304     void textStrikethroughState(bool state);
00305     void textAlignLeftState(bool state);
00306     void textAlignCenterState(bool state);
00307     void textAlignRightState(bool state);
00308     void textAlignFullState(bool state);

```

```

00309     void textInsideOrderedListState(bool state);
00310     void textInsideUnorderedListState(bool state);
00311     void textInsideTableState(bool state);
00312
00313     void textFontFamilyChanged(QString fontFamily);
00314     void textFontSizeChanged(int fontSize);
00315
00316     void insertTableDialogRequested();
00317
00318 public Q_SLOTS:
00319     void convertToNote();
00320
00321     void saveNoteToLocalStorage();
00322
00323     void setNoteTitle(const QString & noteTitle);
00324
00325     void setTagIds(
00326         const QStringList & tagLocalIds, const QStringList & tagGuids);
00327
00328     void undo();
00329     void redo();
00330     void cut();
00331     void copy();
00332     void paste();
00333     void pasteUnformatted();
00334     void selectAll();
00335
00336     void formatSelectionAsSourceCode();
00337
00338     void fontMenu();
00339     void textBold();
00340     void textItalic();
00341     void textUnderline();
00342     void textStrikethrough();
00343     void textHighlight();
00344
00345     void alignLeft();
00346     void alignCenter();
00347     void alignRight();
00348     void alignFull();
00349
00350     void findNext(const QString & text, bool matchCase) const;
00351     void findPrevious(const QString & text, bool matchCase) const;
00352
00353     void replace(
00354         const QString & textToReplace, const QString & replacementText,
00355         bool matchCase);
00356
00357     void replaceAll(
00358         const QString & textToReplace, const QString & replacementText,
00359         bool matchCase);
00360
00361     void insertToDoCheckbox();
00362
00363     void insertInAppNoteLink(
00364         const QString & userId, const QString & shardId,
00365         const QString & noteGuid, const QString & linkText);
00366
00367     void setSpellcheck(bool enabled);
00368
00369     void setFont(const QFont & font);
00370     void setFontHeight(int height);
00371     void setFontColor(const QColor & color);
00372     void setBackgroundColor(const QColor & color);
00373
00374     void setDefaultPalette(const QPalette & pal);
00375
00376     void setDefaultFont(const QFont & font);
00377
00378     void insertHorizontalLine();
00379
00380     void increaseFontSize();
00381     void decreaseFontSize();
00382
00383     void increaseIndentation();
00384     void decreaseIndentation();
00385
00386     void insertBulletedList();
00387     void insertNumberedList();
00388
00389     void insertTableDialog();
00390
00391     void insertFixedWidthTable(int rows, int columns, int widthInPixels);
00392
00393     void insertRelativeWidthTable(int rows, int columns, double relativeWidth);
00394
00395     void insertTableRow();

```

```

00449     void insertTableColumn();
00450     void removeTableRow();
00451     void removeTableColumn();
00452
00453     void addAttachmentDialog();
00454     void saveAttachmentDialog(const QByteArray & resourceHash);
00455     void saveAttachmentUnderCursor();
00456     void openAttachment(const QByteArray & resourceHash);
00457     void openAttachmentUnderCursor();
00458     void copyAttachment(const QByteArray & resourceHash);
00459     void copyAttachmentUnderCursor();
00460
00461     void encryptSelectedText();
00462     void decryptEncryptedTextUnderCursor();
00463
00464     void editHyperlinkDialog();
00465     void copyHyperlink();
00466     void removeHyperlink();
00467
00468     void onNoteLoadCancelled();
00469
00470 protected:
00471     void dragMoveEvent(QDragMoveEvent * pEvent) override;
00472     void dropEvent(QDropEvent * pEvent) override;
00473
00474 private:
00475     INoteEditorBackend * m_backend;
00476 };
00477
00478 } // namespace quentier

```

## 6.37 SpellChecker.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <QList>
00024 #include <QObject>
00025
00026 #include <utility>
00027
00028 namespace quentier {
00029
00030 class Account;
00031 class FileIOProcessorAsync;
00032 class SpellCheckerPrivate;
00033
00034 class QUENTIER_EXPORT SpellChecker : public QObject
00035 {
00036     Q_OBJECT
00037 public:
00038     SpellChecker(
00039         FileIOProcessorAsync * fileIOProcessorAsync, Account account,
00040         QObject * parent = nullptr, const QString & userDictionaryPath = {});
00041
00042     // The second bool in the pair indicates whether the dictionary
00043     // is enabled or disabled
00044     [[nodiscard]] QList<std::pair<QString, bool>> listAvailableDictionaries()
00045         const;
00046
00047     void setAccount(const Account & account);
00048
00049     void enableDictionary(const QString & language);
00050     void disableDictionary(const QString & language);

```

```

00051
00052     [[nodiscard]] bool checkSpell(const QString & word) const;
00053
00054     [[nodiscard]] QStringList spellCorrectionSuggestions(
00055         const QString & misSpelledWord) const;
00056
00057     void addToUserWordlist(const QString & word);
00058     void removeFromUserWordList(const QString & word);
00059     void ignoreWord(const QString & word);
00060     void removeWord(const QString & word);
00061
00062     [[nodiscard]] bool isReady() const noexcept;
00063
00064     Q_SIGNALS:
00065         void ready();
00066
00067     private:
00068         SpellCheckerPrivate * const d_ptr;
00069         Q_DECLARE_PRIVATE(SpellChecker)
00070 };
00071
00072 } // namespace quantier

```

## 6.38 IAuthenticator.h

```

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00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/synchronization/types/Fwd.h>
00022 #include <quantier/types/Account.h>
00023 #include <quantier/utility/Linkage.h>
00024
00025 #include <QFuture>
00026
00027 namespace quantier::synchronization {
00028
00029     class QUINTIER_EXPORT IAuthenticator
00030     {
00031     public:
00032         virtual ~IAuthenticator() noexcept;
00033
00034         [[nodiscard]] virtual QFuture<IAuthenticationInfoPtr>
00035             authenticateNewAccount() = 0;
00036
00037         [[nodiscard]] virtual QFuture<IAuthenticationInfoPtr> authenticateAccount(
00038             Account account) = 0;
00039     };
00040
00041 } // namespace quantier::synchronization

```

## 6.39 INoteStoreFactory.h

```

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```

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <qevercloud/Fwd.h>
00024 #include <qevercloud/services/Fwd.h>
00025 #include <qevercloud/types/TypeAliases.h>
00026
00027 #include <optional>
00028
00029 namespace quentier::synchronization {
00030
00031 class QUENTIER_EXPORT INoteStoreFactory
00032 {
00033 public:
00034     virtual ~INoteStoreFactory();
00035
00036     [[nodiscard]] virtual qevercloud::INoteStorePtr createNoteStore(
00037         QString noteStoreUrl = {},
00038         std::optional<qevercloud::Guid> linkedNotebookGuid = {},
00039         qevercloud::IRequestContextPtr ctx = {},
00040         qevercloud::IRetryPolicyPtr retryPolicy = {}) = 0;
00041 };
00042
00043 } // namespace quentier::synchronization

```

## 6.40 ISyncConflictResolver.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <qevercloud/types/Note.h>
00024 #include <qevercloud/types/Notebook.h>
00025 #include <qevercloud/types/SavedSearch.h>
00026 #include <qevercloud/types/Tag.h>
00027
00028 #include <QFuture>
00029
00030 #include <variant>
00031
00032 class QDebug;
00033 class QTextStream;
00034
00035 namespace quentier::synchronization {
00036
00041 class QUENTIER_EXPORT ISyncConflictResolver
00042 {
00043 public:
00048     struct QUENTIER_EXPORT ConflictResolution
00049     {
00054         struct QUENTIER_EXPORT UseTheirs
00055         {};
00056
00061         struct QUENTIER_EXPORT UseMine
00062         {};
00063

```

```

00069     struct QUINTIER_EXPORT IgnoreMine
00070     {};
00071
00080     template <class T>
00081     struct MoveMine
00082     {
00083         using value_type = T;
00084
00088         T mine;
00089     };
00090 };
00091
00092 using NotebookConflictResolution = std::variant<
00093     ConflictResolution::UseTheirs, ConflictResolution::UseMine,
00094     ConflictResolution::IgnoreMine,
00095     ConflictResolution::MoveMine<qevercloud::Notebook>>;
00096
00097 using NoteConflictResolution = std::variant<
00098     ConflictResolution::UseTheirs, ConflictResolution::UseMine,
00099     ConflictResolution::IgnoreMine,
00100     ConflictResolution::MoveMine<qevercloud::Note>>;
00101
00102 using SavedSearchConflictResolution = std::variant<
00103     ConflictResolution::UseTheirs, ConflictResolution::UseMine,
00104     ConflictResolution::IgnoreMine,
00105     ConflictResolution::MoveMine<qevercloud::SavedSearch>>;
00106
00107 using TagConflictResolution = std::variant<
00108     ConflictResolution::IgnoreMine, ConflictResolution::UseTheirs,
00109     ConflictResolution::UseMine,
00110     ConflictResolution::MoveMine<qevercloud::Tag>>;
00111
00112 public:
00113     virtual ~ISyncConflictResolver() noexcept;
00114
00115     [[nodiscard]] virtual QFuture<NotebookConflictResolution>
00116         resolveNotebookConflict(
00117             qevercloud::Notebook theirs, qevercloud::Notebook mine) = 0;
00118
00119     [[nodiscard]] virtual QFuture<NoteConflictResolution> resolveNoteConflict(
00120         qevercloud::Note theirs, qevercloud::Note mine) = 0;
00121
00122     [[nodiscard]] virtual QFuture<SavedSearchConflictResolution>
00123         resolveSavedSearchConflict(
00124             qevercloud::SavedSearch theirs, qevercloud::SavedSearch mine) = 0;
00125
00126     [[nodiscard]] virtual QFuture<TagConflictResolution> resolveTagConflict(
00127         qevercloud::Tag theirs, qevercloud::Tag mine) = 0;
00128 };
00129
00130 QUINTIER_EXPORT QDataStream & operator<<(
00131     QDataStream & strm,
00132     const ISyncConflictResolver::NotebookConflictResolution & resolution);
00133
00134 QUINTIER_EXPORT QDebug & operator<<(
00135     QDebug & dbg,
00136     const ISyncConflictResolver::NotebookConflictResolution & resolution);
00137
00138 QUINTIER_EXPORT QDataStream & operator<<(
00139     QDataStream & strm,
00140     const ISyncConflictResolver::NoteConflictResolution & resolution);
00141
00142 QUINTIER_EXPORT QDebug & operator<<(
00143     QDebug & dbg,
00144     const ISyncConflictResolver::NoteConflictResolution & resolution);
00145
00146 QUINTIER_EXPORT QDataStream & operator<<(
00147     QDataStream & strm,
00148     const ISyncConflictResolver::SavedSearchConflictResolution & resolution);
00149
00150 QUINTIER_EXPORT QDebug & operator<<(
00151     QDebug & dbg,
00152     const ISyncConflictResolver::SavedSearchConflictResolution & resolution);
00153
00154 QUINTIER_EXPORT QDataStream & operator<<(
00155     QDataStream & strm,
00156     const ISyncConflictResolver::TagConflictResolution & resolution);
00157
00158 QUINTIER_EXPORT QDebug & operator<<(
00159     QDebug & dbg,
00160     const ISyncConflictResolver::TagConflictResolution & resolution);
00161
00162 } // namespace quentier::synchronization

```

## 6.41 ISyncEventsNotifier.h

```

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00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/synchronization/Fwd.h>
00022 #include <quentier/synchronization/types/Fwd.h>
00023 #include <quentier/utility/Linkage.h>
00024
00025 #include <qevercloud/types/LinkedNotebook.h>
00026
00027 #include <QList>
00028 #include <QObject>
00029
00030 namespace quentier::synchronization {
00031
00032 class QUENTIER_EXPORT ISyncEventsNotifier : public QObject
00033 {
00034     Q_OBJECT
00035 protected:
00036     explicit ISyncEventsNotifier(QObject * parent = nullptr);
00037
00038 public:
00039     ~ISyncEventsNotifier() override;
00040
00041     Q_SIGNALS:
00042     void syncChunksDownloadProgress(
00043         qint32 highestDownloadedUsn, qint32 highestServerUsn,
00044         qint32 lastPreviousUsn);
00045
00046     void syncChunksDownloaded();
00047
00048     void syncChunksDataProcessingProgress(ISyncChunksDataCountersPtr counters);
00049
00050     void startLinkedNotebooksDataDownloading(
00051         const QList<qevercloud::LinkedNotebook> & linkedNotebooks);
00052
00053     void linkedNotebookSyncChunksDownloadProgress(
00054         qint32 highestDownloadedUsn, qint32 highestServerUsn,
00055         qint32 lastPreviousUsn,
00056         const qevercloud::LinkedNotebook & linkedNotebook);
00057
00058     void linkedNotebookSyncChunksDownloaded(
00059         const qevercloud::LinkedNotebook & linkedNotebook);
00060
00061     void linkedNotebookSyncChunksDataProcessingProgress(
00062         ISyncChunksDataCountersPtr counters,
00063         const qevercloud::LinkedNotebook & linkedNotebook);
00064
00065     void notesDownloadProgress(
00066         quint32 notesDownloaded, quint32 totalNotesToDownload);
00067
00068     void linkedNotebookNotesDownloadProgress(
00069         quint32 notesDownloaded, quint32 totalNotesToDownload,
00070         const qevercloud::LinkedNotebook & linkedNotebook);
00071
00072     void resourcesDownloadProgress(
00073         quint32 resourcesDownloaded, quint32 totalResourcesToDownload);
00074
00075     void linkedNotebookResourcesDownloadProgress(
00076         quint32 resourcesDownloaded, quint32 totalResourcesToDownload,
00077         const qevercloud::LinkedNotebook & linkedNotebook);
00078
00079     void downloadFinished(bool dataDownloaded);
00080
00081     void userOwnSendStatusUpdate(ISendStatusPtr sendStatus);
00082
00083     void linkedNotebookSendStatusUpdate(
00084         const qevercloud::Guid & linkedNotebookGuid, ISendStatusPtr sendStatus);
00085 };

```



```

00212
00213 } // namespace quantier::synchronization

```

## 6.42 ISynchronizer.h

```

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00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/local_storage/Fwd.h>
00022 #include <quantier/synchronization/Fwd.h>
00023 #include <quantier/synchronization/types/Fwd.h>
00024 #include <quantier/types/Account.h>
00025 #include <quantier/utility/Linkage.h>
00026 #include <quantier/utility/cancelers/Fwd.h>
00027
00028 #include <qevercloud/types/TypeAliases.h>
00029
00030 #include <QFuture>
00031
00032 #include <memory>
00033 #include <utility>
00034
00035 namespace quantier {
00036
00037 class Account;
00038
00039 } // namespace quantier
00040
00041 namespace quantier::synchronization {
00042
00043 class QUENTIER_EXPORT ISynchronizer
00044 {
00045 public:
00046     virtual ~ISynchronizer() noexcept;
00047
00048     [[nodiscard]] virtual QFuture<std::pair<Account, IAuthenticationInfoPtr>>
00049         authenticateNewAccount() = 0;
00050
00051     [[nodiscard]] virtual QFuture<IAuthenticationInfoPtr> authenticateAccount(
00052         Account account) = 0;
00053
00054     using SyncResult =
00055         std::pair<QFuture<ISyncResultPtr>, ISyncEventsNotifier*>;
00056
00057     [[nodiscard]] virtual SyncResult synchronizeAccount(
00058         Account account, local_storage::ILocalStoragePtr localStorage,
00059         utility::cancelers::ICancelerPtr canceler,
00060         ISyncOptionsPtr options = nullptr,
00061         ISyncConflictResolverPtr syncConflictResolver = nullptr) = 0;
00062
00063     virtual void revokeAuthentication(qevercloud::UserID userId) = 0;
00064 };
00065
00066 } // namespace quantier::synchronization

```

## 6.43 ISyncStateStorage.h

```

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00005  *

```

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/synchronization/types/Fwd.h>
00022 #include <quentier/types/Account.h>
00023 #include <quentier/utility/Linkage.h>
00024
00025 #include <QObject>
00026
00027 namespace quentier::synchronization {
00028
00029 class QUENTIER_EXPORT ISyncStateStorage : public QObject
00030 {
00031     Q_OBJECT
00032 protected:
00033     explicit ISyncStateStorage(QObject * parent = nullptr);
00034
00035 public:
00036     ~ISyncStateStorage() override;
00037
00038     [[nodiscard]] virtual ISyncStatePtr getSyncState(
00039         const Account & account) = 0;
00040
00041     virtual void setSyncState(
00042         const Account & account, ISyncStatePtr syncState) = 0;
00043
00044 Q_SIGNALS:
00045     void notifySyncStateUpdated(Account account, ISyncStatePtr syncState);
00046 };
00047
00048 } // namespace quentier::synchronization

```

## 6.44 IUserStoreFactory.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <qevercloud/Fwd.h>
00024 #include <qevercloud/services/Fwd.h>
00025
00026 #include <QString>
00027
00028 namespace quentier::synchronization {
00029
00030 class QUENTIER_EXPORT IUserStoreFactory
00031 {
00032 public:
00033     virtual ~IUserStoreFactory();
00034
00035     [[nodiscard]] virtual qevercloud::UserStorePtr createUserStore(
00036         QString userStoreUrl = {}, qevercloud::IRequestContextPtr ctx = {},
00037         qevercloud::IRetryPolicyPtr retryPolicy = {}) = 0;

```

```

00038 };
00039
00040 } // namespace quantier::synchronization

```

## 6.45 MockIAuthenticator.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/synchronization/IAuthenticator.h>
00022
00023 #include <gmock/gmock.h>
00024
00025 namespace quantier::synchronization::tests::mocks {
00026
00027 class MockIAuthenticator : public IAuthenticator
00028 {
00029 public:
00030     MOCK_METHOD(
00031         QFuture<IAuthenticationInfoPtr>, authenticateNewAccount, (),
00032         (override));
00033
00034     MOCK_METHOD(
00035         QFuture<IAuthenticationInfoPtr>, authenticateAccount, (Account account),
00036         (override));
00037 };
00038
00039 } // namespace quantier::synchronization::tests::mocks

```

## 6.46 MockINoteStoreFactory.h

```

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00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/synchronization/INoteStoreFactory.h>
00022
00023 #include <gmock/gmock.h>
00024
00025 namespace quantier::synchronization::tests::mocks {
00026
00027 class MockINoteStoreFactory : public INoteStoreFactory
00028 {
00029 public:
00030     MOCK_METHOD(
00031         ::gevercloud::INoteStorePtr, createNoteStore,

```

```

00032         (QString noteStoreUrl,
00033          std::optional<::qevercloud::Guid> linkedNotebookGuid,
00034          ::qevercloud::IRequestContextPtr ctx,
00035          ::qevercloud::IRetryPolicyPtr retryPolicy),
00036         (override));
00037 };
00038
00039 } // namespace quantier::synchronization::tests::mocks

```

## 6.47 MockISyncConflictResolver.h

```

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00014  *
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00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/synchronization/ISyncConflictResolver.h>
00022
00023 #include <gmock/gmock.h>
00024
00025 namespace quantier::synchronization::tests::mocks {
00026
00027 class MockISyncConflictResolver : public ISyncConflictResolver
00028 {
00029 public:
00030     MOCK_METHOD(
00031         QFuture<NotebookConflictResolution>, resolveNotebookConflict,
00032         (::qevercloud::Notebook theirs, ::qevercloud::Notebook mine),
00033         (override));
00034
00035     MOCK_METHOD(
00036         QFuture<NoteConflictResolution>, resolveNoteConflict,
00037         (::qevercloud::Note theirs, ::qevercloud::Note mine), (override));
00038
00039     MOCK_METHOD(
00040         QFuture<SavedSearchConflictResolution>, resolveSavedSearchConflict,
00041         (::qevercloud::SavedSearch theirs, ::qevercloud::SavedSearch mine),
00042         (override));
00043
00044     MOCK_METHOD(
00045         QFuture<TagConflictResolution>, resolveTagConflict,
00046         (::qevercloud::Tag theirs, ::qevercloud::Tag mine), (override));
00047 };
00048
00049 } // namespace quantier::synchronization::tests::mocks

```

## 6.48 MockISyncStateStorage.h

```

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00014  *
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00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.

