

# Fractal Designer

6.0

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# Chapter 1

## Fractal Designer

This is an application to make fractal videos based on Qt(6.2.0), C++ and FFmpeg.

### 1.1 Version Information

This is version 6.0.9 updated in 2021/08/01.

**What's new in beta1 version than alpha version:**

- Solve bugs listed in [6.0.9 Alpha Release](#).
- Improve efficiency by up to 100% than alpha version.

Current version is now only available for Windows. Release for Linux will be published in the near future.

Visit our [Fractal Designer Website](#) for more information.

### 1.2 Build the Project

Besides the build version for Windows (using Qt 6.2.0), you can compile it yourself by following steps:

- Build project `include/qscintilla.pro` with both Debug and Release mode. Remember to uncheck *shadow build*.
- Open project `src/Fractal_Designer.pro` and *release translations* (lrelease). In Qt Creator, it is in Tools->External->Qt Languist.
- Build `src/Fractal_Designer.pro` with the same kit as that of building QScintilla. Also remember to uncheck *shadow build*.
- To distribute the project, you need to
  - Build in release mode.
  - Deploy with `windeployqt`, `macdeployqt`, `linuxdeployqt` or other methods to get the dependency files.
  - Copy the release dynamic library file of QScintilla (`qscintilla2_qt6.dll` in Windows) to directory `bin` and delete directory `lib`, `scintilla`, `include`, `tmp`.
  - Download [ffmpeg](#) and put it in the right directory. (For Windows, it is `bin/win/ffmpeg.exe`.)

## 1.3 Use Fractal Designer

Type `help` in the terminal to get the list of all commands supported by Fractal Designer 6.0.9. Use the sample file to have a quick look at how the `frd` language is like. Details about `frd` language will be updated in the near future.

### 1.3.1 FRD Script

Here is the basic syntax of `frd` script:

- `frd` language is case-sensitive.
- Variable names are started with `$`, function names are started with `%` and class names are started with `@`.
- Each statement is ended with `;` or a block (i.e. `{ }`).
- Comments follow the C++ rule (i.e. `//` and `/* */`).
- No custom class name is allowed in this version.
- Members of a class are specified also.
- No quote mark is needed outside `@string` value.
- To assign a `@formula` value, use `:=` instead of `=`.
- Currently a value can only be set during initialization. (Which seems to a bug of `QJson`)
- Variables is only valid in its scope block.
- `@number` values are actually stored as complex numbers.
- `@array` stores `@number` and `@list` stores `@string`.
- `@array` and `@list` values are set by using `,` to divide different elements. No `{ }` should be used.
- Function now only support `CONFIGURE`.

Note:

- Non Ascii characters can lead to the misplace of syntax highlight of variable, function and class names.
- Try to avoid syntax error or mathematics error. (For example, `Ts` in route should between 0 to 1 and `Widths` should not be negative.) The behaviour of the interpreter is undefined faced with these circumstances. *[This will be improved in the future.]*

### 1.3.2 FRD Terminal

- Currently you just need to use the **Editor** tab.
- `Ctrl + O` to open `frd` files. (The default directory will have a sample file.)
- Change the *file location* and *image size* information of sample file according to your need.
- Enter `save` in terminal or use `Ctrl + S` to save your changes.
- Enter `run` to interpret the script (Every time you change the file you need to `run` to get the data updated.)
- Enter `preview` (or `F12`) to view the preview image and `closepreview` to close the preview window.

- Enter `createimages` (or `Ctrl + R`) to create images. This process can be time-consuming.
- Enter `createvideo` to create the video. This process is much faster than that of creating images but the window will not respond until this process finishes.
- Other useful commands:
  - `help` to view all commands. This can help you choose what command and argument to use.
  - `clear` to clear the screen.
  - `history` to view the command history.
  - `info` to view data stored in json format.
  - `!!` to repeat the previous command.

