

QRodSystems

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Chapter 1

Hierarchical Index

1.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

QRS::DataObject< T >	??
QRS::Matrix< T >	??
QRS::Project	??
QDialog	
DataObjectsManager	7
QMainWindow	
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QOpenGLWidget	
View3DWidget	11
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Chapter 2

Class Index

2.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

QRS::DataObject< T >	??
DataObjectsManager	
Manager to create objects of different types: scalars, vectors, matroces and surfaces	7
LogWidget	8
MainWindow	
The main window of the program	9
ManagersTab	
A toolbar consisted of object designers	10
QRS::Matrix< T >	
Numerical matrix	??
QRS::Project	
Project class to interact with a created system of rods	??
View3DWidget	
A widget to represent the resulted rod system	11

Chapter 3

File Index

3.1 File List

Here is a list of all documented files with brief descriptions:

/home/qinterfly/Library/Projects/QRodSystems/src/core/ dataobject.cpp	
Implementation of DataObject class	??
/home/qinterfly/Library/Projects/QRodSystems/src/core/ dataobject.h	
Declaration of DataObject class	??
/home/qinterfly/Library/Projects/QRodSystems/src/core/ matrix.cpp	
Implementation of Matrix class	??
/home/qinterfly/Library/Projects/QRodSystems/src/core/ matrix.h	
Declaration of Matrix class	??
/home/qinterfly/Library/Projects/QRodSystems/src/core/ project.cpp	
Implementation of QRS::Project class	??
/home/qinterfly/Library/Projects/QRodSystems/src/core/ project.h	
Declaration of QRS::Project class	??
/home/qinterfly/Library/Projects/QRodSystems/src/main/ controltabs.cpp	
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Implementation of DataObjectsManager class	18
/home/qinterfly/Library/Projects/QRodSystems/src/managers/ dataobjectsmanager.h	
Declaration of DataObjectsManager class	19

Chapter 4

Class Documentation

4.1 QRS::DataObject< T > Class Template Reference

```
#include <dataobject.h>
```

Public Member Functions

- **DataObject** (QString name)
- void [addEntity](#) (double key, const T &entity)
Add a data entity.

Private Attributes

- std::unordered_map< double, T > **mEntities**
- QString **mName**

Static Private Attributes

- static uint **smID** = 0

4.1.1 Detailed Description

```
template<typename T>  
class QRS::DataObject< T >
```

Data object

Template Parameters

<i>double</i>	
<i>vector<double></i>	
<i>matrix<double></i>	
<i>surface<double></i>	

The documentation for this class was generated from the following files:

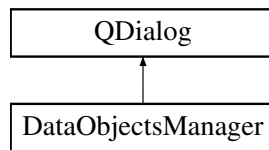
- [/home/qinterfly/Library/Projects/QRodSystems/src/core/dataobject.h](#)
- [/home/qinterfly/Library/Projects/QRodSystems/src/core/dataobject.cpp](#)

4.2 DataObjectsManager Class Reference

Manager to create objects of different types: scalars, vectors, matroces and surfaces.

```
#include <dataobjectsmanager.h>
```

Inheritance diagram for DataObjectsManager:



Public Member Functions

- **DataObjectsManager** (QSettings &settings, QWidget *parent=nullptr)
- void [closeEvent](#) (QCloseEvent *) override
Save settings and delete handling widgets before closing the window.

Private Slots

- void [apply](#) ()
Apply all the changes made by a user.

Private Member Functions

- void [createContent](#) ()
Create all the widgets.
- ads::CDockWidget * [createDataTablesWidget](#) ()
Create a tabbed widget to interact with data tables.
- ads::CDockWidget * [createDataObjectsWidget](#) ()
Create an object to present all data objects.
- ads::CDockWidget * [createCodeWidget](#) ()
Create a widget enables to code data objects.
- QLayout * [createDialogControls](#) ()
Create dialog controls.
- void [restoreSettings](#) ()
Restore settings from a file.
- void [saveSettings](#) ()
Save settings to a file.

Private Attributes

- Ui::DataObjectsManager * **mpUi**
- ads::CDockManager * **mpDockManager**
- QTabWidget * **mpDataTables**
- QSettings & **mSettings**

4.2.1 Detailed Description

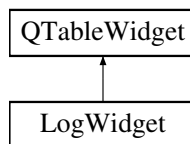
Manager to create objects of different types: scalars, vectors, matroces and surfaces.