```

```

00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/synchronization/ISyncStateStorage.h>
00022
00023 #include <gmock/gmock.h>
00024
00025 namespace quentier::synchronization::tests::mocks {
00026
00027 class MockISyncStateStorage : public ISyncStateStorage
00028 {
00029     Q_OBJECT
00030 public:
00031     MOCK_METHOD(
00032         ISyncStatePtr, getSyncState, (const Account & account), (override));
00033
00034     MOCK_METHOD(
00035         void, setSyncState, (const Account & account, ISyncStatePtr syncState),
00036         (override));
00037 };
00038
00039 } // namespace quentier::synchronization::tests::mocks

```

## 6.49 Errors.h

```

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00014   *
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00016   * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017   */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <QtGlobal>
00024
00025 #include <optional>
00026 #include <variant>
00027
00028 namespace quentier::synchronization {
00029
00030 struct QUINTIER_EXPORT RateLimitReachedError
00031 {
00032     std::optional<qint32> rateLimitDurationSec;
00033 };
00034
00035 [[nodiscard]] QUINTIER_EXPORT bool operator==(
00036     const RateLimitReachedError & lhs,
00037     const RateLimitReachedError & rhs) noexcept;
00038
00039 [[nodiscard]] QUINTIER_EXPORT bool operator!=(
00040     const RateLimitReachedError & lhs,
00041     const RateLimitReachedError & rhs) noexcept;
00042
00043 struct QUINTIER_EXPORT AuthenticationExpiredError
00044 {};
00045
00046 [[nodiscard]] QUINTIER_EXPORT bool operator==(
00047     const AuthenticationExpiredError & lhs,
00048     const AuthenticationExpiredError & rhs) noexcept;
00049
00050 [[nodiscard]] QUINTIER_EXPORT bool operator!=(
00051     const AuthenticationExpiredError & lhs,
00052     const AuthenticationExpiredError & rhs) noexcept;
00053
00054 using StopSynchronizationError = std::variant<
00055     RateLimitReachedError, AuthenticationExpiredError, std::monostate>;
00056
00057 } // namespace quentier::synchronization

```

## 6.50 IAuthenticationInfo.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/synchronization/types/Fwd.h>
00022 #include <quentier/utility/Linkage.h>
00023 #include <quentier/utility/Printable.h>
00024
00025 #include <qevercloud/types/TypeAliases.h>
00026
00027 #include <QList>
00028 #include <QNetworkCookie>
00029 #include <QString>
00030
00031 namespace quentier::synchronization {
00032
00033 class QUENTIER_EXPORT IAuthenticationInfo : public Printable
00034 {
00035 public:
00036     [[nodiscard]] virtual qevercloud::UserID userId() const = 0;
00037
00038     [[nodiscard]] virtual QString authToken() const = 0;
00039
00040     [[nodiscard]] virtual qevercloud::Timestamp authTokenExpirationTime()
00041         const = 0;
00042
00043     [[nodiscard]] virtual qevercloud::Timestamp authenticationTime() const = 0;
00044
00045     [[nodiscard]] virtual QString shardId() const = 0;
00046
00047     [[nodiscard]] virtual QString noteStoreUrl() const = 0;
00048
00049     [[nodiscard]] virtual QString webApiUrlPrefix() const = 0;
00050
00051     [[nodiscard]] virtual QList<QNetworkCookie> userStoreCookies() const = 0;
00052 };
00053
00054 } // namespace quentier::synchronization

```

## 6.51 IAuthenticationInfoBuilder.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/synchronization/types/Fwd.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 #include <qevercloud/types/TypeAliases.h>

```

```

00025
00026 #include <QList>
00027 #include <QNetworkCookie>
00028 #include <QString>
00029
00030 namespace quantier::synchronization {
00031
00032 class QUENTIER_EXPORT IAuthenticationInfoBuilder
00033 {
00034 public:
00035     virtual ~IAuthenticationInfoBuilder() noexcept;
00036
00037     virtual IAuthenticationInfoBuilder & setUserId(
00038         qevercloud::UserID userId) = 0;
00039
00040     virtual IAuthenticationInfoBuilder & setAuthToken(QString token) = 0;
00041
00042     virtual IAuthenticationInfoBuilder & setAuthTokenExpirationTime(
00043         qevercloud::Timestamp expirationTime) = 0;
00044
00045     virtual IAuthenticationInfoBuilder & setAuthenticationTime(
00046         qevercloud::Timestamp authenticationTime) = 0;
00047
00048     virtual IAuthenticationInfoBuilder & setShardId(QString shardId) = 0;
00049
00050     virtual IAuthenticationInfoBuilder & setNoteStoreUrl(
00051         QString noteStoreUrl) = 0;
00052
00053     virtual IAuthenticationInfoBuilder & setWebApiUrlPrefix(
00054         QString webApiUrlPrefix) = 0;
00055
00056     virtual IAuthenticationInfoBuilder & setUserStoreCookies(
00057         QList<QNetworkCookie> cookies) = 0;
00058
00059     [[nodiscard]] virtual IAuthenticationInfoPtr build() = 0;
00060 };
00061
00062 [[nodiscard]] QUENTIER_EXPORT IAuthenticationInfoBuilderPtr
00063     createAuthenticationInfoBuilder();
00064
00065 } // namespace quantier::synchronization

```

## 6.52 IDownloadNotesStatus.h

```

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00014  *
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00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/synchronization/types/Errors.h>
00022 #include <quantier/synchronization/types/Fwd.h>
00023 #include <quantier/utility/Linkage.h>
00024 #include <quantier/utility/Printable.h>
00025
00026 #include <qevercloud/types/Note.h>
00027 #include <qevercloud/types/TypeAliases.h>
00028
00029 #include <QException>
00030 #include <QList>
00031
00032 #include <memory>
00033 #include <utility>
00034
00035 namespace quantier::synchronization {
00036
00041 class QUENTIER_EXPORT IDownloadNotesStatus : public Printable
00042 {
00043 public:

```

```

00044     using QExceptionPtr = std::shared_ptr<QException>;
00045     using NoteWithException = std::pair<qevercloud::Note, QExceptionPtr>;
00046     using GuidWithException = std::pair<qevercloud::Guid, QExceptionPtr>;
00047     using UpdateSequenceNumbersByGuid = QHash<qevercloud::Guid, qint32>;
00048
00049     [[nodiscard]] virtual quint64 totalNewNotes() const = 0;
00050     [[nodiscard]] virtual quint64 totalUpdatedNotes() const = 0;
00051     [[nodiscard]] virtual quint64 totalExpungedNotes() const = 0;
00052
00053     [[nodiscard]] virtual QList<NoteWithException> notesWhichFailedToDownload()
00054         const = 0;
00055
00056     [[nodiscard]] virtual QList<NoteWithException> notesWhichFailedToProcess()
00057         const = 0;
00058
00059     [[nodiscard]] virtual QList<GuidWithException>
00060         noteGuidsWhichFailedToExpunge() const = 0;
00061
00062     [[nodiscard]] virtual UpdateSequenceNumbersByGuid
00063         processedNoteGuidsAndUsns() const = 0;
00064
00065     [[nodiscard]] virtual UpdateSequenceNumbersByGuid
00066         cancelledNoteGuidsAndUsns() const = 0;
00067
00068     [[nodiscard]] virtual QList<qevercloud::Guid> expungedNoteGuids() const = 0;
00069
00070     [[nodiscard]] virtual StopSynchronizationError stopSynchronizationError()
00071         const = 0;
00072 };
00073
00074 } // namespace quantier::synchronization

```

## 6.53 IDownloadResourcesStatus.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/synchronization/types/Errors.h>
00022 #include <quantier/utility/Linkage.h>
00023 #include <quantier/utility/Printable.h>
00024
00025 #include <qevercloud/types/Resource.h>
00026 #include <qevercloud/types/TypeAliases.h>
00027
00028 #include <QException>
00029
00030 #include <memory>
00031 #include <utility>
00032
00033 namespace quantier::synchronization {
00034
00035     class QUENTIER_EXPORT IDownloadResourcesStatus : public Printable
00036     {
00037     public:
00038         ~IDownloadResourcesStatus() noexcept override;
00039
00040         using QExceptionPtr = std::shared_ptr<QException>;
00041
00042         using ResourceWithException =
00043             std::pair<qevercloud::Resource, QExceptionPtr>;
00044
00045         using UpdateSequenceNumbersByGuid = QHash<qevercloud::Guid, qint32>;
00046
00047         [[nodiscard]] virtual quint64 totalNewResources() const = 0;
00048         [[nodiscard]] virtual quint64 totalUpdatedResources() const = 0;
00049

```



```

00050     [[nodiscard]] virtual QList<ResourceWithException>
00051         resourcesWhichFailedToDownload() const = 0;
00052
00053     [[nodiscard]] virtual QList<ResourceWithException>
00054         resourcesWhichFailedToProcess() const = 0;
00055
00056     [[nodiscard]] virtual UpdateSequenceNumbersByGuid
00057         processedResourceGuidsAndUsns() const = 0;
00058
00059     [[nodiscard]] virtual UpdateSequenceNumbersByGuid
00060         cancelledResourceGuidsAndUsns() const = 0;
00061
00062     [[nodiscard]] virtual StopSynchronizationError stopSynchronizationError()
00063         const = 0;
00064 };
00065
00066 } // namespace quantier::synchronization

```

## 6.54 ISendStatus.h

```

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00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/synchronization/types/Errors.h>
00022 #include <quantier/utility/Linkage.h>
00023 #include <quantier/utility/Printable.h>
00024
00025 #include <qevercloud/types/Note.h>
00026 #include <qevercloud/types/Notebook.h>
00027 #include <qevercloud/types/SavedSearch.h>
00028 #include <qevercloud/types/Tag.h>
00029 #include <qevercloud/types/TypeAliases.h>
00030
00031 #include <QException>
00032 #include <QList>
00033
00034 #include <memory>
00035 #include <utility>
00036
00037 namespace quantier::synchronization {
00038
00039     class QUENTIER_EXPORT ISendStatus : public Printable
00040     {
00041     public:
00042         using QExceptionPtr = std::shared_ptr<QException>;
00043
00044         using NoteWithException = std::pair<qevercloud::Note, QExceptionPtr>;
00045
00046         using NotebookWithException =
00047             std::pair<qevercloud::Notebook, QExceptionPtr>;
00048
00049         using SavedSearchWithException =
00050             std::pair<qevercloud::SavedSearch, QExceptionPtr>;
00051
00052         using TagWithException = std::pair<qevercloud::Tag, QExceptionPtr>;
00053
00054     public:
00055         // Total
00056
00057         [[nodiscard]] virtual quint64 totalAttemptedToSendNotes() const = 0;
00058
00059         [[nodiscard]] virtual quint64 totalAttemptedToSendNotebooks() const = 0;
00060
00061         [[nodiscard]] virtual quint64 totalAttemptedToSendSavedSearches() const = 0;
00062
00063         [[nodiscard]] virtual quint64 totalAttemptedToSendTags() const = 0;

```

```

00081
00082 // Notes
00083
00087 [[nodiscard]] virtual quint64 totalSuccessfullySentNotes() const = 0;
00088
00093 [[nodiscard]] virtual QList<NoteWithException> failedToSendNotes()
00094     const = 0;
00095
00096 // Notebooks
00097
00101 [[nodiscard]] virtual quint64 totalSuccessfullySentNotebooks() const = 0;
00102
00107 [[nodiscard]] virtual QList<NotebookWithException> failedToSendNotebooks()
00108     const = 0;
00109
00110 // Saved searches
00111
00115 [[nodiscard]] virtual quint64 totalSuccessfullySentSavedSearches()
00116     const = 0;
00117
00122 [[nodiscard]] virtual QList<SavedSearchWithException>
00123     failedToSendSavedSearches() const = 0;
00124
00125 // Tags
00126
00130 [[nodiscard]] virtual quint64 totalSuccessfullySentTags() const = 0;
00131
00136 [[nodiscard]] virtual QList<TagWithException> failedToSendTags() const = 0;
00137
00138 // General
00139
00145 [[nodiscard]] virtual StopSynchronizationError stopSynchronizationError()
00146     const = 0;
00147
00154 [[nodiscard]] virtual bool needToRepeatIncrementalSync() const = 0;
00155 };
00156
00157 } // namespace quantier::synchronization

```

## 6.55 ISyncChunksDataCounters.h

```

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00014  *
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00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/utility/Linkage.h>
00022 #include <quantier/utility/Printable.h>
00023
00024 #include <QtGlobal>
00025
00026 namespace quantier::synchronization {
00027
00033 struct QUENTIER_EXPORT ISyncChunksDataCounters : public Printable
00034 {
00035     // ===== Saved searches =====
00036
00040     [[nodiscard]] virtual quint64 totalSavedSearches() const noexcept = 0;
00041
00045     [[nodiscard]] virtual quint64 totalExpungedSavedSearches()
00046         const noexcept = 0;
00047
00052     [[nodiscard]] virtual quint64 addedSavedSearches() const noexcept = 0;
00053
00058     [[nodiscard]] virtual quint64 updatedSavedSearches() const noexcept = 0;
00059
00064     [[nodiscard]] virtual quint64 expungedSavedSearches() const noexcept = 0;
00065

```

```

00066 // ===== Tags =====
00067
00071 [[nodiscard]] virtual quint64 totalTags() const noexcept = 0;
00072
00076 [[nodiscard]] virtual quint64 totalExpungedTags() const noexcept = 0;
00077
00081 [[nodiscard]] virtual quint64 addedTags() const noexcept = 0;
00082
00086 [[nodiscard]] virtual quint64 updatedTags() const noexcept = 0;
00087
00091 [[nodiscard]] virtual quint64 expungedTags() const noexcept = 0;
00092
00093 // ===== Linked notebooks =====
00094
00098 [[nodiscard]] virtual quint64 totalLinkedNotebooks() const noexcept = 0;
00099
00103 [[nodiscard]] virtual quint64 totalExpungedLinkedNotebooks()
00104     const noexcept = 0;
00105
00110 [[nodiscard]] virtual quint64 addedLinkedNotebooks() const noexcept = 0;
00111
00116 [[nodiscard]] virtual quint64 updatedLinkedNotebooks() const noexcept = 0;
00117
00122 [[nodiscard]] virtual quint64 expungedLinkedNotebooks() const noexcept = 0;
00123
00124 // ===== Notebooks =====
00125
00129 [[nodiscard]] virtual quint64 totalNotebooks() const noexcept = 0;
00130
00134 [[nodiscard]] virtual quint64 totalExpungedNotebooks() const noexcept = 0;
00135
00139 [[nodiscard]] virtual quint64 addedNotebooks() const noexcept = 0;
00140
00144 [[nodiscard]] virtual quint64 updatedNotebooks() const noexcept = 0;
00145
00150 [[nodiscard]] virtual quint64 expungedNotebooks() const noexcept = 0;
00151 };
00152
00153 } // namespace quantier::synchronization

```

## 6.56 ISyncOptions.h

```

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00014  *
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00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/utility/Linkage.h>
00022 #include <quantier/utility/Printable.h>
00023
00024 #include <qevercloud/Fwd.h>
00025
00026 #include <QDir>
00027 #include <QtGlobal>
00028
00029 #include <optional>
00030
00031 namespace quantier::synchronization {
00032
00036 class QUANTIER_EXPORT ISyncOptions : public Printable
00037 {
00038 public:
00039     ~ISyncOptions() noexcept override;
00040
00046     [[nodiscard]] virtual bool downloadNoteThumbnails() const = 0;
00047
00062     [[nodiscard]] virtual std::optional<QDir> inkNoteImagesStorageDir()
00063         const = 0;

```

```

00064
00069     [[nodiscard]] virtual qevercloud::IRequestContextPtr requestContext()
00070         const = 0;
00071
00076     [[nodiscard]] virtual qevercloud::IRetryPolicyPtr retryPolicy() const = 0;
00077
00084     [[nodiscard]] virtual std::optional<quint32> maxConcurrentNoteDownloads()
00085         const = 0;
00086
00093     [[nodiscard]] virtual std::optional<quint32>
00094         maxConcurrentResourceDownloads() const = 0;
00095 };
00096
00097 } // namespace quantier::synchronization

```

## 6.57 ISyncOptionsBuilder.h

```

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00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/synchronization/types/Fwd.h>
00022 #include <quantier/utility/Linkage.h>
00023
00024 #include <qevercloud/Fwd.h>
00025
00026 #include <QDir>
00027
00028 #include <optional>
00029
00030 namespace quantier::synchronization {
00031
00032     class QUENTIER_EXPORT ISyncOptionsBuilder
00033     {
00034     public:
00035         virtual ~ISyncOptionsBuilder() noexcept;
00036
00037         virtual ISyncOptionsBuilder & setDownloadNoteThumbnails(bool value) = 0;
00038
00039         virtual ISyncOptionsBuilder & setInkNoteImagesStorageDir(
00040             std::optional<QDir> dir) = 0;
00041
00042         virtual ISyncOptionsBuilder & setRequestContext(
00043             qevercloud::IRequestContextPtr ctx) = 0;
00044
00045         virtual ISyncOptionsBuilder & setRetryPolicy(
00046             qevercloud::IRetryPolicyPtr retryPolicy) = 0;
00047
00048         virtual ISyncOptionsBuilder & setMaxConcurrentNoteDownloads(
00049             std::optional<quint32> maxConcurrentNoteDownloads) = 0;
00050
00051         virtual ISyncOptionsBuilder & setMaxConcurrentResourceDownloads(
00052             std::optional<quint32> maxConcurrentResourceDownloads) = 0;
00053
00054         [[nodiscard]] virtual ISyncOptionsPtr build() = 0;
00055     };
00056
00057     [[nodiscard]] QUENTIER_EXPORT ISyncOptionsBuilderPtr createSyncOptionsBuilder();
00058
00059 } // namespace quantier::synchronization

```

## 6.58 ISyncResult.h