## 1.4 TODOs in Version 6.0

- Validity Check in `frd` script.
- Improve error indication of interpreter.
- Add termination control in preview, creating images and creating video.
- Add more terminal commands.

## 1.5 Sample Videos

Video Name	Watch on YouTube	Watch on Bilibili
Mandelbrot Set 1	<a href="https://youtu.be/LU9eL1-9V0E">https://youtu.be/LU9eL1-9V0E</a>	<a href="https://b23.tv/BV1TU4y147ta">https://b23.tv/BV1TU4y147ta</a>
Mandelbrot Set 2	-	<a href="https://b23.tv/BV1qX4y1P74d">https://b23.tv/BV1qX4y1P74d</a>
Mandelbrot Set 3	-	<a href="https://b23.tv/BV17K4y1J7XM">https://b23.tv/BV17K4y1J7XM</a>
Mandelbrot Set 4	-	<a href="https://b23.tv/BV1Hy4y1T7MD">https://b23.tv/BV1Hy4y1T7MD</a>
Julia Set 1	-	<a href="https://b23.tv/BV1wB4y1N7pU">https://b23.tv/BV1wB4y1N7pU</a>
Burning Ship Fractal 1	-	<a href="https://b23.tv/BV1RA41157kJ">https://b23.tv/BV1RA41157kJ</a>
Newton Fractal 1	-	<a href="https://b23.tv/BV1Tb4y1D7oN">https://b23.tv/BV1Tb4y1D7oN</a>

More videos are being uploaded.

## 1.6 Download Release

Now there is only release versions for Windows in this version.





## Chapter 2

# Bug List

Member [FRD\\_Editor::setIndicator](#) (int start, int length, FRD\_Indicator indicator)

When there are characters taking more than 1 byte, indicators can be at the wrong position.



## Chapter 3

# Todo List

Member [MainWindow::createImages](#) ()

Add information check here

Member [MainWindow::eventFilter](#) (QObject \*watched, QEvent \*event) override

This is only ok for Windows



## Chapter 4

# Hierarchical Index

### 4.1 Class Hierarchy

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

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FRD_Error . . . . .	21
FRD_Json . . . . .	21
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info . . . . .	26
Info_Save . . . . .	26
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Version . . . . .	49
QItemEditorFactory	
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QMainWindow	
MainWindow . . . . .	35
QObject	
Create_Image_Task . . . . .	17
QRunnable	
Create_Image_Task . . . . .	17
QWidget	
FRD_Editor . . . . .	19
FRD_TitleBar . . . . .	23
Route_Info . . . . .	44



## Chapter 5

# Class Index

### 5.1 Class List

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

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<a href="#">Create_Images_Range</a>	18
<a href="#">FRD_Editor</a>	19
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<a href="#">info</a>	26
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<a href="#">Route_Tool</a>	45
<a href="#">Search_Result</a>	46
<a href="#">Template_2_Settings</a>	47
<a href="#">Template_4_Settings</a>	48
<a href="#">Version</a>	49