The documentation for this class was generated from the following files:

- </home/qinterfly/Library/Projects/QRodSystems/src/managers/dataobjectsmanager.h>
- </home/qinterfly/Library/Projects/QRodSystems/src/managers/dataobjectsmanager.cpp>

4.3 LogWidget Class Reference

Inheritance diagram for LogWidget:



Public Member Functions

- **LogWidget** (QWidget *parent=nullptr)
- void **log** (QtMsgType messageType, const QString &message)
Represent a message sent.

The documentation for this class was generated from the following files:

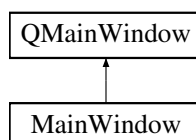
- </home/qinterfly/Library/Projects/QRodSystems/src/main/logwidget.h>
- </home/qinterfly/Library/Projects/QRodSystems/src/main/logwidget.cpp>

4.4 MainWindow Class Reference

The main window of the program.

```
#include <mainwindow.h>
```

Inheritance diagram for MainWindow:



Public Member Functions

- **MainWindow** (QWidget *parent=nullptr)

Static Public Attributes

- static [LogWidget](#) * **pLogger** = nullptr

Private Slots

- void [saveSettings](#) ()
Save the current view state.
- void [restoreSettings](#) ()
Restore a view state from a file.
- void [createDataObjectsManager](#) ()
Show a manager for designing data objects.
- void [createRodPropertiesManager](#) ()
Show a manager to set rod properties based on the created data objects.
- void [createRodConstructorManager](#) ()
Show a manager to create a rod with assigned data properties.

Private Member Functions

- void [initializeWindow](#) ()
Set a state and geometry of [MainWindow](#).
- void [createContent](#) ()
Create all the widgets and corresponding actions.
- ads::CDockWidget * [createProjectHierarchyWidget](#) ()
Create a widget to represent a project hierarchy.
- ads::CDockWidget * [createGLWidget](#) ()
Create an OpenGL widget to render rods.
- ads::CDockWidget * [createLogWidget](#) ()
Create a window for logging.
- ads::CDockWidget * [createPropertiesWidget](#) ()
Create a window to modify properties of selected objects.
- void [specifyMenuConnections](#) ()
Set signals and slots for menu actions.

Private Attributes

- Ui::MainWindow * **mpUi**
- ads::CDockManager * **mpDockManager**
- QSharedPointer< QSettings > **mpSettings**
- [DataObjectsManager](#) * **mpDataObjectsManager** = nullptr
- [QRS::Project](#) **mProject**
- QString **mLastPath**

4.4.1 Detailed Description

The main window of the program.

The documentation for this class was generated from the following files:

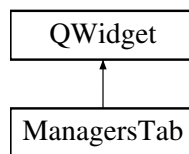
- [/home/qinterfly/Library/Projects/QRodSystems/src/main/mainwindow.h](#)
- [/home/qinterfly/Library/Projects/QRodSystems/src/main/mainwindow.cpp](#)

4.5 ManagersTab Class Reference

A toolbar consisted of object designers.

```
#include <controlltabs.h>
```

Inheritance diagram for ManagersTab:



Signals

- void **actionDataObjectsTriggered** ()
- void **actionRodPropertiesTriggered** ()
- void **actionRodConstructorTriggered** ()

Public Member Functions

- [ManagersTab](#) (QWidget *parent=nullptr)
Managers tab constructor.

4.5.1 Detailed Description

A toolbar consisted of object designers.

The documentation for this class was generated from the following files:

- [/home/qinterfly/Library/Projects/QRodSystems/src/main/controltabs.h](#)
- [/home/qinterfly/Library/Projects/QRodSystems/src/main/controltabs.cpp](#)

4.6 QRS::Matrix< T > Class Template Reference

Numerical matrix.

```
#include <matrix.h>
```

Public Member Functions

- **Matrix** (uint numRows=3, uint numCols=3)
- void **setValue** (T &)

Private Attributes

- std::vector< T > **mValues**
- uint **mNumRows**
- uint **mNumCols**

4.6.1 Detailed Description

```
template<typename T>
class QRS::Matrix< T >
```

Numerical matrix.

The documentation for this class was generated from the following files:

- /home/qinterfly/Library/Projects/QRodSystems/src/core/[matrix.h](#)
- /home/qinterfly/Library/Projects/QRodSystems/src/core/[matrix.cpp](#)

4.7 QRS::Project Class Reference

[Project](#) class to interact with a created system of rods.

```
#include <project.h>
```

Public Member Functions

- [Project](#) (QString name)
Construct a clean project with the user specified name.

Private Attributes

- const QUuid [mID](#)
Unique project identifier.
- QString [mName](#)
Project name.
- QString [mFilePath](#)
Path to a file where a project is stored.
- uint [mNumModified](#) = 0
Number of modifications since last saving.
- ListScalars [mScalars](#)
Data objects.