```

00001 /*

```

```

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00009  *
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00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/synchronization/Fwd.h>
00022 #include <quentier/synchronization/types/Errors.h>
00023 #include <quentier/synchronization/types/Fwd.h>
00024 #include <quentier/utility/Linkage.h>
00025 #include <quentier/utility/Printable.h>
00026
00027 #include <qevercloud/types/TypeAliases.h>
00028
00029 #include <QHash>
00030 #include <QSet>
00031
00032 namespace quentier::synchronization {
00033
00034 class QUENTIER_EXPORT ISyncResult : public Printable
00035 {
00036 public:
00037     [[nodiscard]] virtual ISyncStatePtr syncState() const = 0;
00038
00039     [[nodiscard]] virtual ISyncChunksDataCountersPtr
00040         userAccountSyncChunksDataCounters() const = 0;
00041
00042     [[nodiscard]] virtual QHash<qevercloud::Guid, ISyncChunksDataCountersPtr>
00043         linkedNotebookSyncChunksDataCounters() const = 0;
00044
00045     [[nodiscard]] virtual bool userAccountSyncChunksDownloaded() const = 0;
00046
00047     [[nodiscard]] virtual QSet<qevercloud::Guid>
00048         linkedNotebookGuidsWithSyncChunksDownloaded() const = 0;
00049
00050     [[nodiscard]] virtual IDownloadNotesStatusPtr
00051         userAccountDownloadNotesStatus() const = 0;
00052
00053     [[nodiscard]] virtual QHash<qevercloud::Guid, IDownloadNotesStatusPtr>
00054         linkedNotebookDownloadNotesStatuses() const = 0;
00055
00056     [[nodiscard]] virtual IDownloadResourcesStatusPtr
00057         userAccountDownloadResourcesStatus() const = 0;
00058
00059     [[nodiscard]] virtual QHash<qevercloud::Guid, IDownloadResourcesStatusPtr>
00060         linkedNotebookDownloadResourcesStatuses() const = 0;
00061
00062     [[nodiscard]] virtual ISendStatusPtr userAccountSendStatus() const = 0;
00063
00064     [[nodiscard]] virtual QHash<qevercloud::Guid, ISendStatusPtr>
00065         linkedNotebookSendStatuses() const = 0;
00066
00067     [[nodiscard]] virtual StopSynchronizationError stopSynchronizationError()
00068         const = 0;
00069 };
00070
00071 } // namespace quentier::synchronization

```

## 6.59 ISyncState.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022 #include <quentier/utility/Printable.h>
00023
00024 #include <qevercloud/types/TypeAliases.h>
00025
00026 #include <QHash>
00027 #include <QString>
00028
00029 namespace quentier::synchronization {
00030
00031 class QUENTIER_EXPORT ISyncState : public Printable
00032 {
00033 public:
00034     [[nodiscard]] virtual qint32 userDataUpdateCount() const = 0;
00035
00036     [[nodiscard]] virtual qevercloud::Timestamp userDataLastSyncTime()
00037         const = 0;
00038
00039     [[nodiscard]] virtual QHash<qevercloud::Guid, qint32>
00040         linkedNotebookUpdateCounts() const = 0;
00041
00042     [[nodiscard]] virtual QHash<qevercloud::Guid, qevercloud::Timestamp>
00043         linkedNotebookLastSyncTimes() const = 0;
00044 };
00045
00046 } // namespace quentier::synchronization

```

## 6.60 ISyncStateBuilder.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/synchronization/types/Fwd.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 #include <qevercloud/types/TypeAliases.h>
00025
00026 #include <QHash>
00027
00028 namespace quentier::synchronization {
00029
00030 class QUENTIER_EXPORT ISyncStateBuilder
00031 {
00032 public:
00033     virtual ~ISyncStateBuilder() noexcept;
00034
00035     virtual ISyncStateBuilder & setUserDataUpdateCount(qint32 updateCount) = 0;
00036
00037     virtual ISyncStateBuilder & setUserDataLastSyncTime(
00038         qevercloud::Timestamp lastSyncTime) = 0;
00039
00040     virtual ISyncStateBuilder & setLinkedNotebookUpdateCounts(
00041         QHash<qevercloud::Guid, qint32> updateCounts) = 0;
00042
00043     virtual ISyncStateBuilder & setLinkedNotebookLastSyncTimes(
00044         QHash<qevercloud::Guid, qevercloud::Timestamp> lastSyncTimes) = 0;

```

```

00045
00046     [[nodiscard]] virtual ISyncStatePtr build() = 0;
00047 };
00048
00049 [[nodiscard]] QUENTIER_EXPORT ISyncStateBuilderPtr createSyncStateBuilder();
00050
00051 } // namespace quantier::synchronization

```

## 6.61 AuthenticationInfo.h

```

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00014  *
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00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/synchronization/types/Fwd.h>
00022 #include <quantier/utility/Linkage.h>
00023
00024 #include <QJsonObject>
00025
00026 namespace quantier::synchronization {
00027
00031 [[nodiscard]] QJsonObject QUENTIER_EXPORT
00032     serializeAuthenticationInfoToJson(const IAuthenticationInfo & info);
00033
00039 [[nodiscard]] IAuthenticationInfoPtr QUENTIER_EXPORT
00040     deserializeAuthenticationInfoFromJson(const QJsonObject & json);
00041
00042 } // namespace quantier::synchronization

```

## 6.62 DownloadNotesStatus.h

```

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00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/synchronization/types/Fwd.h>
00022 #include <quantier/utility/Linkage.h>
00023
00024 #include <QJsonObject>
00025
00026 namespace quantier::synchronization {
00027
00031 [[nodiscard]] QJsonObject QUENTIER_EXPORT
00032     serializeDownloadNotesStatusToJson(const IDownloadNotesStatus & status);
00033
00039 [[nodiscard]] IDownloadNotesStatusPtr QUENTIER_EXPORT
00040     deserializeDownloadNotesStatusFromJson(const QJsonObject & json);
00041
00042 } // namespace quantier::synchronization

```

## 6.63 DownloadResourcesStatus.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/synchronization/types/Fwd.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 #include <QJsonObject>
00025
00026 namespace quentier::synchronization {
00027
00031 [[nodiscard]] QJsonObject QUENTIER_EXPORT
00032     serializeDownloadResourcesStatusToJson(
00033         const IDownloadResourcesStatus & status);
00034
00040 [[nodiscard]] IDownloadResourcesStatusPtr QUENTIER_EXPORT
00041     deserializeDownloadResourcesStatusFromJson(const QJsonObject & json);
00042
00043 } // namespace quentier::synchronization

```

## 6.64 SendStatus.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/synchronization/types/Fwd.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 #include <QJsonObject>
00025
00026 namespace quentier::synchronization {
00027
00031 [[nodiscard]] QJsonObject QUENTIER_EXPORT
00032     serializeSendStatusToJson(const ISendStatus & sendStatus);
00033
00039 [[nodiscard]] ISendStatusPtr QUENTIER_EXPORT
00040     deserializeSendStatusFromJson(const QJsonObject & json);
00041
00042 } // namespace quentier::synchronization

```

## 6.65 SyncChunksDataCounters.h

```

00001 /*
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```



```

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00009  *
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00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/synchronization/types/Fwd.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 #include <QJsonObject>
00025
00026 namespace quentier::synchronization {
00027
00031 [[nodiscard]] QJsonObject QUENTIER_EXPORT serializeSyncChunksDataCountersToJson(
00032     const ISyncChunksDataCounters & counters);
00033
00039 [[nodiscard]] ISyncChunksDataCountersPtr QUENTIER_EXPORT
00040     deserializeSyncChunksDataCountersFromJson(const QJsonObject & json);
00041
00042 } // namespace quentier::synchronization

```

## 6.66 SyncResult.h

```

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00003  *
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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/synchronization/types/Fwd.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 #include <QJsonObject>
00025
00026 namespace quentier::synchronization {
00027
00031 [[nodiscard]] QJsonObject QUENTIER_EXPORT
00032     serializeSyncResultToJson(const ISyncResult & syncResult);
00033
00039 [[nodiscard]] ISyncResultPtr QUENTIER_EXPORT
00040     deserializeSyncResultFromJson(const QJsonObject & json);
00041
00042 } // namespace quentier::synchronization

```

## 6.67 SyncState.h

```

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```

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/synchronization/types/Fwd.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 #include <QJsonObject>
00025
00026 namespace quentier::synchronization {
00027
00031 [[nodiscard]] QJsonObject QUENTIER_EXPORT
00032     serializeSyncStateToJson(const ISyncState & syncState);
00033
00039 [[nodiscard]] ISyncStatePtr QUENTIER_EXPORT
00040     deserializeSyncStateFromJson(const QJsonObject & json);
00041
00042 } // namespace quentier::synchronization

```

## 6.68 Future.h

```

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00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <QAbstractEventDispatcher>
00024 #include <QFuture>
00025 #include <QFutureWatcher>
00026 #include <QMutex>
00027 #include <QMutexLocker>
00028 #include <QObject>
00029 #include <QPointer>
00030
00031 #include <quentier/threading/QtFutureContinuations.h>
00032
00033 #if QT_VERSION >= QT_VERSION_CHECK(6, 0, 0)
00034 #include <QPromise>
00035 #include <exception>
00036 #else
00037 #include <quentier/threading/Qt5Promise.h>
00038 #endif
00039
00040 #include <algorithm>
00041 #include <cmath>
00042 #include <memory>
00043 #include <type_traits>
00044 #include <utility>
00045
00046 namespace quentier::threading {
00047
00051 template <class T>
00052 [[nodiscard]] std::enable_if_t<
00053     std::negation_v<std::is_same<std::decay_t<T>, void>,
00054     QFuture<std::decay_t<T>>>
00055     makeReadyFuture(T t)
00056 {

```

```

00057     QPromise<std::decay_t<T>> promise;
00058     QFuture<std::decay_t<T>> future = promise.future();
00059
00060     promise.start();
00061     promise.addResult(std::move(t));
00062     promise.finish();
00063
00064     return future;
00065 }
00066
00067 [[nodiscard]] QFuture<void> QENTIER_EXPORT makeReadyFuture();
00068
00073 template <class T, class E>
00074 [[nodiscard]] std::enable_if_t<std::is_base_of_v<QException, E>, QFuture<T>>
00075     makeExceptionalFuture(const E & e)
00076 {
00077     QPromise<std::decay_t<T>> promise;
00078     QFuture<std::decay_t<T>> future = promise.future();
00079
00080     promise.start();
00081     promise.setException(e);
00082     promise.finish();
00083
00084     return future;
00085 }
00086
00087 #if QT_VERSION >= QT_VERSION_CHECK(6, 0, 0)
00092 template <class T>
00093 [[nodiscard]] QFuture<T> makeExceptionalFuture(std::exception_ptr e)
00094 {
00095     QPromise<std::decay_t<T>> promise;
00096     QFuture<std::decay_t<T>> future = promise.future();
00097
00098     promise.start();
00099     promise.setException(std::move(e));
00100     promise.finish();
00101
00102     return future;
00103 }
00104 #endif // QT_VERSION
00105
00110 template <class T, class U>
00111 void bindCancellation(const QFuture<T> & from, QFuture<U> to)
00112 {
00113     auto watcher = std::make_unique<QFutureWatcher<T>>();
00114     auto * rawWatcher = watcher.get();
00115
00116     QObject::connect(
00117         rawWatcher, &QFutureWatcher<T>::canceled, rawWatcher,
00118         [rawWatcher, to]() mutable {
00119             to.cancel();
00120             rawWatcher->deleteLater();
00121         });
00122
00123     QObject::connect(
00124         rawWatcher, &QFutureWatcher<T>::finished, rawWatcher,
00125         [rawWatcher] { rawWatcher->deleteLater(); });
00126
00127     watcher->setFuture(from);
00128     Q_UNUSED(watcher.release());
00129 }
00130
00138 [[nodiscard]] QFuture<void> QENTIER_EXPORT
00139     whenAll(QList<QFuture<void>> futures);
00140
00150 template <class T>
00151 [[nodiscard]] std::enable_if_t<
00152     !std::is_void_v<std::decay_t<T>>, QFuture<QList<std::decay_t<T>>>>
00153     whenAll(QList<QFuture<std::decay_t<T>>> futures)
00154 {
00155     if (Q_UNLIKELY(futures.isEmpty())) {
00156         return makeReadyFuture<QList<std::decay_t<T>>>({});
00157     }
00158
00159     auto promise = std::make_shared<QPromise<QList<std::decay_t<T>>>>();
00160     auto future = promise->future();
00161
00162     for (auto & f: futures) {
00163         threading::bindCancellation(future, f);
00164     }
00165
00166     const auto totalItemCount = futures.size();
00167     promise->setProgressRange(0, static_cast<int>(totalItemCount));
00168     promise->setProgressValue(0);
00169
00170     promise->start();
00171

```

```

00172     auto resultIndexedList =
00173         std::make_shared<QList<std::pair<int, std::decay_t<T>...>>()>();
00174
00175     auto processedItemsCount = std::make_shared<int>(0);
00176     auto exceptionFlag = std::make_shared<bool>(false);
00177     auto mutex = std::make_shared<QMutex>();
00178
00179     for (int i = 0; i < futures.size(); ++i) {
00180         auto & f = futures[i];
00181         auto thenFuture = then(
00182             std::move(f),
00183             [promise, processedItemsCount, totalItemCount, exceptionFlag, mutex,
00184              resultIndexedList, i](std::decay_t<T> result) {
00185                 if (promise->isCanceled()) {
00186                     return;
00187                 }
00188
00189                 int count = 0;
00190                 {
00191                     const QMutexLocker locker(mutex.get());
00192
00193                     if (*exceptionFlag) {
00194                         return;
00195                     }
00196
00197                     ++(*processedItemsCount);
00198                     count = *processedItemsCount;
00199                     promise->setProgressValue(count);
00200
00201                     resultIndexedList->append(
00202                         std::make_pair(i, std::move(result)));
00203                 }
00204
00205                 if (count == totalItemCount) {
00206                     std::sort(
00207                         resultIndexedList->begin(), resultIndexedList->end(),
00208                         [](const auto & lhs, const auto & rhs) {
00209                             return lhs.first < rhs.first;
00210                         });
00211
00212                     auto resultList =
00213                         std::make_shared<QList<std::decay_t<T>...>>();
00214                     resultList->reserve(resultIndexedList->size());
00215                     for (auto & [i, v]: *resultIndexedList) {
00216                         resultList->append(std::move(v));
00217                     }
00218
00219                     promise->addResult(*resultList);
00220                     promise->finish();
00221                 }
00222             });
00223
00224     onFailed(
00225         std::move(thenFuture),
00226         [promise, mutex, exceptionFlag](const QException & e) {
00227             if (promise->isCanceled()) {
00228                 return;
00229             }
00230
00231             {
00232                 const QMutexLocker locker(mutex.get());
00233
00234                 if (*exceptionFlag) {
00235                     return;
00236                 }
00237
00238                 *exceptionFlag = true;
00239             }
00240
00241             promise->setException(e);
00242             promise->finish();
00243         });
00244     }
00245
00246     return future;
00247 }
00248
00254 template <class T, class U>
00255 void mapFutureProgress(
00256     const QFuture<T> & future, const std::shared_ptr<QPromise<U>> & promise)
00257 {
00258     const auto futureProgressMinimum = future.progressMinimum();
00259     const auto futureProgressRange =
00260         future.progressMaximum() - futureProgressMinimum;
00261
00262     Q_ASSERT(futureProgressRange >= 0);
00263

```

```

00264     const auto promiseFuture = promise->future();
00265     const auto promiseProgressMinimum = promiseFuture.progressMinimum();
00266     const auto promiseProgressMaximum = promiseFuture.progressMaximum();
00267
00268     const auto promiseProgressRange =
00269         promiseProgressMaximum - promiseProgressMinimum;
00270
00271     Q_ASSERT(promiseProgressRange >= 0);
00272
00273     auto futureWatcher = std::make_unique<QFutureWatcher<T>>();
00274
00275     QObject::connect(
00276         futureWatcher.get(), &QFutureWatcher<T>::progressValueChanged,
00277         futureWatcher.get(),
00278         [promise, futureProgressMinimum, futureProgressRange,
00279          promiseProgressRange, promiseProgressMinimum,
00280          promiseProgressMaximum](int progressValue) {
00281             if (Q_UNLIKELY(futureProgressRange == 0)) {
00282                 promise->setProgressValue(0);
00283                 return;
00284             }
00285
00286             const auto progressPart =
00287                 static_cast<double>(progressValue - futureProgressMinimum) /
00288                 static_cast<double>(futureProgressRange);
00289
00290             const auto mappedProgressValue = static_cast<int>(
00291                 std::round(progressPart * promiseProgressRange));
00292
00293             promise->setProgressValue(std::clamp(
00294                 promiseProgressMinimum + mappedProgressValue,
00295                 promiseProgressMinimum, promiseProgressMaximum));
00296         });
00297
00298     QObject::connect(
00299         futureWatcher.get(), &QFutureWatcher<T>::finished, futureWatcher.get(),
00300         [futureWatcherWeak = QPointer<QFutureWatcher<T>>(futureWatcher.get())] {
00301             if (!futureWatcherWeak.isNull()) {
00302                 futureWatcherWeak->deleteLater();
00303             }
00304         });
00305
00306     QObject::connect(
00307         futureWatcher.get(), &QFutureWatcher<T>::canceled, futureWatcher.get(),
00308         [futureWatcherWeak = QPointer<QFutureWatcher<T>>(futureWatcher.get())] {
00309             if (!futureWatcherWeak.isNull()) {
00310                 futureWatcherWeak->deleteLater();
00311             }
00312         });
00313
00314     futureWatcher->setFuture(future);
00315     Q_UNUSED(futureWatcher.release());
00316 }
00317
00318 } // namespace quantier::threading

```

## 6.69 Post.h

```

00001 /*
00002  * Copyright 2021-2024 Dmitry Ivanov
00003  *
00004  * This file is part of libquantier
00005  *
00006  * libquantier is free software; you can redistribute it and/or modify
00007  * it under the terms of the GNU Lesser General Public License as published by
00008  * the Free Software Foundation, version 3 of the License.
00009  *
00010  * libquantier is distributed in the hope that it will be useful,
00011  * but WITHOUT ANY WARRANTY; without even the implied warranty of
00012  * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <QAbstractEventDispatcher>
00022 #include <QMetaObject>
00023 #include <QObject>
00024
00025 #include <QThread>

```

```

00026
00027 #include <memory>
00028 #include <utility>
00029
00030 namespace quentier::threading {
00031
00032 template <typename Function>
00033 void postToObject(QObject * object, Function && function)
00034 {
00035     Q_ASSERT(object);
00036
00037     QMetaObject::invokeMethod(
00038         object, std::forward<Function>(function), Qt::QueuedConnection);
00039 }
00040
00041 template <typename Function>
00042 void postToThread(QThread * pThread, Function && function)
00043 {
00044     Q_ASSERT(pThread);
00045     Q_ASSERT(!pThread->isFinished());
00046
00047     QObject * pObject = QAbstractEventDispatcher::instance(pThread);
00048     if (!pObject) {
00049         // Thread's event loop has not been started yet. Create a dummy QObject,
00050         // move it to the target thread, set things up so that it would be
00051         // destroyed after the job is done and use postToObject.
00052         auto pDummyObj = std::make_unique<QObject>();
00053         pDummyObj->moveToThread(pThread);
00054         postToObject(
00055             pDummyObj.get(),
00056             [pObj = pDummyObj.get(),
00057              function = std::forward<Function>(function)]() mutable {
00058                 pObj->deleteLater();
00059                 function();
00060             });
00061         Q_UNUSED(pDummyObj.release()) // NOLINT
00062         return;
00063     }
00064
00065     if (pThread == QThread::currentThread()) {
00066         // Already on the target thread, executing the function right away
00067         function();
00068         return;
00069     }
00070
00071     QMetaObject::invokeMethod(pObject, std::forward<Function>(function));
00072 }
00073
00074 } // namespace quentier::threading

```

## 6.70 Qt5Promise.h

```

00001 /*
00002  * Copyright 2021-2024 Dmitry Ivanov
00003  *
00004  * This file is part of libquentier
00005  *
00006  * libquentier is free software; you can redistribute it and/or modify
00007  * it under the terms of the GNU Lesser General Public License as published by
00008  * the Free Software Foundation, version 3 of the License.
00009  *
00010  * libquentier is distributed in the hope that it will be useful,
00011  * but WITHOUT ANY WARRANTY; without even the implied warranty of
00012  * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <QFutureInterface>
00022
00023 #include <type_traits>
00024
00025 // Partial backport of QPromise from Qt6 to Qt5
00026 template <typename T>
00027 class QPromise
00028 {
00029     static_assert(
00030         std::is_copy_constructible_v<T> || std::is_move_constructible_v<T> ||
00031         std::is_same_v<T, void>,