## Chapter 6

# File Index

### 6.1 File List

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

D:/GitHub/TVJ Group/Fractal_Designer/src/ <b>create_image_info.h</b> . . . . .	??
D:/GitHub/TVJ Group/Fractal_Designer/src/ <b>create_image_task.h</b> . . . . .	??
D:/GitHub/TVJ Group/Fractal_Designer/src/ <b>create_images_range.h</b> . . . . .	??
D:/GitHub/TVJ Group/Fractal_Designer/src/ <b>FRD_Editor.h</b> . . . . .	??
D:/GitHub/TVJ Group/Fractal_Designer/src/ <b>FRD_Json.h</b> . . . . .	??
D:/GitHub/TVJ Group/Fractal_Designer/src/ <b>FRD_TitleBar.h</b> . . . . .	??
D:/GitHub/TVJ Group/Fractal_Designer/src/ <b>Info.h</b> . . . . .	??
D:/GitHub/TVJ Group/Fractal_Designer/src/ <b>info_save.h</b> . . . . .	??
D:/GitHub/TVJ Group/Fractal_Designer/src/ <b>Interpreter.h</b>	
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D:/GitHub/TVJ Group/Fractal_Designer/src/ <b>login.h</b> . . . . .	??
D:/GitHub/TVJ Group/Fractal_Designer/src/ <b>mainwindow.h</b> . . . . .	??
D:/GitHub/TVJ Group/Fractal_Designer/src/ <b>mainwindow_global.h</b>	
Include and global settings of class <b>MainWindow</b> . . . . .	51
D:/GitHub/TVJ Group/Fractal_Designer/src/ <b>new_features.h</b> . . . . .	??
D:/GitHub/TVJ Group/Fractal_Designer/src/ <b>preview_setting.h</b> . . . . .	??
D:/GitHub/TVJ Group/Fractal_Designer/src/ <b>route_info.h</b> . . . . .	??
D:/GitHub/TVJ Group/Fractal_Designer/src/ <b>route_tool.h</b> . . . . .	??
D:/GitHub/TVJ Group/Fractal_Designer/src/ <b>search_result.h</b> . . . . .	??
D:/GitHub/TVJ Group/Fractal_Designer/src/ <b>String_Evaluate.h</b> . . . . .	??
D:/GitHub/TVJ Group/Fractal_Designer/src/ <b>template_2_settings.h</b> . . . . .	??
D:/GitHub/TVJ Group/Fractal_Designer/src/ <b>template_4_settings.h</b> . . . . .	??
D:/GitHub/TVJ Group/Fractal_Designer/src/ <b>version.h</b> . . . . .	??



## Chapter 7

# Class Documentation

### 7.1 `_var` Struct Reference

type '`_var`' is used in stack

```
#include <String_Evaluate.h>
```

#### Public Member Functions

- `_var` (std::string s)
- `_var` (std::complex< double > n)
- `_var` (size\_t index)

#### Public Attributes

- std::string **str**
- std::complex< double > **num**
- bool **is\_var** = false

#### 7.1.1 Detailed Description

type '`_var`' is used in stack

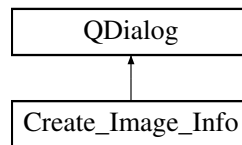
if 'str' is not empty, it stores and operator or function name; else if 'is\_var' is true, it stores the index of variable in 'num'; else it stores the complex number in 'num'.

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

- D:/GitHub/TVJ Group/Fractal\_Designer/src/String\_Evaluate.h
- D:/GitHub/TVJ Group/Fractal\_Designer/src/String\_Evaluate.cpp

## 7.2 Create\_Image\_Info Class Reference

Inheritance diagram for Create\_Image\_Info:



### Public Slots

- void **set\_info** (QString name, QString format, int total, int start=0)
- void **set\_info\_** (QString name, QString format, QList< int > list)
- void **updateInfo** ()
- void **close\_create\_image\_info** ()
- void **init** ()

### Signals

- void **timeOut** ()
- void **releaseInfo** (int current\_num, double speed)

### Public Member Functions

- **Create\_Image\_Info** (QWidget \*parent=nullptr)

### Private Slots

- void **updateTime** ()
- void **closeEvent** (QCloseEvent \*)

### Private Attributes

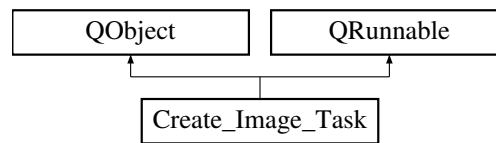
- Ui::Create\_Image\_Info \* **ui**
- QTimer \* **timer**
- QTime **time\_now** = QTime::fromString("0", "s")
- QTime **time\_left** = QTime::fromString("1", "h")
- QTime **time\_ten** = QTime::fromString("0", "s")
- QString **name**
- QString **format**
- int **total**
- int **index**
- int **start**
- double **speed** = 0
- bool **usingQList** = false
- QList< int > **list\_**