4.7.1 Detailed Description

[Project](#) class to interact with a created system of rods.

The documentation for this class was generated from the following files:

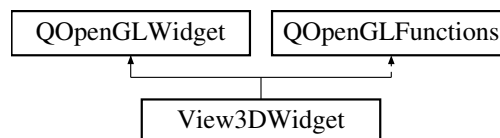
- [/home/qinterfly/Library/Projects/QRodSystems/src/core/project.h](#)
- [/home/qinterfly/Library/Projects/QRodSystems/src/core/project.cpp](#)

4.8 View3DWidget Class Reference

A widget to represent the resulted rod system.

```
#include <view3dwidget.h>
```

Inheritance diagram for View3DWidget:



Public Member Functions

- **View3DWidget** (QWidget *parent=nullptr)

Protected Member Functions

- void [initializeGL](#) () override
Initialize a graphical scene.
- void [paintGL](#) () override
Render its content.

Private Attributes

- bool **mCore**

4.8.1 Detailed Description

A widget to represent the resulted rod system.

The documentation for this class was generated from the following files:

- [/home/qinterfly/Library/Projects/QRodSystems/src/main/view3dwidget.h](#)
- [/home/qinterfly/Library/Projects/QRodSystems/src/main/view3dwidget.cpp](#)

Chapter 5

File Documentation

5.1 `/home/qinterfly/Library/Projects/QRod↵ Systems/src/core/dataobject.cpp` File Reference

Implementation of DataObject class.

```
#include "dataobject.h"
```

5.1.1 Detailed Description

Implementation of DataObject class.

Author

Pavel Lakiza

Date

March 2021

5.2 `/home/qinterfly/Library/Projects/QRodSystems/src/core/dataobject.h` File Reference

Declaration of DataObject class.

```
#include <QString>  
#include <unordered_map>
```

Classes

- class [QRS::DataObject< T >](#)

5.2.1 Detailed Description

Declaration of DataObject class.

Author

Pavel Lakiza

Date

March 2021

5.3 /home/qinterfly/Library/Projects/QRodSystems/src/core/matrix.cpp File Reference

Implementation of Matrix class.

```
#include "matrix.h"
```

5.3.1 Detailed Description

Implementation of Matrix class.

Author

Pavel Lakiza

Date

March 2021

5.4 /home/qinterfly/Library/Projects/QRodSystems/src/core/matrix.h File Reference

Declaration of Matrix class.

```
#include <QtGlobal>  
#include <vector>
```

Classes

- class [QRS::Matrix< T >](#)
Numerical matrix.

5.4.1 Detailed Description

Declaration of Matrix class.

Author

Pavel Lakiza

Date

March 2021

5.5 /home/qinterfly/Library/Projects/QRodSystems/src/core/project.cpp File Reference

Implementation of [QRS::Project](#) class.

```
#include "project.h"
```

5.5.1 Detailed Description

Implementation of [QRS::Project](#) class.

Author

Pavel Lakiza

Date

March 2021

5.6 /home/qinterfly/Library/Projects/QRodSystems/src/core/project.h File Reference

Declaration of [QRS::Project](#) class.

```
#include <QUuid>
#include <QSharedPointer>
#include <list>
#include "dataobject.h"
```

Classes

- class [QRS::Project](#)
Project class to interact with a created system of rods.

Typedefs

- using **QRS::ListScalars** = std::list< QSharedPointer< DataObject< double > >>

5.6.1 Detailed Description

Declaration of [QRS::Project](#) class.

Author

Pavel Lakiza

Date

March 2021

5.7 [/home/qinterfly/Library/Projects/QRod](#) Systems/src/main/controltabs.cpp File Reference

Implementation of ControlTabs class.

```
#include <QLayout>
#include <QToolBar>
#include <QIcon>
#include "controltabs.h"
```

5.7.1 Detailed Description

Implementation of ControlTabs class.

Author

Pavel Lakiza

Date

March 2021

5.8 [/home/qinterfly/Library/Projects/QRod](#) Systems/src/main/controltabs.h File Reference

Declaration of ControlTabs class.

```
#include <QWidget>
```

Classes

- class [ManagersTab](#)

A toolbar consisted of object designers.

5.8.1 Detailed Description

Declaration of ControlTabs class.