```

```

00032         "Type with copy or move constructors or type void is required");
00033
00034 public:
00035     QPromise() = default;
00036
00037     Q_DISABLE_COPY(QPromise)
00038
00039     QPromise(QPromise<T> && other) noexcept : d(other.d)
00040     {
00041         other.d = QFutureInterface<T>();
00042     }
00043
00044     QPromise(QFutureInterface<T> & other) : d(other) {}
00045
00046     QPromise & operator=(QPromise<T> && other) noexcept
00047     {
00048         QPromise<T> tmp(std::move(other));
00049         tmp.swap(*this);
00050         return *this;
00051     }
00052
00053     ~QPromise()
00054     {
00055         // If QFutureInterface has no state, there is nothing to be done
00056         if (d.queryState(QFutureInterfaceBase::State::NoState)) {
00057             return;
00058         }
00059
00060         // Otherwise, if computation is not finished at this point, cancel
00061         // potential waits
00062         if (!d.queryState(QFutureInterfaceBase::State::Finished)) {
00063             d.cancel();
00064             finish(); // required to finalize the state
00065         }
00066     }
00067
00068     // Core QPromise APIs
00069     QFuture<T> future() const
00070     {
00071         return d.future();
00072     }
00073
00074     template <
00075         typename U,
00076         typename = std::enable_if_t<
00077             std::is_same_v<U, T> || std::is_convertible_v<U, T>>
00078     > void addResult(U && result, int index = -1)
00079     {
00080         d.reportResult(std::forward<U>(result), index);
00081     }
00082
00083     void setException(const QException & e)
00084     {
00085         d.reportException(e);
00086     }
00087
00088     void start()
00089     {
00090         d.reportStarted();
00091     }
00092
00093     void finish()
00094     {
00095         d.reportFinished();
00096     }
00097
00098     void suspendIfRequested()
00099     {
00100         d.suspendIfRequested();
00101     }
00102
00103     bool isCanceled() const
00104     {
00105         return d.isCanceled();
00106     }
00107
00108     // Progress methods
00109     void setProgressRange(int minimum, int maximum)
00110     {
00111         d.setProgressRange(minimum, maximum);
00112     }
00113
00114     void setProgressValue(int progressValue)
00115     {
00116         d.setProgressValue(progressValue);
00117     }
00118
00119     void setProgressValueAndText (
00120         int progressValue, const QString & progressText)
00121     {
00122         d.setProgressValueAndText (progressValue, progressText);
00123     }

```

```

00119     }
00120
00121     void swap(QPromise<T> & other) noexcept
00122     {
00123         qSwap(this->d, other.d);
00124     }
00125
00126 private:
00127     mutable QFutureInterface<T> d = QFutureInterface<T>();
00128 };
00129
00130 template <typename T>
00131 inline void swap(QPromise<T> & a, QPromise<T> & b) noexcept
00132 {
00133     a.swap(b);
00134 }

```

## 6.71 QtFutureContinuations.h

```

00001 /*
00002  * Copyright 2021-2024 Dmitry Ivanov
00003  *
00004  * This file is part of libquentier
00005  *
00006  * libquentier is free software; you can redistribute it and/or modify
00007  * it under the terms of the GNU Lesser General Public License as published by
00008  * the Free Software Foundation, version 3 of the License.
00009  *
00010  * libquentier is distributed in the hope that it will be useful,
00011  * but WITHOUT ANY WARRANTY; without even the implied warranty of
00012  * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <QtGlobal>
00022
00023 #include <QFutureWatcher>
00024 #include <QRunnable>
00025 #include <QThreadPool>
00026 #include <quentier/exception/RuntimeException.h>
00027 #include <quentier/threading/Post.h>
00028 #include <quentier/threading/QtFutureHelpers.h>
00029
00030 #if QT_VERSION < QT_VERSION_CHECK(6, 0, 0)
00031 #include <quentier/threading/Qt5Promise.h>
00032 #endif // QT_VERSION
00033
00034 #include <quentier/threading/Runnable.h>
00035
00036 #include <boost/core/demangle.hpp>
00037
00038 #include <memory>
00039 #include <type_traits>
00040 #include <typeinfo>
00041
00042 namespace quentier::threading {
00043
00044 // NOTE: "native" implementation of continuations for Qt6 is currently disabled
00045 // due to bugs in their implementation, in particular (but not limited to)
00046 // https://bugreports.qt.io/browse/QTBUG-119579 and
00047 // https://bugreports.qt.io/browse/QTBUG-117918. It's a shame but it is what it
00048 // is.
00049 /*
00050 #if QT_VERSION >= QT_VERSION_CHECK(6, 0, 0)
00051
00052 template <class T, class Function>
00053 QFuture<typename QtPrivate::ResultTypeHelper<Function, T>::ResultType> then(
00054     QFuture<T> && future, Function && function)
00055 {
00056     return future.then(std::forward<decltype(function)>(function));
00057 }
00058
00059 template <class T, class Function>
00060 QFuture<typename QtPrivate::ResultTypeHelper<Function, T>::ResultType> then(
00061     QFuture<T> && future, QtFuture::Launch policy, Function && function)
00062 {
00063     return future.then(policy, std::forward<decltype(function)>(function));
00064 }
00065 */

```



```

00065
00066 template <class T, class Function>
00067 QFuture<typename QtPrivate::ResultTypeHelper<Function, T>::ResultType> then(
00068     QFuture<T> && future, QThreadPool * pool, Function && function)
00069 {
00070     return future.then(pool, std::forward<decltype(function)>(function));
00071 }
00072
00073 template <class T, class Function>
00074 QFuture<typename QtPrivate::ResultTypeHelper<Function, T>::ResultType> then(
00075     QFuture<T> && future, QObject * context, Function && function)
00076 {
00077     return future.then(context, std::forward<decltype(function)>(function));
00078 }
00079
00080 template <class T, class Function>
00081 std::enable_if_t<!QtPrivate::ArgResolver<Function>::HasExtraArgs, QFuture<T>
00082     onFailed(QFuture<T> && future, Function && handler)
00083 {
00084     return future.onFailed(std::forward<decltype(handler)>(handler));
00085 }
00086
00087 template <class T, class Function>
00088 std::enable_if_t<!QtPrivate::ArgResolver<Function>::HasExtraArgs, QFuture<T>
00089     onFailed(QFuture<T> && future, QObject * context, Function && handler)
00090 {
00091     return future.onFailed(context, std::forward<decltype(handler)>(handler));
00092 }
00093
00094 #else // QT_VERSION
00095
00096 // implementation for Qt5
00097 */
00098
00099 namespace detail {
00100
00101 template <class T, class Function>
00102 void processParentFuture(
00103     std::shared_ptr<
00104         QPromise<typename ResultTypeHelper<Function, T>::ResultType>
00105         promise,
00106         QFuture<T> && future, Function && function)
00107 {
00108     Q_ASSERT(promise);
00109
00110     using ResultType = typename ResultTypeHelper<Function, T>::ResultType;
00111
00112     promise->start();
00113
00114     // If future contains exception, just forward it to the promise and
00115     // don't call the function at all
00116     try {
00117         future.waitForFinished();
00118     }
00119     catch (const QException & e) {
00120         promise->setException(e);
00121         promise->finish();
00122         return;
00123     }
00124     // NOTE: there cannot be other exception types in this context in Qt5
00125     // because exception store can only contain QExceptions
00126
00127     // Try to run the handler, in case of success forward the result to promise
00128     // (unless it is void), catch possible exceptions and if caught put them
00129     // to the promise
00130     try {
00131         if constexpr (std::is_void_v<ResultType>) {
00132             if constexpr (std::is_void_v<T>) {
00133                 function();
00134             }
00135             else {
00136                 if (future.resultCount() == 0) {
00137                     promise->setException(RuntimeError{ErrorString{
00138                         QString::fromUtf8(
00139                             "Invalid future continuation: detected future "
00140                             "without result for type %1"
00141                             .arg(QString::fromStdString(std::string{
00142                                 boost::core::demangle(typeid(T).name())
00143                             })))
00144                     });
00145                     promise->finish();
00146                     return;
00147                 }
00148                 function(future.result());
00149             }
00150         }
00151         else {
00152             if constexpr (std::is_void_v<T>) {

```

```

00152         promise->addResult(function());
00153     }
00154     else {
00155         promise->addResult(function(future.result()));
00156     }
00157 }
00158 }
00159 catch (const QException & e) {
00160     promise->setException(e);
00161 }
00162 catch (const std::exception & e) {
00163     QString error{QT_TRANSLATE_NOOP(
00164         "utility", "Unknown std::exception in then future handler")};
00165     error.details() = QString::fromStdString(std::string{e.what()});
00166     promise->setException(RuntimeError{std::move(error)});
00167 }
00168 catch (...) {
00169     QString error{QT_TRANSLATE_NOOP(
00170         "utility", "Unknown exception in then future handler")};
00171     promise->setException(RuntimeError{std::move(error)});
00172 }
00173
00174 promise->finish();
00175 }
00176
00177 } // namespace detail
00178
00179 template <class T, class Function>
00180 QFuture<typename detail::ResultTypeHelper<Function, T>::ResultType> then(
00181     QFuture<T> && future, Function && function)
00182 {
00183     using ResultType =
00184         typename detail::ResultTypeHelper<Function, T>::ResultType;
00185
00186     auto promise = std::make_shared<QPromise<ResultType>>();
00187     auto result = promise->future();
00188
00189     if (future.isFinished()) {
00190         detail::processParentFuture(
00191             std::move(promise), std::move(future),
00192             std::forward<decltype(function)>(function));
00193         return result;
00194     }
00195
00196     auto watcher = std::make_unique<QFutureWatcher<T>>();
00197     auto * rawWatcher = watcher.get();
00198     QObject::connect(
00199         rawWatcher, &QFutureWatcher<T>::finished, rawWatcher,
00200         [rawWatcher, function = std::forward<decltype(function)>(function),
00201             promise = std::move(promise)]() mutable {
00202             detail::processParentFuture(
00203                 std::move(promise), rawWatcher->future(),
00204                 std::forward<decltype(function)>(function));
00205             rawWatcher->deleteLater();
00206         });
00207
00208     QObject::connect(
00209         rawWatcher, &QFutureWatcher<T>::canceled, rawWatcher,
00210         [rawWatcher] { rawWatcher->deleteLater(); });
00211
00212     watcher->setFuture(std::move(future));
00213     Q_UNUSED(watcher.release());
00214
00215     return result;
00216 }
00217
00218 template <class T, class Function>
00219 QFuture<typename detail::ResultTypeHelper<Function, T>::ResultType> then(
00220     QFuture<T> && future, QtFuture::Launch policy, Function && function)
00221 {
00222     if (policy == QtFuture::Launch::Sync) {
00223         return then(
00224             std::move(future), std::forward<decltype(function)>(function));
00225     }
00226
00227     return then(
00228         std::move(future), QThreadPool::globalInstance(),
00229         std::forward<decltype(function)>(function));
00230 }
00231
00232 template <class T, class Function>
00233 QFuture<typename detail::ResultTypeHelper<Function, T>::ResultType> then(
00234     QFuture<T> && future, QThreadPool * pool, Function && function)
00235 {
00236     using ResultType =
00237         typename detail::ResultTypeHelper<Function, T>::ResultType;
00238

```

```

00239     auto promise = std::make_shared<QPromise<ResultType>>();
00240     auto result = promise->future();
00241
00242     if (future.isFinished()) {
00243         auto * runnable = createFunctionRunnable(
00244             [future = std::move(future), promise = std::move(promise),
00245              function = std::forward<decltype(function)>(function)]() mutable {
00246                 detail::processParentFuture(
00247                     std::move(promise), std::move(future),
00248                     std::forward<decltype(function)>(function));
00249             });
00250         runnable->setAutoDelete(true);
00251         pool->start(runnable);
00252         return result;
00253     }
00254
00255     auto watcher = std::make_unique<QFutureWatcher<T>>();
00256     auto * rawWatcher = watcher.get();
00257     QObject::connect(
00258         rawWatcher, &QFutureWatcher<T>::finished, rawWatcher,
00259         [rawWatcher, function = std::forward<decltype(function)>(function),
00260          promise = std::move(promise), pool]() mutable {
00261             auto * runnable = createFunctionRunnable(
00262                 [function = std::forward<decltype(function)>(function),
00263                  promise = std::move(promise),
00264                  future = rawWatcher->future()]() mutable {
00265                     detail::processParentFuture(
00266                         std::move(promise), std::move(future),
00267                         std::forward<decltype(function)>(function));
00268                 });
00269             runnable->setAutoDelete(true);
00270             pool->start(runnable);
00271             rawWatcher->deleteLater();
00272         });
00273
00274     QObject::connect(
00275         rawWatcher, &QFutureWatcher<T>::canceled, rawWatcher,
00276         [rawWatcher] { rawWatcher->deleteLater(); });
00277
00278     watcher->setFuture(std::move(future));
00279     Q_UNUSED(watcher.release());
00280
00281     return result;
00282 }
00283
00284 template <class T, class Function>
00285 QFuture<typename detail::ResultTypeHelper<Function, T>::ResultType> then(
00286     QFuture<T> && future, QObject * context, Function && function)
00287 {
00288     using ResultType =
00289         typename detail::ResultTypeHelper<Function, T>::ResultType;
00290
00291     auto promise = std::make_shared<QPromise<ResultType>>();
00292     auto result = promise->future();
00293
00294     if (future.isFinished()) {
00295         postToObject(
00296             context,
00297             [future = std::move(future), promise = std::move(promise),
00298              function = std::forward<decltype(function)>(function)]() mutable {
00299                 detail::processParentFuture(
00300                     std::move(promise), std::move(future),
00301                     std::forward<decltype(function)>(function));
00302             });
00303         return result;
00304     }
00305
00306     auto watcher = std::make_unique<QFutureWatcher<T>>();
00307     auto * rawWatcher = watcher.get();
00308
00309     QObject::connect(
00310         rawWatcher, &QFutureWatcher<T>::finished, context,
00311         [context, rawWatcher,
00312          function = std::forward<decltype(function)>(function),
00313          promise = std::move(promise)]() mutable {
00314             postToObject(
00315                 context,
00316                 [function = std::forward<decltype(function)>(function),
00317                  promise = std::move(promise),
00318                  future = rawWatcher->future()]() mutable {
00319                     detail::processParentFuture(
00320                         std::move(promise), std::move(future),
00321                         std::forward<decltype(function)>(function));
00322                 });
00323             rawWatcher->deleteLater();
00324         });
00325

```

```

00326     QObject::connect (
00327         rawWatcher, &QFutureWatcher<T>::canceled, rawWatcher,
00328         [rawWatcher] { rawWatcher->deleteLater(); });
00329
00330     watcher->setFuture(std::move(future));
00331     Q_UNUSED(watcher.release())
00332
00333     return result;
00334 }
00335
00336 namespace detail {
00337
00338 template <class T, class Function>
00339 std::enable_if_t<!QtPrivate::ArgResolver<Function>::HasExtraArgs, void>
00340 processPossibleFutureException(
00341     std::shared_ptr<QPromise<T>> promise, QFuture<T> && future,
00342     Function && handler)
00343 {
00344     Q_ASSERT(promise);
00345
00346     using ArgType = typename QtPrivate::ArgResolver<Function>::First;
00347     using ResultType =
00348         typename ResultTypeHelper<Function, std::decay_t<ArgType>>::ResultType;
00349     static_assert(std::is_convertible_v<ResultType, T>);
00350
00351     promise->start();
00352
00353     try {
00354         try {
00355             future.waitForFinished();
00356         }
00357         catch (const ArgType & e) {
00358             try {
00359                 if constexpr (std::is_void_v<ResultType>) {
00360                     handler(e);
00361                 }
00362                 else {
00363                     promise->addResult(handler(e));
00364                 }
00365             }
00366             catch (const QException & e) {
00367                 promise->setException(e);
00368             }
00369             catch (const std::exception & e) {
00370                 ErrorString error{QT_TRANSLATE_NOOP(
00371                     "utility",
00372                     "Unknown std::exception in onFailed future handler")};
00373                 error.details() = QString::fromStdString(std::string{e.what()});
00374                 promise->setException(RuntimeError{std::move(error)});
00375             }
00376             catch (...) {
00377                 ErrorString error{QT_TRANSLATE_NOOP(
00378                     "utility", "Unknown exception in onFailed future handler")};
00379                 promise->setException(RuntimeError{std::move(error)});
00380             }
00381         }
00382     }
00383     // Exception doesn't match with handler's argument type, propagate
00384     // the exception to be handled later.
00385     catch (const QException & e) {
00386         promise->setException(e);
00387     }
00388     catch (const std::exception & e) {
00389         ErrorString error{QT_TRANSLATE_NOOP(
00390             "utility",
00391             "Unknown std::exception which did not match with onFailed "
00392             "future handler")};
00393         error.details() = QString::fromStdString(std::string{e.what()});
00394         promise->setException(RuntimeError{std::move(error)});
00395     }
00396     catch (...) {
00397         ErrorString error{QT_TRANSLATE_NOOP(
00398             "utility",
00399             "Unknown which did not match with onFailed "
00400             "future handler")};
00401         promise->setException(RuntimeError{std::move(error)});
00402     }
00403
00404     promise->finish();
00405 }
00406
00407 } // namespace detail
00408
00409 // WARNING! "Chaining" of onFailed calls would only work properly with Qt5 if
00410 // all involved exceptions subclass QException. It is due to the way exception
00411 // storage is implemented in Qt5. In Qt6 is was made to store std::exception_ptr
00412 // so there's no requirement to use QExceptions in Qt6.