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

- D:/GitHub/TVJ Group/Fractal\_Designer/src/create\_image\_info.h
- D:/GitHub/TVJ Group/Fractal\_Designer/src/create\_image\_info.cpp

## 7.3 Create\_Image\_Task Class Reference

Inheritance diagram for Create\_Image\_Task:



### Public Types

- enum **Eval\_Type** {  
**EVAL\_FORMULA** , **EVAL\_CON** , **EVAL\_DIV** , **EVAL\_DISTANCE** ,  
**EVAL\_MIN** , **EVAL\_MAX** , **EVAL\_ITER** }

### Public Slots

- void **stop** ()

### Signals

- void **updateImage\_preview** (QImage)
- void **progressInform\_preview** (double)
- void **updateImage\_route** (QImage)
- void **progressInform\_route** (double)
- void **image\_build\_finished** ()
- void **finished** ()
- void **one\_ok** ()
- void **error\_calc** (int)

### Public Member Functions

- **Create\_Image\_Task** (QWidget \*)
- void **run** ()
- void **setImage** (double, double, double, double, int, int, double, double, QString, QString, QString, QString, bool)
- void **setData** (const std::vector< [\\_var](#) > &formula, const std::vector< [\\_var](#) > C1[4], const std::vector< [\\_var](#) > C2[4], const std::vector< [\\_var](#) > &distance, const std::vector< [\\_var](#) > &min, const std::vector< [\\_var](#) > &max, const std::vector< [\\_var](#) > &lpt)
- void **setTemplate2** (std::complex< double > c)
- void **setTemplate4** (const std::complex< double > &c1, std::complex< double > c2[10], const std::complex< double > &c3, const std::complex< double > &c4, const std::complex< double > &c5)
- void **setFormula** (const std::vector< [\\_var](#) > &)

### Private Types

- enum **Colour\_Type** { **RGBA** }

## Private Member Functions

- int **range\_complex\_to\_255** (const std::complex< double > &c)
- bool **setRGBA** (double[4], bool, std::vector< std::complex< double >> num\_list)
- std::complex< double > **evalExpr** (const std::vector< [\\_var](#) > &expr, const std::vector< std::complex< double >> &num\_list, Eval\_Type type, bool \*ok=nullptr)

## Private Attributes

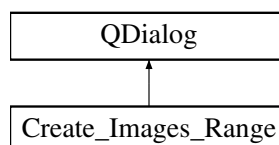
- QString **pro\_path**
- bool **Version\_Higher\_Than\_4** = false
- std::vector< [\\_var](#) > **distance\_**
- std::vector< [\\_var](#) > **max\_loop\_t**
- std::complex< double > **c0**
- std::complex< double > **Newton\_a** = 1
- std::complex< double > **Newton\_xn** [10] {0}
- std::complex< double > **Newton\_sin** = 0
- std::complex< double > **Newton\_cos** = 0
- std::complex< double > **Newton\_ex** = 0
- std::vector< [\\_var](#) > **Colour1\_f** [4]
- std::vector< [\\_var](#) > **Colour2\_f** [4]
- std::vector< [\\_var](#) > **Formula**
- enum Create\_Image\_Task::Colour\_Type **c\_type**
- std::vector< [\\_var](#) > **min\_class\_v**
- std::vector< [\\_var](#) > **max\_class\_v**
- double **x**
- double **y**
- double **x\_width**
- double **y\_height**
- double **rotate\_angle**
- double **t**
- int **X**
- int **Y**
- QString **img\_format**
- QString **img\_path**
- QString **img\_title**
- QString **work\_name**
- bool **isCancelled** = false
- bool **y\_inverse** = false

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

- D:/GitHub/TVJ Group/Fractal\_Designer/src/create\_image\_task.h
- D:/GitHub/TVJ Group/Fractal\_Designer/src/create\_image\_task.cpp