Author

Pavel Lakiza

Date

March 2021

5.9 /home/qinterfly/Library/Projects/QRod↵ Systems/src/main/logwidget.cpp File Reference

Implementation of [LogWidget](#) class.

```
#include <QHeaderView>
#include <QTime>
#include <QTimer>
#include "logwidget.h"
```

Enumerations

- enum **ColumnType** { kTime , kType , kMessage }

5.9.1 Detailed Description

Implementation of [LogWidget](#) class.

Author

Pavel Lakiza

Date

March 2021

5.10 /home/qinterfly/Library/Projects/QRod↵ Systems/src/main/logwidget.h File Reference

Declaration of [LogWidget](#) class.

```
#include <QTableWidget>
```

Classes

- class [LogWidget](#)

5.10.1 Detailed Description

Declaration of [LogWidget](#) class.

Author

Pavel Lakiza

Date

March 2021

5.11 /home/qinterfly/Library/Projects/QRodSystems/src/main/main.cpp File Reference

The startup function.

```
#include <QApplication>  
#include "mainwindow.h"
```

Functions

- void [throwMessage](#) (QtMsgType type, const QMessageLogContext &, const QString &message)
Log all the messages.
- int [main](#) (int argc, char *argv[])
Entry point.

5.11.1 Detailed Description

The startup function.

Author

Pavel Lakiza

Date

March 2021

5.12 /home/qinterfly/Library/Projects/QRod↵ Systems/src/main/mainwindow.cpp File Reference

Implementation of [MainWindow](#) class.

```
#include <QDesktopWidget>
#include <QToolBar>
#include <QTableWidget>
#include <QTreeView>
#include <QFileSystemModel>
#include <QTextEdit>
#include <QVBoxLayout>
#include <QSettings>
#include "DockManager.h"
#include "DockWidget.h"
#include "ads_globals.h"
#include "mainwindow.h"
#include "ui_mainwindow.h"
#include "controltabs.h"
#include "view3dwidget.h"
#include "logwidget.h"
#include "../managers/dataobjectsmanager.h"
```

Functions

- void [moveToCenter](#) (QWidget *pWidget)
Helper function to situate widgets at the center of their parent widgets.

5.12.1 Detailed Description

Implementation of [MainWindow](#) class.

Author

Pavel Lakiza

Date

March 2021

5.13 /home/qinterfly/Library/Projects/QRod↵ Systems/src/main/mainwindow.h File Reference

Declaration of [MainWindow](#) class.

```
#include <QMainWindow>
#include "logwidget.h"
#include "../core/project.h"
```

Classes

- class [MainWindow](#)

The main window of the program.

5.13.1 Detailed Description

Declaration of [MainWindow](#) class.

Author

Pavel Lakiza

Date

March 2021

5.14 [/home/qinterfly/Library/Projects/QRod↵](#) Systems/src/main/view3dwidget.cpp File Reference

Implementation of [View3DWidget](#) class.

```
#include <QOpenGLContext>
#include <QOpenGLPaintDevice>
#include <QPainter>
#include "view3dwidget.h"
```

5.14.1 Detailed Description

Implementation of [View3DWidget](#) class.

Author

Pavel Lakiza

Date

March 2021

5.15 [/home/qinterfly/Library/Projects/QRod↵](#) Systems/src/main/view3dwidget.h File Reference

Declaration of [View3DWidget](#) class.

```
#include <QOpenGLWidget>
#include <QOpenGLFunctions>
```

Classes

- class [View3DWidget](#)

A widget to represent the resulted rod system.

5.15.1 Detailed Description

Declaration of [View3DWidget](#) class.

Author

Pavel Lakiza

Date

March 2021

5.16 /home/qinterfly/Library/Projects/QRodSystems/src/managers/dataobjectsmanager.cpp File Reference

Implementation of [DataObjectsManager](#) class.

```
#include <QSettings>
#include <QHBoxLayout>
#include <QToolBar>
#include <QListWidget>
#include <QTableView>
#include <QTextEdit>
#include <QPushButton>
#include <QSpacerItem>
#include "DockManager.h"
#include "DockWidget.h"
#include "dataobjectsmanager.h"
#include "ui_dataobjectsmanager.h"
```

5.16.1 Detailed Description

Implementation of [DataObjectsManager](#) class.

Author

Pavel Lakiza

Date

March 2021

5.17 /home/qinterfly/Library/Projects/QRod↵ Systems/src/managers/dataobjectsmanager.h File Reference

Declaration of [DataObjectsManager](#) class.

```
#include <QDialog>
```

Classes

- class [DataObjectsManager](#)

Manager to create objects of different types: scalars, vectors, matroces and surfaces.

5.17.1 Detailed Description

Declaration of [DataObjectsManager](#) class.

Author

Pavel Lakiza

Date

March 2021