```

```

00413
00414 template <class T, class Function>
00415 std::enable_if_t<!QtPrivate::ArgResolver<Function>::HasExtraArgs, QFuture<T>
00416     onFailed(QFuture<T> && future, Function && handler)
00417 {
00418     auto promise = std::make_shared<QPromise<T>>();
00419     auto result = promise->future();
00420
00421     if (future.isFinished()) {
00422         detail::processPossibleFutureException(
00423             std::move(promise), std::move(future),
00424             std::forward<decltype(handler)>(handler));
00425         return result;
00426     }
00427
00428     auto watcher = std::make_unique<QFutureWatcher<T>>();
00429     auto * rawWatcher = watcher.get();
00430     QObject::connect(
00431         rawWatcher, &QFutureWatcher<T>::finished, rawWatcher,
00432         [rawWatcher, promise = std::move(promise),
00433          handler = std::forward<decltype(handler)>(handler)]() mutable {
00434             auto future = rawWatcher->future();
00435             rawWatcher->deleteLater();
00436             detail::processPossibleFutureException(
00437                 std::move(promise), std::move(future),
00438                 std::forward<decltype(handler)>(handler));
00439         });
00440
00441     QObject::connect(
00442         rawWatcher, &QFutureWatcher<T>::canceled, rawWatcher,
00443         [rawWatcher] { rawWatcher->deleteLater(); });
00444
00445     watcher->setFuture(std::move(future));
00446     Q_UNUSED(watcher.release())
00447
00448     return result;
00449 }
00450
00451 template <class T, class Function>
00452 std::enable_if_t<!QtPrivate::ArgResolver<Function>::HasExtraArgs, QFuture<T>
00453     onFailed(QFuture<T> && future, QObject * context, Function && handler)
00454 {
00455     auto promise = std::make_shared<QPromise<T>>();
00456     auto result = promise->future();
00457
00458     if (future.isFinished()) {
00459         postToObject(
00460             context,
00461             [promise = std::move(promise), future = std::move(future),
00462              handler = std::forward<decltype(handler)>(handler)]() mutable {
00463                 detail::processPossibleFutureException(
00464                     std::move(promise), std::move(future),
00465                     std::forward<decltype(handler)>(handler));
00466             });
00467         return result;
00468     }
00469
00470     auto watcher = std::make_unique<QFutureWatcher<T>>();
00471     auto * rawWatcher = watcher.get();
00472     QObject::connect(
00473         rawWatcher, &QFutureWatcher<T>::finished, context,
00474         [context, rawWatcher, promise = std::move(promise),
00475          handler = std::forward<decltype(handler)>(handler)]() mutable {
00476             postToObject(
00477                 context,
00478                 [promise = std::move(promise), future = rawWatcher->future(),
00479                  handler = std::forward<decltype(handler)>(handler)]() mutable {
00480                     detail::processPossibleFutureException(
00481                         std::move(promise), std::move(future),
00482                         std::forward<decltype(handler)>(handler));
00483                 });
00484             rawWatcher->deleteLater();
00485         });
00486
00487     QObject::connect(
00488         rawWatcher, &QFutureWatcher<T>::canceled, rawWatcher,
00489         [rawWatcher] { rawWatcher->deleteLater(); });
00490
00491     watcher->setFuture(std::move(future));
00492     Q_UNUSED(watcher.release())
00493
00494     return result;
00495 }
00496
00497 // #endif // QT_VERSION
00498
00499 // Convenience functions for both Qt versions

```

```

00500
00501 template <class T, class U, class Function>
00502 void thenOrFailed(
00503     QFuture<T> && future, std::shared_ptr<QPromise<U>> promise,
00504     Function && function)
00505 {
00506     auto thenFuture =
00507         then(std::move(future), std::forward<decltype(function)>(function));
00508
00509     onFailed(std::move(thenFuture), [promise](const QException & e) {
00510         promise->setException(e);
00511         promise->finish();
00512     });
00513 }
00514
00515 template <class T, class U, class Function>
00516 void thenOrFailed(
00517     QFuture<T> && future, QThread * thread,
00518     std::shared_ptr<QPromise<U>> promise, Function && function)
00519 {
00520     auto thenFuture =
00521         then(std::move(future), thread, std::forward<Function>(function));
00522
00523     onFailed(std::move(thenFuture), thread, [promise](const QException & e) {
00524         promise->setException(e);
00525         promise->finish();
00526     });
00527 }
00528
00529 template <class T, class U>
00530 void thenOrFailed(QFuture<T> && future, std::shared_ptr<QPromise<U>> promise)
00531 {
00532     thenOrFailed(std::move(future), promise, [promise] { promise->finish(); });
00533 }
00534
00535 template <class T, class U>
00536 void thenOrFailed(
00537     QFuture<T> && future, QThread * thread,
00538     std::shared_ptr<QPromise<U>> promise)
00539 {
00540     thenOrFailed(
00541         std::move(future), thread, promise, [promise] { promise->finish(); });
00542 }
00543
00544 } // namespace quantier::threading

```

## 6.72 QtFutureHelpers.h

```

00001 /*
00002  * Copyright 2021-2024 Dmitry Ivanov
00003  *
00004  * This file is part of libquantier
00005  *
00006  * libquantier is free software; you can redistribute it and/or modify
00007  * it under the terms of the GNU Lesser General Public License as published by
00008  * the Free Software Foundation, version 3 of the License.
00009  *
00010  * libquantier is distributed in the hope that it will be useful,
00011  * but WITHOUT ANY WARRANTY; without even the implied warranty of
00012  * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <QFuture>
00022
00023 #if QT_VERSION < QT_VERSION_CHECK(6, 0, 0)
00024 #include "Qt5Promise.h"
00025 #endif
00026
00027 #include <type_traits>
00028
00029 #if QT_VERSION < QT_VERSION_CHECK(6, 0, 0)
00030 // Backports of some helpers for QFuture continuations from Qt6 to Qt5
00031 namespace QtFuture {
00032
00033 // Inherit option from Qt6 is not supported in Qt5
00034 enum class Launch
00035 {

```

```

00036     Sync,
00037     Async,
00038 };
00039
00040 } // namespace QtFuture
00041
00042 namespace QtPrivate {
00043
00044 template <typename...>
00045 struct ArgsType;
00046
00047 template <typename Arg, typename... Args>
00048 struct ArgsType<Arg, Args...>
00049 {
00050     using First = Arg;
00051     using PromiseType = void;
00052     using IsPromise = std::false_type;
00053     static const bool HasExtraArgs = (sizeof...(Args) > 0);
00054
00055     template <class Class, class Callable>
00056     static const bool CanInvokeWithArgs =
00057         std::is_invocable_v<Callable, Class, Arg, Args...>;
00058 };
00059
00060 template <typename Arg, typename... Args>
00061 struct ArgsType<QPromise<Arg> &, Args...>
00062 {
00063     using First = QPromise<Arg> &;
00064     using PromiseType = Arg;
00065     using IsPromise = std::true_type;
00066     static const bool HasExtraArgs = (sizeof...(Args) > 0);
00067
00068     template <class Class, class Callable>
00069     static const bool CanInvokeWithArgs =
00070         std::is_invocable_v<Callable, Class, QPromise<Arg> &, Args...>;
00071 };
00072
00073 template <>
00074 struct ArgsType<>
00075 {
00076     using First = void;
00077     using PromiseType = void;
00078     using IsPromise = std::false_type;
00079     static const bool HasExtraArgs = false;
00080     using AllArgs = void;
00081
00082     template <class Class, class Callable>
00083     static const bool CanInvokeWithArgs = std::is_invocable_v<Callable, Class>;
00084 };
00085
00086 template <typename F>
00087 struct ArgResolver : ArgResolver<decltype(&std::decay_t<F>::operator())>
00088 {};
00089
00090 template <typename F>
00091 struct ArgResolver<std::reference_wrapper<F> > :
00092     ArgResolver<decltype(&std::decay_t<F>::operator())>
00093 {};
00094
00095 template <typename R, typename... Args>
00096 struct ArgResolver<R(Args...)> : public ArgsType<Args...>
00097 {};
00098
00099 template <typename R, typename... Args>
00100 struct ArgResolver<R (*) (Args...)> : public ArgsType<Args...>
00101 {};
00102
00103 template <typename R, typename... Args>
00104 struct ArgResolver<R (&) (Args...)> : public ArgsType<Args...>
00105 {};
00106
00107 template <typename R, typename... Args>
00108 struct ArgResolver<R (*const) (Args...)> : public ArgsType<Args...>
00109 {};
00110
00111 template <typename R, typename... Args>
00112 struct ArgResolver<R (&) (Args...)> : public ArgsType<Args...>
00113 {};
00114
00115 template <typename Class, typename R, typename... Args>
00116 struct ArgResolver<R (Class::*) (Args...)> : public ArgsType<Args...>
00117 {};
00118
00119 template <typename Class, typename R, typename... Args>
00120 struct ArgResolver<R (Class::*) (Args...) noexcept> : public ArgsType<Args...>
00121 {};
00122

```

```

00123 template <typename Class, typename R, typename... Args>
00124 struct ArgResolver<R (Class::*)(Args...) const> : public ArgsType<Args...>
00125 {};
00126
00127 template <typename Class, typename R, typename... Args>
00128 struct ArgResolver<R (Class::*)(Args...) const noexcept> :
00129     public ArgsType<Args...>
00130 {};
00131
00132 template <typename Class, typename R, typename... Args>
00133 struct ArgResolver<R (Class::*const)(Args...) const> : public ArgsType<Args...>
00134 {};
00135
00136 template <typename Class, typename R, typename... Args>
00137 struct ArgResolver<R (Class::*const)(Args...) const noexcept> :
00138     public ArgsType<Args...>
00139 {};
00140
00141 } // namespace QtPrivate
00142 #endif // QT_VERSION
00143
00144 namespace quantier::threading::detail {
00145
00146 template <typename F, typename Arg, typename Enable = void>
00147 struct ResultTypeHelper
00148 {};
00149
00150 // The callable takes an argument of type Arg
00151 template <typename F, typename Arg>
00152 struct ResultTypeHelper<
00153     F, Arg,
00154     typename std::enable_if_t<
00155         !std::is_invocable_v<std::decay_t<F>, QFuture<Arg>>>
00156 {
00157     using ResultType = std::invoke_result_t<std::decay_t<F>, std::decay_t<Arg>;
00158 };
00159
00160 // The callable takes an argument of type QFuture<Arg>
00161 template <class F, class Arg>
00162 struct ResultTypeHelper<
00163     F, Arg,
00164     typename std::enable_if_t<
00165         std::is_invocable_v<std::decay_t<F>, QFuture<Arg>>>
00166 {
00167     using ResultType = std::invoke_result_t<std::decay_t<F>, QFuture<Arg>>;
00168 };
00169
00170 // The callable takes an argument of type QFuture<void>
00171 template <class F>
00172 struct ResultTypeHelper<
00173     F, void,
00174     typename std::enable_if_t<
00175         std::is_invocable_v<std::decay_t<F>, QFuture<void>>>
00176 {
00177     using ResultType = std::invoke_result_t<std::decay_t<F>, QFuture<void>>;
00178 };
00179
00180 // The callable doesn't take argument
00181 template <class F>
00182 struct ResultTypeHelper<
00183     F, void,
00184     typename std::enable_if_t<
00185         !std::is_invocable_v<std::decay_t<F>, QFuture<void>>>
00186 {
00187     using ResultType = std::invoke_result_t<std::decay_t<F>;
00188 };
00189
00190 } // namespace quantier::threading::detail

```

## 6.73 Runnable.h

```

00001 /*
00002  * Copyright 2021 Dmitry Ivanov
00003  *
00004  * This file is part of libquantier
00005  *
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00009  *
00010  * libquantier is distributed in the hope that it will be useful,
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```



```

00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <functional>
00024
00025 class QRunnable;
00026
00027 namespace quentier::threading {
00028
00029 [[nodiscard]] auto QUINTIER_EXPORT
00030     createFunctionRunnable(std::function<void()> function) -> QRunnable *;
00031
00032 } // namespace quentier::threading

```

## 6.74 TrackedTask.h

```

00001  /*
00002  * Copyright 2022-2024 Dmitry Ivanov
00003  *
00004  * This file is part of libquentier
00005  *
00006  * libquentier is free software; you can redistribute it and/or modify
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00009  *
00010  * libquentier is distributed in the hope that it will be useful,
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00012  * MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
00013  * GNU Lesser General Public License for more details.
00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <functional>
00022 #include <type_traits>
00023 #include <utility>
00024
00025 namespace quentier::threading {
00026
00027 namespace detail {
00028
00029 template <typename LockableObject, typename Function, typename... Arguments>
00030 constexpr std::enable_if_t<std::is_invocable_v<Function, Arguments...> invoke(
00031     LockableObject & lockableObject, Function & function,
00032     Arguments &&... arguments)
00033 {
00034     const auto lockedObject = lockableObject.lock();
00035     if (lockedObject) {
00036         std::invoke(function, std::forward<Arguments>(arguments)...);
00037     }
00038 }
00039
00040 template <typename LockableObject, typename Function, typename... Arguments>
00041 constexpr std::enable_if_t<
00042     !std::is_invocable_v<Function, Arguments...> &&
00043     std::is_member_function_pointer_v<Function>
00044     invoke(
00045         LockableObject & lockableObject, Function & function,
00046         Arguments &&... arguments)
00047 {
00048     const auto lockedObject = lockableObject.lock();
00049     if (lockedObject) {
00050         std::invoke(
00051             function, *lockedObject, std::forward<Arguments>(arguments)...);
00052     }
00053 }
00054
00055 } // namespace detail
00056
00057 template <typename LockableObject, typename Function>
00058 class TrackedTask
00059 {
00060 public:

```

```

00077     template <typename SomeLockableObject, typename SomeFunction>
00078     constexpr TrackedTask(
00079         SomeLockableObject && someLockableObject, SomeFunction && function) :
00080         m_lockableObject{std::forward<SomeLockableObject>(someLockableObject)},
00081         m_function{std::forward<SomeFunction>(function)}
00082     {}
00083
00084     template <
00085         typename... Arguments,
00086         typename = std::enable_if_t<
00087             std::is_invocable_v<Function, Arguments...> ||
00088             std::is_member_function_pointer_v<Function>>
00089     > constexpr void operator()(Arguments &&... arguments)
00090     {
00091         detail::invoke(
00092             m_lockableObject, m_function,
00093             std::forward<Arguments>(arguments)...);
00094     }
00095
00096     template <
00097         typename... Arguments,
00098         typename = std::enable_if_t<
00099             std::is_invocable_v<Function, Arguments...> ||
00100             std::is_member_function_pointer_v<Function>>
00101     > constexpr void operator()(Arguments &&... arguments) const
00102     {
00103         detail::invoke(
00104             m_lockableObject, m_function,
00105             std::forward<Arguments>(arguments)...);
00106     }
00107
00108 private:
00109     LockableObject m_lockableObject;
00110     Function m_function;
00111 };
00112
00113 template <typename LockableObject, typename Function>
00114 TrackedTask(LockableObject, Function) -> TrackedTask<LockableObject, Function>;
00115
00116 } // namespace quentier::threading

```

## 6.75 Account.h

```

00001 /*
00002  * Copyright 2016-2024 Dmitry Ivanov
00003  *
00004  * This file is part of libquentier
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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Printable.h>
00022
00023 #include <qevercloud/QEverCloud.h>
00024
00025 #include <QSharedDataPointer>
00026 #include <QString>
00027
00028 namespace quentier {
00029
00030     class AccountData;
00031
00032     class QUINTIER_EXPORT Account : public Printable
00033     {
00034     public:
00035         enum class Type
00036         {
00037             Local,
00038             Evernote
00039         };
00040     };
00041
00042 }
00043
00044
00045

```

```

00046     friend QUINTIER_EXPORT QTextStream & operator<<(
00047         QTextStream & strm, Type type);
00048
00049     friend QUINTIER_EXPORT QDebug & operator<<(QDebug & dbg, Type type);
00050
00051     enum class EvernoteAccountType
00052     {
00053         Free,
00054         Plus,
00055         Premium,
00056         Business
00057     };
00058
00059     friend QUINTIER_EXPORT QTextStream & operator<<(
00060         QTextStream & strm, EvernoteAccountType type);
00061
00062     friend QUINTIER_EXPORT QDebug & operator<<(
00063         QDebug & dbg, EvernoteAccountType type);
00064
00065 public:
00066     explicit Account();
00067
00068     explicit Account(
00069         QString name, Type type, qevercloud::UserID userId = -1,
00070         EvernoteAccountType evernoteAccountType = EvernoteAccountType::Free,
00071         QString evernoteHost = {}, QString shardId = {});
00072
00073     Account(const Account & other);
00074     Account(Account && other) noexcept;
00075
00076     Account & operator=(const Account & other);
00077     Account & operator=(Account && other) noexcept;
00078
00079     ~Account() noexcept override;
00080
00081     [[nodiscard]] bool operator==(const Account & other) const noexcept;
00082     [[nodiscard]] bool operator!=(const Account & other) const noexcept;
00083
00084     [[nodiscard]] bool isEmpty() const;
00085
00086     [[nodiscard]] QString name() const;
00087
00088     void setName(QString name);
00089
00090     [[nodiscard]] QString displayName() const;
00091
00092     void setDisplayName(QString displayName);
00093
00094     [[nodiscard]] Type type() const;
00095
00096     [[nodiscard]] qevercloud::UserID id() const;
00097
00098     [[nodiscard]] EvernoteAccountType evernoteAccountType() const;
00099
00100     [[nodiscard]] QString evernoteHost() const;
00101
00102     [[nodiscard]] QString shardId() const;
00103
00104     void setEvernoteAccountType(EvernoteAccountType evernoteAccountType);
00105     void setEvernoteHost(QString evernoteHost);
00106     void setShardId(QString shardId);
00107
00108     [[nodiscard]] quint32 mailLimitDaily() const;
00109     [[nodiscard]] quint64 noteSizeMax() const;
00110     [[nodiscard]] quint64 resourceSizeMax() const;
00111     [[nodiscard]] quint32 linkedNotebookMax() const;
00112     [[nodiscard]] quint32 noteCountMax() const;
00113     [[nodiscard]] quint32 notebookCountMax() const;
00114     [[nodiscard]] quint32 tagCountMax() const;
00115     [[nodiscard]] quint32 savedTagCountMax() const;
00116     [[nodiscard]] quint32 savedSearchCountMax() const;
00117     [[nodiscard]] quint32 noteResourceCountMax() const;
00118
00119     void setEvernoteAccountLimits(const qevercloud::AccountLimits & limits);
00120
00121     QTextStream & print(QTextStream & strm) const override;
00122
00123 private:
00124     QSharedDataPointer<AccountData> d;
00125 };
00126
00127 } // namespace quentier

```

## 6.76 ErrorString.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Printable.h>
00022
00023 #include <QSharedDataPointer>
00024
00025 namespace quentier {
00026
00027 class ErrorStringData;
00028
00042 class QUENTIER_EXPORT ErrorString : public Printable
00043 {
00044 public:
00045     explicit ErrorString(const char * error = nullptr);
00046     explicit ErrorString(const QString & error);
00047
00048     ErrorString(const ErrorString & other);
00049     ErrorString(ErrorString && other) noexcept;
00050
00051     ErrorString & operator=(const ErrorString & other);
00052     ErrorString & operator=(ErrorString && other) noexcept;
00053
00054     ~ErrorString() override;
00055
00056     [[nodiscard]] const QString & base() const noexcept;
00057     [[nodiscard]] QString & base();
00058
00059     [[nodiscard]] const QStringList & additionalBases() const noexcept;
00060     [[nodiscard]] QStringList & additionalBases();
00061
00062     [[nodiscard]] const QString & details() const noexcept;
00063     [[nodiscard]] QString & details();
00064
00065     void setBase(QString error);
00066     void setBase(const char * error);
00067
00068     void appendBase(const QString & error);
00069     void appendBase(const QStringList & errors);
00070     void appendBase(const char * error);
00071
00072     void setDetails(const QString & error);
00073     void setDetails(const char * error);
00074
00075     [[nodiscard]] bool isEmpty() const;
00076     void clear();
00077
00078     [[nodiscard]] QString localizedString() const;
00079     [[nodiscard]] QString nonLocalizedString() const;
00080
00081     QTextStream & print(QTextStream & strm) const override;
00082
00083 private:
00084     QSharedDataPointer<ErrorStringData> d;
00085 };
00086
00087 [[nodiscard]] QUENTIER_EXPORT bool operator==(
00088     const ErrorString & lhs, const ErrorString & rhs) noexcept;
00089
00090 [[nodiscard]] QUENTIER_EXPORT bool operator!=(
00091     const ErrorString & lhs, const ErrorString & rhs) noexcept;
00092
00093 } // namespace quentier

```

## 6.77 NoteUtils.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/types/Fwd.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 #include <qevercloud/types/Fwd.h>
00025
00026 #include <QStringList>
00027
00028 #include <utility>
00029
00030 namespace quentier {
00031
00032 [[nodiscard]] QUENTIER_EXPORT bool isInkNote(const qevercloud::Note & note);
00033
00034 [[nodiscard]] QUENTIER_EXPORT bool noteContentContainsCheckedToDo(
00035     const QString & noteContent);
00036
00037 [[nodiscard]] QUENTIER_EXPORT bool noteContentContainsUncheckedToDo(
00038     const QString & noteContent);
00039
00040 [[nodiscard]] QUENTIER_EXPORT bool noteContentContainsToDo(
00041     const QString & noteContent);
00042
00043 [[nodiscard]] QUENTIER_EXPORT bool noteContentContainsEncryptedFragments(
00044     const QString & noteContent);
00045
00046 [[nodiscard]] QUENTIER_EXPORT QString noteContentToPlainText(
00047     const QString & noteContent, ErrorString * errorDescription = nullptr);
00048
00049 [[nodiscard]] QUENTIER_EXPORT QStringList noteContentToListOfWords(
00050     const QString & noteContent, ErrorString * errorDescription = nullptr);
00051
00052 [[nodiscard]] QUENTIER_EXPORT std::pair<QString, QStringList>
00053     noteContentToPlainTextAndListOfWords(
00054     const QString & noteContent, ErrorString * errorDescription = nullptr);
00055
00056 } // namespace quentier

```

## 6.78 RegisterMetatypes.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022

```

```

00023 namespace quantier {
00024
00025 QUENTIER_EXPORT void registerMetatypes();
00026
00027 } // namespace quantier

```

## 6.79 ResourceRecognitionIndexItem.h

```

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00014  *
00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/utility/Linkage.h>
00022 #include <quantier/utility/Printable.h>
00023
00024 #include <QByteArray>
00025 #include <QList>
00026 #include <QSharedDataPointer>
00027
00028 #include <memory>
00029
00030 namespace quantier {
00031
00032 class ResourceRecognitionIndexItemData;
00033
00034 class QUENTIER_EXPORT ResourceRecognitionIndexItem : public Printable
00035 {
00036 public:
00037     explicit ResourceRecognitionIndexItem();
00038
00039     ResourceRecognitionIndexItem(const ResourceRecognitionIndexItem & other);
00040
00041     ResourceRecognitionIndexItem(
00042         ResourceRecognitionIndexItem && other) noexcept;
00043
00044     ResourceRecognitionIndexItem & operator=(
00045         const ResourceRecognitionIndexItem & other);
00046
00047     ResourceRecognitionIndexItem & operator=(
00048         ResourceRecognitionIndexItem && other) noexcept;
00049
00050     ~ResourceRecognitionIndexItem() override;
00051
00052     [[nodiscard]] bool isValid() const;
00053
00054     [[nodiscard]] int x() const;
00055     void setX(int x);
00056
00057     [[nodiscard]] int y() const;
00058     void setY(int y);
00059
00060     [[nodiscard]] int h() const;
00061     void setH(int h);
00062
00063     [[nodiscard]] int w() const;
00064     void setW(int w);
00065
00066     [[nodiscard]] int offset() const;
00067     void setOffset(int offset);
00068
00069     [[nodiscard]] int duration() const;
00070     void setDuration(int duration);
00071
00072     [[nodiscard]] QList<int> strokes() const;
00073     void setStrokes(QList<int> strokes);
00074
00075     struct QUENTIER_EXPORT ITextItem

```

```

00076     {
00077         virtual ~ITextItem();
00078
00079         [[nodiscard]] virtual QString text() const = 0;
00080         [[nodiscard]] virtual int weight() const = 0;
00081     };
00082
00083     using ITextItemPtr = std::shared_ptr<ITextItem>;
00084
00085     [[nodiscard]] QList<ITextItemPtr> textItems() const;
00086     void setTextItems(QList<ITextItemPtr> textItems);
00087
00088     struct QUINTIER_EXPORT IObjectItem
00089     {
00090         virtual ~IObjectItem();
00091
00092         [[nodiscard]] virtual QString objectType() const = 0;
00093         [[nodiscard]] virtual int weight() const = 0;
00094     };
00095
00096     using IObjectItemPtr = std::shared_ptr<IObjectItem>;
00097
00098     [[nodiscard]] QList<IObjectItemPtr> objectItems() const;
00099     void setObjectItems(QList<IObjectItemPtr> objectItems);
00100
00101     struct QUINTIER_EXPORT IShapeItem
00102     {
00103         virtual ~IShapeItem();
00104
00105         [[nodiscard]] virtual QString shape() const = 0;
00106         [[nodiscard]] virtual int weight() const = 0;
00107     };
00108
00109     using IShapeItemPtr = std::shared_ptr<IShapeItem>;
00110
00111     [[nodiscard]] QList<IShapeItemPtr> shapeItems() const;
00112     void setShapeItems(QList<IShapeItemPtr> shapeItems);
00113
00114     struct QUINTIER_EXPORT IBarcodeItem
00115     {
00116         virtual ~IBarcodeItem();
00117
00118         [[nodiscard]] virtual QString barcode() const = 0;
00119         [[nodiscard]] virtual int weight() const = 0;
00120     };
00121
00122     using IBarcodeItemPtr = std::shared_ptr<IBarcodeItem>;
00123
00124     [[nodiscard]] QList<IBarcodeItemPtr> barcodeItems() const;
00125     void setBarcodeItems(QList<IBarcodeItemPtr> barcodeItems);
00126
00127     QTextStream & print(QTextStream & strm) const override;
00128
00129 private:
00130     QSharedDataPointer<ResourceRecognitionIndexItemData> d;
00131 };
00132
00133 } // namespace quentier

```

## 6.80 ResourceRecognitionIndices.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/types/ResourceRecognitionIndexItem.h>
00022

```

```

00023 #include <QByteArray>
00024 #include <QSharedDataPointer>
00025 #include <QVector>
00026
00027 namespace quantier {
00028
00029 class ResourceRecognitionIndicesData;
00030
00031 class QUENTIER_EXPORT ResourceRecognitionIndices : public Printable
00032 {
00033 public:
00034     explicit ResourceRecognitionIndices();
00035
00036     explicit ResourceRecognitionIndices(
00037         const QByteArray & rawRecognitionIndicesData);
00038
00039     ResourceRecognitionIndices(const ResourceRecognitionIndices & other);
00040     ResourceRecognitionIndices(ResourceRecognitionIndices && other) noexcept;
00041
00042     ResourceRecognitionIndices & operator=(
00043         const ResourceRecognitionIndices & other);
00044
00045     ResourceRecognitionIndices & operator=(
00046         ResourceRecognitionIndices && other) noexcept;
00047
00048     ~ResourceRecognitionIndices() override;
00049
00050     [[nodiscard]] bool isNull() const;
00051     [[nodiscard]] bool isValid() const;
00052
00053     [[nodiscard]] QString objectId() const;
00054     [[nodiscard]] QString objectType() const;
00055     [[nodiscard]] QString recoType() const;
00056     [[nodiscard]] QString engineVersion() const;
00057     [[nodiscard]] QString docType() const;
00058     [[nodiscard]] QString lang() const;
00059
00060     [[nodiscard]] int objectHeight() const;
00061     [[nodiscard]] int objectWidth() const;
00062
00063     [[nodiscard]] QVector<ResourceRecognitionIndexItem> items() const;
00064
00065     bool setData(const QByteArray & rawRecognitionIndicesData);
00066
00067     QTextStream & print(QTextStream & strm) const override;
00068
00069 private:
00070     QSharedDataPointer<ResourceRecognitionIndicesData> d;
00071 };
00072
00073 } // namespace quantier

```

## 6.81 ResourceUtils.h

```

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00015  * You should have received a copy of the GNU Lesser General Public License
00016  * along with libquantier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/utility/Linkage.h>
00022
00023 #include <qevercloud/types/Fwd.h>
00024
00025 #include <QString>
00026
00027 namespace quantier {
00028
00029 [[nodiscard]] QUENTIER_EXPORT QString

```



```

00030     resourceDisplayName(const qevercloud::Resource & resource);
00031
00032 [[nodiscard]] QUENTIER_EXPORT QString
00033     preferredFileSuffix(const qevercloud::Resource & resource);
00034
00035 } // namespace quentier

```

## 6.82 Result.h

```

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00014  *
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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/exception/RuntimeError.h>
00022 #include <quentier/types/ErrorMessage.h>
00023
00024 #include <type_traits>
00025 #include <variant>
00026
00027 namespace quentier {
00028
00029 template <
00030     class T, class Error,
00031     typename = typename std::enable_if_t<
00032         !std::is_same_v<std::decay_t<T>, std::decay_t<Error>>
00033     >
00034 class Result
00035 {
00036     using ValueType = std::conditional_t<
00037         std::is_same_v<std::decay_t<T>, void>, std::monostate, T>;
00038
00039 public:
00040     template <
00041         typename T1 = T,
00042         typename std::enable_if_t<!std::is_void_v<std::decay_t<T1>> * =
00043             nullptr>
00044     explicit Result(T1 t) : m_valueOrError{std::move(t)} {}
00045
00046     template <
00047         typename T1 = T,
00048         typename std::enable_if_t<std::is_void_v<std::decay_t<T1>> * = nullptr>
00049     explicit Result() : m_valueOrError{std::monostate{}} {}
00050
00051     explicit Result(Error error) : m_valueOrError{std::move(error)} {}
00052
00053     Result(const Result<T, Error> & other) :
00054         m_valueOrError{other.m_valueOrError} {}
00055
00056     Result(Result<T, Error> && other) :
00057         m_valueOrError{std::move(other.m_valueOrError)} {}
00058
00059     Result & operator=(const Result<T, Error> & other)
00060     {
00061         if (this != &other) {
00062             m_valueOrError = other.m_valueOrError;
00063         }
00064         return *this;
00065     }
00066
00067     Result & operator=(Result<T, Error> && other)
00068     {
00069         if (this != &other) {
00070             m_valueOrError = std::move(other.m_valueOrError);
00071         }
00072     }
00073
00074
00075
00076
00077
00078

```

```

00079         }
00080
00081         return *this;
00082     }
00083
00084     [[nodiscard]] bool isValid() const noexcept
00085     {
00086         return std::holds_alternative<ValueType>(m_valueOrError);
00087     }
00088
00089     operator bool() const noexcept
00090     {
00091         return isValid();
00092     }
00093
00094     template <
00095         typename T1 = T,
00096         typename std::enable_if_t<!std::is_void_v<std::decay_t<T1>> * =
00097             nullptr>
00098     > [[nodiscard]] T1 & get()
00099     {
00100         // NOTE: std::get also performs the check of what is stored inside the
00101         // variant but it throws std::bad_variant_access which doesn't implement
00102         // QException so this exception is not representable inside QFuture
00103         // in Qt5. Due to this for Qt5 also performing another check and using
00104         // another exception type
00105         #if QT_VERSION < QT_VERSION_CHECK(6, 0, 0)
00106             if (Q_UNLIKELY(!isValid())) {
00107                 throw RuntimeError{
00108                     ErrorString{"Detected attempt to get value from empty Result"}};
00109             }
00110         #endif
00111         return std::get<T>(m_valueOrError);
00112     }
00113
00114     template <
00115         typename T1 = T,
00116         typename std::enable_if_t<!std::is_void_v<std::decay_t<T1>> * =
00117             nullptr>
00118     > [[nodiscard]] const T1 & get() const
00119     {
00120         // NOTE: std::get also performs the check of what is stored inside the
00121         // variant but it throws std::bad_variant_access which doesn't implement
00122         // QException so this exception is not representable inside QFuture
00123         // in Qt5. Due to this for Qt5 also performing another check and using
00124         // another exception type
00125         #if QT_VERSION < QT_VERSION_CHECK(6, 0, 0)
00126             if (Q_UNLIKELY(!isValid())) {
00127                 throw RuntimeError{
00128                     ErrorString{"Detected attempt to get value from empty Result"}};
00129             }
00130         #endif
00131         return std::get<T>(m_valueOrError);
00132     }
00133
00134     template <
00135         typename T1 = T,
00136         typename std::enable_if_t<!std::is_void_v<std::decay_t<T1>> * =
00137             nullptr>
00138     > [[nodiscard]] T1 & operator*()
00139     {
00140         return get();
00141     }
00142
00143     template <
00144         typename T1 = T,
00145         typename std::enable_if_t<!std::is_void_v<std::decay_t<T1>> * =
00146             nullptr>
00147     > [[nodiscard]] const T1 & operator*() const
00148     {
00149         return get();
00150     }
00151
00152     [[nodiscard]] const Error & error() const
00153     {
00154         // NOTE: std::get also performs the check of what is stored inside the
00155         // variant but it throws std::bad_variant_access which doesn't implement
00156         // QException so this exception is not representable inside QFuture
00157         // in Qt5. Due to this for Qt5 also performing another check and using
00158         // another exception type
00159         #if QT_VERSION < QT_VERSION_CHECK(6, 0, 0)
00160             if (Q_UNLIKELY(isValid())) {
00161                 throw RuntimeError{ErrorString{
00162                     "Detected attempt to get error from non-empty Result"}};
00163             }
00164         #endif
00165     }

```

```

00169 #endif
00170
00171         return std::get<Error>(m_valueOrError);
00172     }
00173
00174     [[nodiscard]] Error & error()
00175     {
00176         // NOTE: std::get also performs the check of what is stored inside the
00177         // variant but it throws std::bad_variant_access which doesn't implement
00178         // QException so this exception is not representable inside QFuture
00179         // in Qt5. Due to this for Qt5 also performing another check and using
00180         // another exception type
00181         #if QT_VERSION < QT_VERSION_CHECK(6, 0, 0)
00182             if (Q_UNLIKELY(isValid())) {
00183                 throw RuntimeError{ErrorString{
00184                     "Detected attempt to get error from non-empty Result"}};
00185             }
00186         #endif
00187
00188         return std::get<Error>(m_valueOrError);
00189     }
00190
00191 private:
00192     std::variant<ValueType, Error> m_valueOrError;
00193 };
00194
00195 } // namespace quentier

```

## 6.83 Validation.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/types/Fwd.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 class QString;
00025
00026 namespace quentier {
00027
00028     [[nodiscard]] QUENTIER_EXPORT bool validateNoteTitle(
00029         const QString & noteTitle,
00030         ErrorString * errorDescription = nullptr) noexcept;
00031
00032     [[nodiscard]] QUENTIER_EXPORT bool validateNotebookName(
00033         const QString & notebookName,
00034         ErrorString * errorDescription = nullptr) noexcept;
00035
00036     [[nodiscard]] QUENTIER_EXPORT bool validateSavedSearchName(
00037         const QString & savedSearchName,
00038         ErrorString * errorDescription = nullptr) noexcept;
00039
00040     [[nodiscard]] QUENTIER_EXPORT bool validateTagName(
00041         const QString & tagName, ErrorString * errorDescription = nullptr) noexcept;
00042
00043 } // namespace quentier

```

## 6.84 ApplicationSettings.h

```

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```

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/types/Account.h>
00022
00023 #include <QSettings>
00024
00025 #include <string_view>
00026
00027 namespace quentier {
00028
00034 class QUENTIER_EXPORT ApplicationSettings : public QSettings, public Printable
00035 {
00036     Q_OBJECT
00037 public:
00047     explicit ApplicationSettings(const QString & settingsName = {});
00048
00060     explicit ApplicationSettings(
00061         const Account & account, const QString & settingsName = {});
00062
00079     ApplicationSettings(
00080         const Account & account, const char * settingsName,
00081         int settingsNameSize = -1);
00082
00096     ApplicationSettings(const Account & account, std::string_view settingsName);
00097
00101     ~ApplicationSettings() override;
00102
00103 public:
00108     struct ArrayCloser
00109     {
00110         ArrayCloser(ApplicationSettings & settings) : m_settings(settings) {}
00111
00112         ~ArrayCloser()
00113         {
00114             m_settings.endArray();
00115             m_settings.sync();
00116         }
00117
00118         ApplicationSettings & m_settings;
00119     };
00120
00125     struct GroupCloser
00126     {
00127         GroupCloser(ApplicationSettings & settings) : m_settings(settings) {}
00128
00129         ~GroupCloser()
00130         {
00131             m_settings.endGroup();
00132             m_settings.sync();
00133         }
00134
00135         ApplicationSettings & m_settings;
00136     };
00137
00138 public:
00145     void beginGroup(const QString & prefix);
00146
00157     void beginGroup(const char * prefix, int size = -1);
00158
00168     void beginGroup(std::string_view prefix);
00169
00177     [[nodiscard]] int beginReadArray(const QString & prefix);
00178
00189     [[nodiscard]] int beginReadArray(const char * prefix, int size = -1);
00190
00198     [[nodiscard]] int beginReadArray(std::string_view prefix);
00199
00210     void beginWriteArray(const QString & prefix, int arraySize = -1);
00211
00226     void beginWriteArray(
00227         const char * prefix, int arraySize = -1, int prefixSize = -1);
00228

```

```

00240     void beginWriteArray(std::string_view prefix, int arraySize = -1);
00241
00249     [[nodiscard]] bool contains(const QString & key) const;
00250
00262     [[nodiscard]] bool contains(const char * key, int size = -1) const;
00263
00272     [[nodiscard]] bool contains(std::string_view key) const;
00273
00280     void remove(const QString & key);
00281
00292     void remove(const char * key, int size = -1);
00293
00301     void remove(std::string_view key);
00302
00310     void setValue(const QString & key, const QVariant & value);
00311
00323     void setValue(const char * key, const QVariant & value, int keySize = -1);
00324
00333     void setValue(std::string_view key, const QVariant & value);
00334
00345     [[nodiscard]] QVariant value(
00346         const QString & key, const QVariant & defaultValue = {}) const;
00347
00362     [[nodiscard]] QVariant value(
00363         const char * key, const QVariant & defaultValue = {},
00364         int keySize = -1) const;
00365
00377     [[nodiscard]] QVariant value(
00378         std::string_view key, const QVariant & defaultValue = {}) const;
00379
00380 public:
00381     QTextStream & print(QTextStream & strm) const override;
00382
00383 private:
00384     Q_DISABLE_COPY(ApplicationSettings)
00385 };
00386
00387 } // namespace quentier

```

## 6.85 AnyOfCanceler.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/cancelers/Fwd.h>
00022 #include <quentier/utility/cancelers/ICanceler.h>
00023
00024 #include <QList>
00025
00026 namespace quentier::utility::cancelers {
00027
00028     class QUENTIER_EXPORT AnyOfCanceler : public ICanceler
00029     {
00030     public:
00031         explicit AnyOfCanceler(QList<ICancelerPtr> cancelers);
00032         AnyOfCanceler(AnyOfCanceler && other) noexcept;
00033         AnyOfCanceler & operator=(AnyOfCanceler && other) noexcept;
00034         ~AnyOfCanceler() noexcept override;
00035
00036         [[nodiscard]] bool isCanceled() const noexcept override;
00037
00038     private:
00039         class Impl;
00040         std::unique_ptr<Impl> m_impl;
00041     };
00042
00043 } // namespace quentier::utility::cancelers

```

## 6.86 FutureCanceler.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/cancelers/ICanceler.h>
00022
00023 #include <QFuture>
00024
00025 namespace quentier::utility::cancelers {
00026
00027     template <class T>
00028     class FutureCanceler : public ICanceler
00029     {
00030     public:
00031         explicit FutureCanceler(QFuture<T> future) : m_future{std::move(future)} {}
00032
00033         [[nodiscard]] bool isCanceled() const noexcept override
00034         {
00035             return m_future.isCanceled();
00036         }
00037
00038     private:
00039         QFuture<T> m_future;
00040     };
00041 } // namespace quentier::utility::cancelers

```

## 6.87 ICanceler.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 namespace quentier::utility::cancelers {
00024
00025     class QUENTIER_EXPORT ICanceler
00026     {
00027     public:
00028         virtual ~ICanceler() = default;
00029
00030         [[nodiscard]] virtual bool isCanceled() const = 0;
00031     };
00032 } // namespace quentier::utility::cancelers

```

## 6.88 ManualCanceler.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/cancelers/ICanceler.h>
00022
00023 #include <atomic>
00024 #include <memory>
00025
00026 namespace quentier::utility::cancelers {
00027
00032 class QUENTIER_EXPORT ManualCanceler : public ICanceler
00033 {
00034 public:
00035     ManualCanceler();
00036     ManualCanceler(ManualCanceler && other) noexcept;
00037     ManualCanceler & operator=(ManualCanceler && other) noexcept;
00038     ~ManualCanceler() noexcept override;
00039
00043     void cancel() noexcept;
00044
00045     [[nodiscard]] bool isCanceled() const noexcept override;
00046
00047 private:
00048     class Impl;
00049     std::unique_ptr<Impl> m_impl;
00050 };
00051
00052 } // namespace quentier::utility::cancelers

```

## 6.89 Checks.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <QString>
00024
00025 namespace quentier {
00026
00033 [[nodiscard]] bool QUENTIER_EXPORT checkGuid(const QString & guid);
00034
00044 [[nodiscard]] bool QUENTIER_EXPORT
00045     checkUpdateSequenceNumber(qint32 updateSequenceNumber);
00046
00047 } // namespace quentier

```

## 6.90 Compat.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <QHash>
00022 #include <QString>
00023 #include <QtGlobal>
00024
00025 // Compatibility with boost parts which require to take a hash of QString
00026
00027 inline std::size_t hash_value(const QString & x) noexcept
00028 {
00029     return qHash(x);
00030 }

```

## 6.91 DateTime.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <QFlags>
00024
00025 namespace quentier {
00026
00027 [[nodiscard]] constexpr int secondsToMilliseconds(int seconds) noexcept
00028 {
00029     return seconds * 1000;
00030 }
00031
00032 enum class DateTimePrintOption
00033 {
00034     IncludeNumericTimestamp = 1 « 1,
00035     IncludeMilliseconds = 1 « 2,
00036     IncludeTimezone = 1 « 3
00037 };
00038
00039 Q_DECLARE_FLAGS(DateTimePrintOptions, DateTimePrintOption)
00040 Q_DECLARE_OPERATORS_FOR_FLAGS(DateTimePrintOptions)
00041
00042 [[nodiscard]] QString QUENTIER_EXPORT printableDateTimeFromTimestamp(
00043     qint64 timestamp,
00044     DateTimePrintOptions options = DateTimePrintOptions(
00045         DateTimePrintOption::IncludeNumericTimestamp |
00046         DateTimePrintOption::IncludeMilliseconds |
00047         DateTimePrintOption::IncludeTimezone),

```



```

00080     const char * customFormat = nullptr);
00081
00082 } // namespace quantier

```

## 6.92 EncryptionManager.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quantier/types/ErrorMessage.h>
00022 #include <quantier/utility/Linkage.h>
00023
00024 #include <QObject>
00025 #include <QString>
00026 #include <QUuid>
00027
00028 namespace quantier {
00029
00030 class EncryptionManagerPrivate;
00031
00032 class QUINTIER_EXPORT EncryptionManager : public QObject
00033 {
00034     Q_OBJECT
00035 public:
00036     explicit EncryptionManager(QObject * parent = nullptr);
00037     ~EncryptionManager() noexcept override;
00038
00039     [[nodiscard]] bool decrypt(
00040         const QString & encryptedText, const QString & passphrase,
00041         const QString & cipher, size_t keyLength, QString & decryptedText,
00042         ErrorMessage & errorDescription);
00043
00044     [[nodiscard]] bool encrypt(
00045         const QString & textToEncrypt, const QString & passphrase,
00046         QString & cipher, size_t & keyLength, QString & encryptedText,
00047         ErrorMessage & errorDescription);
00048
00049     Q_SIGNALS:
00050         void decryptedText(
00051             QString text, bool success, ErrorMessage errorDescription,
00052             QUuid requestId);
00053
00054         void encryptedText(
00055             QString encryptedText, bool success, ErrorMessage errorDescription,
00056             QUuid requestId);
00057
00058     public Q_SLOTS:
00059         void onDecryptTextRequest(
00060             QString encryptedText, QString passphrase, QString cipher,
00061             size_t keyLength, QUuid requestId);
00062
00063         void onEncryptTextRequest(
00064             QString textToEncrypt, QString passphrase, QString cipher,
00065             size_t keyLength, QUuid requestId);
00066
00067 private:
00068     EncryptionManagerPrivate * const d_ptr;
00069     Q_DECLARE_PRIVATE(EncryptionManager)
00070 };
00071
00072 } // namespace quantier

```

## 6.93 EventLoopWithExitStatus.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/types/ErrorMessage.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 #include <QEventLoop>
00025
00026 class QDebug;
00027 class QTextStream;
00028
00029 namespace quentier {
00030
00031 class QUENTIER_EXPORT EventLoopWithExitStatus : public QEventLoop
00032 {
00033     Q_OBJECT
00034 public:
00035     explicit EventLoopWithExitStatus(QObject * parent = nullptr);
00036
00037     enum class ExitStatus
00038     {
00039         Success,
00040         Failure,
00041         Timeout
00042     };
00043
00044     friend QDebug & operator<<(QDebug & dbg, ExitStatus status);
00045     friend QTextStream & operator<<(QTextStream & strm, ExitStatus status);
00046
00047     [[nodiscard]] ExitStatus exitStatus() const;
00048     [[nodiscard]] const ErrorMessage & errorDescription() const;
00049
00050 public Q_SLOTS:
00051     void exitAsSuccess();
00052     void exitAsFailure();
00053     void exitAsFailureWithError(QString errorDescription);
00054     void exitAsFailureWithError(ErrorMessage errorDescription);
00055     void exitAsTimeout();
00056
00057 private:
00058     ExitStatus m_exitStatus;
00059     ErrorMessage m_errorDescription;
00060 };
00061
00062 } // namespace quentier

```

## 6.94 FileCopier.h

```

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```

```

00017  */
00018
00019  #pragma once
00020
00021  #include <quentier/types/ErrorMessage.h>
00022  #include <quentier/utility/Linkage.h>
00023
00024  #include <QObject>
00025  #include <QString>
00026
00027  class QDebug;
00028  class QTextStream;
00029
00030  namespace quentier {
00031
00032  class FileCopierPrivate;
00033
00034  class QUINTIER_EXPORT FileCopier : public QObject
00035  {
00036      Q_OBJECT
00037  public:
00038      explicit FileCopier(QObject * parent = nullptr);
00039
00040      enum class State
00041      {
00042          Idle = 0,
00043          Copying,
00044          Cancelling
00045      };
00046
00047      friend QDebug & operator<<(QDebug & dbg, State state);
00048      friend QTextStream & operator<<(QTextStream & strm, State state);
00049
00050      [[nodiscard]] State state() const;
00051
00052      [[nodiscard]] QString sourceFilePath() const;
00053      [[nodiscard]] QString destinationFilePath() const;
00054
00055      [[nodiscard]] double currentProgress() const;
00056
00057      Q_SIGNALS:
00058          void progressUpdate(double progress);
00059          void finished(QString sourcePath, QString destPath);
00060          void cancelled(QString sourcePath, QString destPath);
00061          void notifyError(ErrorMessage error);
00062
00063      public Q_SLOTS:
00064          void copyFile(QString sourcePath, QString destPath);
00065          void cancel();
00066
00067      private:
00068          Q_DISABLE_COPY(FileCopier)
00069
00070      private:
00071          FileCopierPrivate * d_ptr;
00072          Q_DECLARE_PRIVATE(FileCopier)
00073      };
00074
00075  } // namespace quentier

```

## 6.95 FileIOProcessorAsync.h

```

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00017   */
00018
00019  #pragma once
00020
00021  #include <quentier/types/ErrorMessage.h>

```

```

00022 #include <quentier/utility/Linkage.h>
00023
00024 #include <QByteArray>
00025 #include <QIODevice>
00026 #include <QObject>
00027 #include <QString>
00028 #include <QUuid>
00029
00030 namespace quentier {
00031
00032 class FileIOProcessorAsyncPrivate;
00033
00038 class QUINTIER_EXPORT FileIOProcessorAsync : public QObject
00039 {
00040     Q_OBJECT
00041 public:
00042     explicit FileIOProcessorAsync(QObject * parent = nullptr);
00043
00053     void setIdleTimePeriod(qint32 seconds);
00054
00055 Q_SIGNALS:
00062     void readyForIO();
00063
00074     void writeFileRequestProcessed(
00075         bool success, ErrorString errorDescription, QUuid requestId);
00076
00088     void readFileRequestProcessed(
00089         bool success, ErrorString errorDescription, QByteArray data,
00090         QUuid requestId);
00091
00092 public Q_SLOTS:
00104     void onWriteFileRequest(
00105         QString absoluteFilePath, QByteArray data, QUuid requestId,
00106         bool append);
00107
00115     void onReadFileRequest(QString absoluteFilePath, QUuid requestId);
00116
00117 private:
00118     FileIOProcessorAsyncPrivate * const d_ptr;
00119     Q_DECLARE_PRIVATE(FileIOProcessorAsync)
00120 };
00121
00122 } // namespace quentier

```

## 6.96 FileSystem.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <QString>
00024
00025 namespace quentier {
00026
00027 class ErrorString;
00028
00043 [[nodiscard]] QString QUINTIER_EXPORT relativePathFromAbsolutePath(
00044     const QString & absolutePath, const QString & relativePathRootFolderPath);
00045
00054 [[nodiscard]] bool QUINTIER_EXPORT removeFile(const QString & filePath);
00055
00065 [[nodiscard]] bool QUINTIER_EXPORT removeDir(const QString & dirPath);
00066
00078 [[nodiscard]] QByteArray QUINTIER_EXPORT
00079     readFileContents(const QString & filePath, ErrorString & errorDescription);

```

```

00080
00095 [[nodiscard]] bool QUENTIER_EXPORT renameFile(
00096     const QString & from, const QString & to, ErrorString & errorDescription);
00097
00098 } // namespace quentier

```

## 6.97 FileSystemWatcher.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <QObject>
00024 #include <QStringList>
00025
00026 #define FILE_SYSTEM_WATCHER_DEFAULT_REMOVAL_TIMEOUT_MSEC (500)
00027
00028 namespace quentier {
00029
00030 class FileSystemWatcherPrivate;
00031
00032 class QUENTIER_EXPORT FileSystemWatcher : public QObject
00033 {
00034     Q_OBJECT
00035 public:
00036     explicit FileSystemWatcher(
00037         int removalTimeoutMsec =
00038             FILE_SYSTEM_WATCHER_DEFAULT_REMOVAL_TIMEOUT_MSEC,
00039         QObject * parent = nullptr);
00040
00041     explicit FileSystemWatcher(
00042         const QStringList & paths,
00043         int removalTimeoutMsec =
00044             FILE_SYSTEM_WATCHER_DEFAULT_REMOVAL_TIMEOUT_MSEC,
00045         QObject * parent = nullptr);
00046
00047     ~FileSystemWatcher() override;
00048
00049     void addPath(const QString & path);
00050     void addPaths(const QStringList & paths);
00051
00052     [[nodiscard]] QStringList directories() const;
00053     [[nodiscard]] QStringList files() const;
00054
00055     void removePath(const QString & path);
00056     void removePaths(const QStringList & paths);
00057
00058 Q_SIGNALS:
00059     void directoryChanged(const QString & path);
00060     void directoryRemoved(const QString & path);
00061
00062     void fileChanged(const QString & path);
00063     void fileRemoved(const QString & path);
00064
00065 private:
00066     Q_DISABLE_COPY(FileSystemWatcher)
00067
00068 private:
00069     FileSystemWatcherPrivate * d_ptr;
00070     Q_DECLARE_PRIVATE(FileSystemWatcher)
00071 };
00072
00073 } // namespace quentier

```

## 6.98 IKeychainService.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/exception/IQuentierException.h>
00022 #include <quentier/types/ErrorMessage.h>
00023 #include <quentier/utility/Fwd.h>
00024 #include <quentier/utility/Linkage.h>
00025
00026 #include <QFuture>
00027
00028 class QDebug;
00029
00030 namespace quentier {
00031
00032     class QUENTIER_EXPORT IKeychainService
00033     {
00034     public:
00035         virtual ~IKeychainService() noexcept;
00036
00037         enum class ErrorCode
00038         {
00039             NoError,
00040             EntryNotFound,
00041             CouldNotDeleteEntry,
00042             AccessDeniedByUser,
00043             AccessDenied,
00044             NoBackendAvailable,
00045             NotImplemented,
00046             OtherError
00047         };
00048
00049         friend QUENTIER_EXPORT QTextStream & operator<<(
00050             QTextStream & strm, ErrorCode errorCode);
00051
00052         friend QUENTIER_EXPORT QDebug & operator<<(
00053             QDebug & dbg, ErrorCode errorCode);
00054
00055         class QUENTIER_EXPORT Exception : public IQuentierException
00056         {
00057         public:
00058             explicit Exception(ErrorCode errorCode) noexcept;
00059             explicit Exception(
00060                 ErrorCode errorCode, ErrorMessage errorDescription) noexcept;
00061
00062             [[nodiscard]] ErrorCode errorCode() const noexcept;
00063             [[nodiscard]] QString exceptionDisplayName() const override;
00064
00065             void raise() const override;
00066             [[nodiscard]] Exception * clone() const override;
00067
00068         private:
00069             const ErrorCode m_errorCode;
00070         };
00071
00072     public:
00073         [[nodiscard]] virtual QFuture<void> writePassword(
00074             QString service, QString key, QString password) = 0;
00075
00076         [[nodiscard]] virtual QFuture<QString> readPassword(
00077             QString service, QString key) const = 0;
00078
00079         [[nodiscard]] virtual QFuture<void> deletePassword(
00080             QString service, QString key) = 0;
00081     };
00082
00083     [[nodiscard]] QUENTIER_EXPORT IKeychainServicePtr newQtKeychainService();
00084
00085 }

```

```

00159 [[nodiscard]] QUENTIER_EXPORT IKeychainServicePtr
00160     newObfuscatingKeychainService();
00161
00162 [[nodiscard]] QUENTIER_EXPORT IKeychainServicePtr newCompositeKeychainService(
00163     QString name, IKeychainServicePtr primaryKeychain,
00164     IKeychainServicePtr secondaryKeychain);
00165
00166 [[nodiscard]] QUENTIER_EXPORT IKeychainServicePtr newMigratingKeychainService(
00167     IKeychainServicePtr sourceKeychain, IKeychainServicePtr sinkKeychain);
00168
00169 } // namespace quentier

```

## 6.99 Initialize.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 namespace quentier {
00024
00029 void QUENTIER_EXPORT initializeLibquentier();
00030
00031 } // namespace quentier

```

## 6.100 LRUCache.hpp

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <QHash>
00022
00023 #include <cstdint>
00024 #include <list>
00025
00026 namespace quentier {
00027
00028 template <
00029     class Key, class Value,
00030     class Allocator = std::allocator<std::pair<Key, Value>>
00031 class LRUCache
00032 {
00033 public:
00034     LRUCache(const size_t maxSize = 100) : m_maxSize(maxSize) {}
00035

```

```

00036     using key_type = Key;
00037     using mapped_type = Value;
00038     using allocator_type = Allocator;
00039     using value_type = std::pair<key_type, mapped_type>;
00040     using container_type = std::list<value_type, allocator_type>;
00041     using size_type = typename container_type::size_type;
00042     using difference_type = typename container_type::difference_type;
00043     using iterator = typename container_type::iterator;
00044     using const_iterator = typename container_type::const_iterator;
00045     using reverse_iterator = std::reverse_iterator<iterator>;
00046     using const_reverse_iterator = std::reverse_iterator<const_iterator>;
00047
00048     using reference = value_type &;
00049     using const_reference = const value_type &;
00050     using pointer = typename std::allocator_traits<allocator_type>::pointer;
00051
00052     using const_pointer =
00053         typename std::allocator_traits<allocator_type>::const_pointer;
00054
00055     [[nodiscard]] iterator begin() noexcept
00056     {
00057         return m_container.begin();
00058     }
00059
00060     [[nodiscard]] const_iterator begin() const noexcept
00061     {
00062         return m_container.begin();
00063     }
00064
00065     [[nodiscard]] reverse_iterator rbegin() noexcept
00066     {
00067         return m_container.rbegin();
00068     }
00069
00070     [[nodiscard]] const_reverse_iterator rbegin() const noexcept
00071     {
00072         return m_container.rbegin();
00073     }
00074
00075     [[nodiscard]] iterator end() noexcept
00076     {
00077         return m_container.end();
00078     }
00079
00080     [[nodiscard]] const_iterator end() const noexcept
00081     {
00082         return m_container.end();
00083     }
00084
00085     [[nodiscard]] reverse_iterator rend() noexcept
00086     {
00087         return m_container.rend();
00088     }
00089
00090     [[nodiscard]] const_reverse_iterator rend() const noexcept
00091     {
00092         return m_container.rend();
00093     }
00094
00095     [[nodiscard]] bool empty() const noexcept
00096     {
00097         return m_container.empty();
00098     }
00099
00100     [[nodiscard]] size_t size() const noexcept
00101     {
00102         return m_currentSize;
00103     }
00104
00105     [[nodiscard]] size_t max_size() const noexcept
00106     {
00107         return m_maxSize;
00108     }
00109
00110     void clear()
00111     {
00112         m_container.clear();
00113         m_mapper.clear();
00114         m_currentSize = 0;
00115     }
00116
00117     void put(const key_type & key, const mapped_type & value)
00118     {
00119         Q_UNUSED(remove(key))
00120
00121         m_container.push_front(value_type(key, value));
00122         m_mapper[key] = m_container.begin();

```



```

00123         ++m_currentSize;
00124
00125         fixupSize();
00126     }
00127
00128     [[nodiscard]] const mapped_type * get(const key_type & key) const noexcept
00129     {
00130         auto mapperIt = m_mapper.find(key);
00131         if (mapperIt == m_mapper.end()) {
00132             return nullptr;
00133         }
00134
00135         auto it = mapperIt.value();
00136         if (it == m_container.end()) {
00137             return nullptr;
00138         }
00139
00140         m_container.splice(m_container.begin(), m_container, it);
00141         mapperIt.value() = m_container.begin();
00142         return &(mapperIt.value()->second);
00143     }
00144
00145     [[nodiscard]] bool exists(const key_type & key) const noexcept
00146     {
00147         const auto mapperIt = m_mapper.find(key);
00148         if (mapperIt == m_mapper.end()) {
00149             return false;
00150         }
00151
00152         const auto it = mapperIt.value();
00153         return (it != m_container.end());
00154     }
00155
00156     bool remove(const key_type & key) noexcept
00157     {
00158         const auto mapperIt = m_mapper.find(key);
00159         if (mapperIt == m_mapper.end()) {
00160             return false;
00161         }
00162
00163         const auto it = mapperIt.value();
00164         Q_UNUSED(m_container.erase(it))
00165         Q_UNUSED(m_mapper.erase(mapperIt))
00166
00167         if (m_currentSize != 0) {
00168             --m_currentSize;
00169         }
00170
00171         return true;
00172     }
00173
00174     void setMaxSize(const size_t maxSize)
00175     {
00176         if (maxSize >= m_maxSize) {
00177             m_maxSize = maxSize;
00178             return;
00179         }
00180
00181         size_t diff = m_maxSize - maxSize;
00182         for (size_t i = 0; (i < diff) && !m_container.empty(); ++i) {
00183             auto lastIt = m_container.end();
00184             --lastIt;
00185
00186             const key_type & lastElementKey = lastIt->first;
00187             Q_UNUSED(m_mapper.remove(lastElementKey))
00188             Q_UNUSED(m_container.erase(lastIt))
00189
00190             if (m_currentSize != 0) {
00191                 --m_currentSize;
00192             }
00193         }
00194     }
00195
00196 private:
00197     void fixupSize()
00198     {
00199         if (m_currentSize <= m_maxSize) {
00200             return;
00201         }
00202
00203         if (Q_UNLIKELY(m_container.empty())) {
00204             return;
00205         }
00206
00207         auto lastIt = m_container.end();
00208         --lastIt;
00209

```

```

00210         const key_type & lastElementKey = lastIt->first;
00211
00212         Q_UNUSED(m_mapper.remove(lastElementKey))
00213         Q_UNUSED(m_container.erase(lastIt))
00214
00215         if (m_currentSize != 0) {
00216             --m_currentSize;
00217         }
00218     }
00219
00220 private:
00221     mutable container_type m_container;
00222     size_t m_currentSize = 0;
00223     size_t m_maxSize;
00224
00225     mutable QHash<Key, iterator> m_mapper;
00226 };
00227
00228 } // namespace quentier

```

## 6.101 MessageBox.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <QMessageBox>
00024
00025 namespace quentier {
00026
00027 int QUENTIER_EXPORT genericMessageBox(
00028     QWidget * parent, const QString & title, const QString & briefText,
00029     const QString & detailedText = {},
00030     QMessageBox::StandardButtons standardButtons = QMessageBox::Ok);
00031
00032 int QUENTIER_EXPORT informationMessageBox(
00033     QWidget * parent, const QString & title, const QString & briefText,
00034     const QString & detailedText = {},
00035     QMessageBox::StandardButtons standardButtons = QMessageBox::Ok);
00036
00037 int QUENTIER_EXPORT warningMessageBox(
00038     QWidget * parent, const QString & title, const QString & briefText,
00039     const QString & detailedText = {},
00040     QMessageBox::StandardButtons standardButtons = QMessageBox::Ok);
00041
00042 int QUENTIER_EXPORT criticalMessageBox(
00043     QWidget * parent, const QString & title, const QString & briefText,
00044     const QString & detailedText = {},
00045     QMessageBox::StandardButtons standardButtons = QMessageBox::Ok);
00046
00047 [[nodiscard]] int QUENTIER_EXPORT questionMessageBox(
00048     QWidget * parent, const QString & title, const QString & briefText,
00049     const QString & detailedText = {},
00050     QMessageBox::StandardButtons standardButtons = QMessageBox::Ok |
00051     QMessageBox::Cancel);
00052
00053 void QUENTIER_EXPORT
00054     internalErrorMessageBox(QWidget * parent, QString detailedText = {});
00055
00056 } // namespace quentier

```

## 6.102 Printable.h

```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <QDebug>
00024 #include <QHash>
00025 #include <QIODevice>
00026 #include <QSet>
00027 #include <QString>
00028 #include <QTextStream>
00029
00030 namespace quentier {
00031
00032     class QUENTIER_EXPORT Printable
00033     {
00034     public:
00035         virtual ~Printable() noexcept;
00036
00037         virtual QTextStream & print(QTextStream & strm) const = 0;
00038
00039         [[nodiscard]] QString toString() const;
00040
00041         friend QUENTIER_EXPORT QTextStream & operator<<(
00042             QTextStream & strm, const Printable & printable);
00043
00044         friend QUENTIER_EXPORTQDebug & operator<<(
00045            QDebug & debug, const Printable & printable);
00046     };
00047
00048 } // namespace quentier
00049
00050 // printing operators for existing classes not inheriting from Printable
00051
00052 template <class T>
00053 [[nodiscard]] QString ToString(const T & object)
00054 {
00055     QString str;
00056     QTextStream strm(&str, QIODevice::WriteOnly);
00057     strm << object;
00058     return str;
00059 }
00060
00061 template <class TKey, class TValue>
00062 [[nodiscard]] QString ToString(const QHash<TKey, TValue> & object)
00063 {
00064     QString str;
00065     QTextStream strm(&str, QIODevice::WriteOnly);
00066     strm << QStringLiteral("QHash: \n");
00067
00068     using CIter = typename QHash<TKey, TValue>::const_iterator;
00069     CIter hashEnd = object.end();
00070     for (CIter it = object.begin(); it != hashEnd; ++it) {
00071         strm << QStringLiteral("[") << it.key() << QStringLiteral("] = ")
00072             << it.value() << QStringLiteral("; \n");
00073     }
00074     return str;
00075 }
00076
00077 template <class T>
00078 [[nodiscard]] QString ToString(const QSet<T> & object)
00079 {
00080     QString str;
00081     QTextStream strm(&str, QIODevice::WriteOnly);
00082     strm << QStringLiteral("QSet: \n");
00083
00084     using CIter = typename QSet<T>::const_iterator;
00085     CIter setEnd = object.end();

```

```

00091     for (CIter it = object.begin(); it != setEnd; ++it) {
00092         strm « QStringLiteral("[") « *it « QStringLiteral("];\n");
00093     }
00094     return str;
00095 }
00096
00097 #define QUENTIER_DECLARE_PRINTABLE(type, ...)
00098     QUENTIER_EXPORT QTextStream & operator«(
00099         QTextStream & strm, const type & obj);
00100     inline QDebug & operator«(QDebug & debug, const type & obj)
00101     {
00102         debug « ToString<type, ##__VA_ARGS__>(obj);
00103         return debug;
00104     }
00105     // QUENTIER_DECLARE_PRINTABLE

```

## 6.103 QuentierApplication.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <QApplication>
00024
00025 namespace quentier {
00026
00027 class QUENTIER_EXPORT QuentierApplication : public QApplication
00028 {
00029     Q_OBJECT
00030 public:
00031     QuentierApplication(int & argc, char * argv[]); // NOLINT
00032     ~QuentierApplication() noexcept override;
00033
00034     [[nodiscard]] bool notify(QObject * pObject, QEvent * pEvent) override;
00035     [[nodiscard]] bool event(QEvent * pEvent) override;
00036 };
00037
00038 } // namespace quentier

```

## 6.104 QuentierUndoCommand.h

```

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00017  */
00018
00019 #pragma once
00020

```

```

00021 #include <quentier/types/ErrorMessage.h>
00022
00023 #include <QObject>
00024 #include <QUndoCommand>
00025
00026 namespace quentier {
00027
00053 class QuentierUndoCommand : public QObject, public QUndoCommand
00054 {
00055     Q_OBJECT
00056 public:
00057     QuentierUndoCommand(QUndoCommand * parent = nullptr);
00058     QuentierUndoCommand(const QString & text, QUndoCommand * parent = nullptr);
00059     ~QuentierUndoCommand() noexcept override;
00060
00061     void undo() final;
00062     void redo() final;
00063
00064     [[nodiscard]] bool onceUndoExecuted() const noexcept
00065     {
00066         return m_onceUndoExecuted;
00067     }
00068
00069     Q_SIGNALS:
00070         void notifyError(ErrorMessage error);
00071
00072 protected:
00073     virtual void undoImpl() = 0;
00074     virtual void redoImpl() = 0;
00075
00076 private:
00077     bool m_onceUndoExecuted = false;
00078 };
00079
00080 } // namespace quentier

```

## 6.105 ShortcutManager.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/types/Account.h>
00022 #include <quentier/utility/Linkage.h>
00023
00024 #include <QKeySequence>
00025 #include <QObject>
00026
00027 namespace quentier {
00028
00029 QT_FORWARD_DECLARE_CLASS(ShortcutManagerPrivate)
00030
00031 class QUINTIER_EXPORT ShortcutManager : public QObject
00032 {
00033     Q_OBJECT
00034 public:
00035     explicit ShortcutManager(QObject * parent = nullptr);
00036
00037     enum QuentierShortcutKey
00038     {
00039         NewNote = 5000,
00040         NewTag,
00041         NewNotebook,
00042         NewSavedSearch,
00043         AddAttachment,
00044         SaveAttachment,
00045         OpenAttachment,

```

```

00046     CopyAttachment,
00047     CutAttachment,
00048     RemoveAttachment,
00049     RenameAttachment,
00050     AddAccount,
00051     ExitAccount,
00052     SwitchAccount,
00053     AccountInfo,
00054     NoteSearch,
00055     NewNoteSearch,
00056     ShowNotes,
00057     ShowNotebooks,
00058     ShowTags,
00059     ShowSavedSearches,
00060     ShowDeletedNotes,
00061     ShowStatusBar,
00062     ShowToolBar,
00063     PasteUnformatted,
00064     Font,
00065     UpperIndex,
00066     LowerIndex,
00067     AlignLeft,
00068     AlignCenter,
00069     AlignRight,
00070     AlignFull,
00071     IncreaseIndentation,
00072     DecreaseIndentation,
00073     IncreaseFontSize,
00074     DecreaseFontSize,
00075     InsertNumberedList,
00076     InsertBulletedList,
00077     Strikethrough,
00078     Highlight,
00079     InsertTable,
00080     InsertRow,
00081     InsertColumn,
00082     RemoveRow,
00083     RemoveColumn,
00084     InsertHorizontalLine,
00085     InsertToDoTag,
00086     EditHyperlink,
00087     CopyHyperlink,
00088     RemoveHyperlink,
00089     Encrypt,
00090     Decrypt,
00091     DecryptPermanently,
00092     BackupLocalStorage,
00093     RestoreLocalStorage,
00094     UpgradeLocalStorage,
00095     LocalStorageStatus,
00096     SpellCheck,
00097     SpellCheckIgnoreWord,
00098     SpellCheckAddWordToUserDictionary,
00099     SaveImage,
00100     AnnotateImage,
00101     ImageRotateClockwise,
00102     ImageRotateCounterClockwise,
00103     Synchronize,
00104     FullSync,
00105     ImportFolders,
00106     Preferences,
00107     ReleaseNotes,
00108     ViewLogs,
00109     About,
00110     UnknownKey = 100000
00111 };
00112
00118 [[nodiscard]] QKeySequence shortcut(
00119     int key, const Account & account, const QString & context = {}) const;
00120
00126 [[nodiscard]] QKeySequence shortcut(
00127     const QString & nonStandardKey, const Account & account,
00128     const QString & context = {}) const;
00129
00134 [[nodiscard]] QKeySequence defaultShortcut(
00135     int key, const Account & account, const QString & context = {}) const;
00136
00141 [[nodiscard]] QKeySequence defaultShortcut(
00142     const QString & nonStandardKey, const Account & account,
00143     const QString & context = {}) const;
00144
00149 [[nodiscard]] QKeySequence userShortcut(
00150     int key, const Account & account, const QString & context = {}) const;
00151
00156 [[nodiscard]] QKeySequence userShortcut(
00157     const QString & nonStandardKey, const Account & account,
00158     const QString & context = {}) const;

```

```

00159
00160 Q_SIGNALS:
00161     void shortcutChanged(
00162         int key, QKeySequence shortcut, const Account & account,
00163         QString context);
00164
00165     void nonStandardShortcutChanged(
00166         QString nonStandardKey, QKeySequence shortcut, const Account & account,
00167         QString context);
00168
00169 public Q_SLOTS:
00170     void setUserShortcut(
00171         int key, QKeySequence shortcut, const Account & account,
00172         QString context = {});
00173
00174     void setNonStandardUserShortcut(
00175         QString nonStandardKey, QKeySequence shortcut, const Account & account,
00176         QString context = {});
00177
00178     void setDefaultShortcut(
00179         int key, QKeySequence shortcut, const Account & account,
00180         QString context = {});
00181
00182     void setNonStandardDefaultShortcut(
00183         QString nonStandardKey, QKeySequence shortcut, const Account & account,
00184         QString context = {});
00185
00186 private:
00187     ShortcutManagerPrivate * const d_ptr;
00188     Q_DECLARE_PRIVATE(ShortcutManager)
00189 };
00190
00191 } // namespace quentier

```

## 6.106 Size.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <QString>
00024
00025 namespace quentier {
00026
00027 [[nodiscard]] QString QUINTIER_EXPORT humanReadableSize(quint64 bytes);
00028
00029 } // namespace quentier

```

## 6.107 StandardPaths.h

```

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```

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00016  * along with libquentier. If not, see <http://www.gnu.org/licenses/>.
00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/types/Account.h>
00022 #include <quentier/utility/Linkage.h>
00023
00028 #define LIBQUENTIER_PERSISTENCE_STORAGE_PATH \
00029     "LIBQUENTIER_PERSISTENCE_STORAGE_PATH"
00030
00031 namespace quentier {
00032
00041 [[nodiscard]] QString QUENTIER_EXPORT
00042     applicationPersistentStoragePath(bool * pNonStandardLocation = nullptr);
00043
00053 [[nodiscard]] QString QUENTIER_EXPORT
00054     accountPersistentStoragePath(const Account & account);
00055
00060 [[nodiscard]] QString QUENTIER_EXPORT applicationTemporaryStoragePath();
00061
00067 [[nodiscard]] QString QUENTIER_EXPORT homePath();
00068
00072 [[nodiscard]] QString QUENTIER_EXPORT documentsPath();
00073
00074 } // namespace quentier

```

## 6.108 StringUtils.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <QList>
00024 #include <QSet>
00025 #include <QString>
00026
00027 namespace quentier {
00028
00029 QT_FORWARD_DECLARE_CLASS(StringUtilsPrivate)
00030
00031 class QUENTIER_EXPORT StringUtils
00032 {
00033 public:
00034     StringUtils();
00035     ~StringUtils() noexcept;
00036
00037     void removePunctuation(
00038         QString & str, const QList<QChar> & charactersToPreserve = {}) const;
00039
00040     void removeDiacritics(QString & str) const;
00041     void removeNewlines(QString & str) const;
00042
00043 private:
00044     StringUtilsPrivate * const d_ptr;
00045     Q_DECLARE_PRIVATE(StringUtils);
00046 };
00047
00048 } // namespace quentier

```



## 6.109 SuppressWarnings.h

```

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00017  */
00018
00019 #pragma once
00020
00022 // Common macros
00024
00025 #define STRINGIFY(a) #a
00026
00027 // Define empty macros doing nothing for supported compilers, they would be used
00028 // as fallback when any of these compilers are not actually used
00029
00030 #define SAVE_WARNINGS
00031
00032 #define CLANG_SUPPRESS_WARNING(warning)
00033 #define GCC_SUPPRESS_WARNING(warning)
00034 #define MSVC_SUPPRESS_WARNING(warning)
00035
00036 #define RESTORE_WARNINGS
00037
00039 // Clang implementation
00041
00042 #if defined(__clang__)
00043
00044 #undef CLANG_SUPPRESS_WARNING
00045
00046 #define CLANG_SUPPRESS_WARNING(warning) \
00047     _Pragma(Stringify(clang diagnostic ignored #warning))
00048
00049 #undef SAVE_WARNINGS
00050
00051 #define SAVE_WARNINGS _Pragma("clang diagnostic push")
00052
00053 #undef RESTORE_WARNINGS
00054
00055 #define RESTORE_WARNINGS _Pragma("clang diagnostic pop")
00056
00057 #endif // clang
00058
00060 // GCC implementation
00062
00063 // Clang can mimic gcc so need to ensure it's indeed gcc
00064 #if defined(__GNUC__) && !defined(__clang__)
00065
00066 #undef GCC_SUPPRESS_WARNING
00067
00068 #define GCC_SUPPRESS_WARNING(warning) \
00069     _Pragma(Stringify(GCC diagnostic ignored #warning))
00070
00071 #undef SAVE_WARNINGS
00072
00073 #define SAVE_WARNINGS _Pragma("GCC diagnostic push")
00074
00075 #undef RESTORE_WARNINGS
00076
00077 #define RESTORE_WARNINGS _Pragma("GCC diagnostic pop")
00078
00079 #endif // GCC
00080
00082 // MSVC implementation
00084
00085 #if defined(_MSC_VER)
00086
00087 #undef MSVC_SUPPRESS_WARNING
00088
00089 #define MSVC_SUPPRESS_WARNING(number) __pragma(warning(disable : number))
00090
00091 #undef SAVE_WARNINGS
00092
00093 #define SAVE_WARNINGS __pragma(warning(push))

```

```

00094
00095 #undef RESTORE_WARNINGS
00096
00097 #define RESTORE_WARNINGS __pragma(warning(pop))
00098
00099 #endif // MSVC

```

## 6.110 SysInfo.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <QString>
00024
00025 namespace quentier {
00026
00027 QT_FORWARD_DECLARE_CLASS(SysInfoPrivate)
00028
00029 class QUINTIER_EXPORT SysInfo
00030 {
00031 public:
00032     SysInfo();
00033     ~SysInfo() noexcept;
00034
00035     [[nodiscard]] quint64 pageSize();
00036     [[nodiscard]] quint64 totalMemory();
00037     [[nodiscard]] quint64 freeMemory();
00038
00039     [[nodiscard]] QString stackTrace();
00040
00041     [[nodiscard]] QString platformName();
00042
00043 private:
00044     Q_DISABLE_COPY(SysInfo)
00045
00046 private:
00047     SysInfoPrivate * const d_ptr;
00048     Q_DECLARE_PRIVATE(SysInfo)
00049 };
00050
00051 } // namespace quentier

```

## 6.111 System.h

```

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```

```

00017  */
00018
00019  #pragma once
00020
00021  #include <quentier/utility/Linkage.h>
00022
00023  #include <QString>
00024  #include <QUrl>
00025
00026  namespace quentier {
00027
00031  [[nodiscard]] QString QUINTIER_EXPORT getCurrentUserName();
00032
00036  [[nodiscard]] QString QUINTIER_EXPORT getCurrentUserFullName();
00037
00041  void QUINTIER_EXPORT openUrl(const QUrl & url);
00042
00043  } // namespace quentier

```

## 6.112 TagSortByParentChildRelations.h

```

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00017   */
00018
00019  #pragma once
00020
00021  #include <quentier/utility/Linkage.h>
00022
00023  #include <QList>
00024
00025  namespace qevercloud {
00026
00027  class Tag;
00028
00029  } // namespace qevercloud
00030
00031  namespace quentier {
00032
00033  class ErrorString;
00034
00046  bool QUINTIER_EXPORT sortTagsByParentChildRelations(
00047      QList<qevercloud::Tag> & tagList, ErrorString & errorDescription);
00048
00049  } // namespace quentier

```

## 6.113 MockIKeychainService.h

```

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00017   */

```

```

00018
00019 #include <quentier/utility/IKeychainService.h>
00020
00021 #include <gmock/gmock.h>
00022
00023 namespace quentier::utility::tests::mocks {
00024
00025 class MockIKeychainService : public IKeychainService
00026 {
00027 public:
00028     MOCK_METHOD(
00029         QFuture<void>, writePassword,
00030         (QString service, QString key, QString password), (override));
00031
00032     MOCK_METHOD(
00033         QFuture<QString>, readPassword, (QString service, QString key),
00034         (const, override));
00035
00036     MOCK_METHOD(
00037         QFuture<void>, deletePassword, (QString service, QString key),
00038         (override));
00039 };
00040
00041 } // namespace quentier::utility::tests::mocks

```

## 6.114 UidGenerator.h

```

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00017  */
00018
00019 #pragma once
00020
00021 #include <quentier/utility/Linkage.h>
00022
00023 #include <QString>
00024 #include <QUuid>
00025
00026 namespace quentier {
00027
00028 class QUENTIER_EXPORT UidGenerator
00029 {
00030 public:
00031     [[nodiscard]] static QString Generate();
00032     [[nodiscard]] static QString UidToString(const QUuid & uid);
00033 };
00034
00035 } // namespace quentier

```

## 6.115 Unreachable.h

```

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```

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00017  */
00018
00019 #pragma once
00020
00021 #include <QtGlobal>
00022
00023 #ifndef _MSC_VER
00024 #define UNREACHABLE
00025     do {
00026         Q_ASSERT(false);
00027         __assume(0);
00028     } while (false)
00029 #else
00030 #define UNREACHABLE
00031     do {
00032         Q_ASSERT(false);
00033         __builtin_unreachable();
00034     } while (false)
00035 #endif
```

```

/
/
/
/
/
/
/
```



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