## 7.4 Create\_Images\_Range Class Reference

Inheritance diagram for Create\_Images\_Range:



## Public Member Functions

- **Create\_Images\_Range** (QWidget \*parent, int limit\_number)

## Private Slots

- void **on\_pushButton\_go\_clicked** ()

## Private Attributes

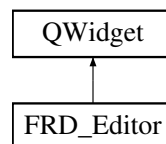
- Ui::Create\_Images\_Range \* **ui**
- int **limit** = 0

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

- D:/GitHub/TVJ Group/Fractal\_Designer/src/create\_images\_range.h
- D:/GitHub/TVJ Group/Fractal\_Designer/src/create\_images\_range.cpp

## 7.5 FRD\_Editor Class Reference

Inheritance diagram for FRD\_Editor:



## Public Types

- enum **FRD\_Indicator** {  
**FRD\_INDIC\_CLEAR** = -1 , **FRD\_INDIC\_VARIABLE** = 15 , **FRD\_INDIC\_FUNCTION** , **FRD\_INDIC\_CLASS** ,  
**FRD\_INDIC\_ERROR** , **FRD\_INDIC\_WARNING** , **FRD\_INDIC\_SEARCH** }

## Signals

- QString **textChanged** ()

## Public Member Functions

- **FRD\_Editor** (QLayout \*layout, int waiting\_msec=0)
- QString **text** () const
- void **setText** (const QString &text)
- void **setHighlightWaiting** (int msec)
- void **setSearchIndic** (int start, int length)
- void **clearSearchIndic** (int start, int length)

## Private Slots

- void **updateHighlight** ()
- void **waitToUpdateHighlight** ()

## Private Member Functions

- bool **isEndString** (QChar c) const
- bool **isComment** (int pos) const
- bool **isString** (int pos) const
- void **setIndicator** (int start, int length, FRD\_Indicator indicator)  
*set the indicator*
- FRD\_Indicator **indicatorFromSymbol** (QChar symbol) const

## Private Attributes

- QsciScintilla \* **editor**
- QLayout \* **layout**
- QTimer \* **timer**
- int **waiting\_time**

## 7.5.1 Member Function Documentation

### 7.5.1.1 setIndicator()

```
void FRD_Editor::setIndicator (
    int start,
    int length,
    FRD_Indicator indicator ) [private]
```

set the indicator

This is used to highlight variable name, function name, class name, error, warning, and search result.

**Bug** When there are characters taking more than 1 byte, indicators can be at the wrong position.

#### Parameters

<i>start</i>	the starting point of string
<i>length</i>	the length of string
<i>indicator</i>	the type of string



## 7.5.2 Member Data Documentation

### 7.5.2.1 editor

```
QsciScintilla* FRD_Editor::editor [private]
```

the FRD editor

### 7.5.2.2 layout

```
QLayout* FRD_Editor::layout [private]
```

layout for editor

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

- D:/GitHub/TVJ Group/Fractal\_Designer/src/FRD\_Editor.h
- D:/GitHub/TVJ Group/Fractal\_Designer/src/FRD\_Editor.cpp

## 7.6 FRD\_Error Struct Reference

### Public Member Functions

- **FRD\_Error** (int type, int row, int length, int col, const QString &msg)

### Public Attributes

- FRD\_error\_type **error\_type**
- int **row**
- int **col**
- int **length**
- QString **msg**

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

- D:/GitHub/TVJ Group/Fractal\_Designer/src/FRD\_Json.h
- D:/GitHub/TVJ Group/Fractal\_Designer/src/FRD\_Json.cpp

## 7.7 FRD\_Json Class Reference

### Public Slots

- void **updateText** (QString text)

## Public Member Functions

- QJsonValue **operator[]** (const QString &name) const
- QString **type** (const QString &block, const QString &name) const
- QString **type** (const QString &block, const QStringList &names) const
- QJsonValue **getValue** (const QString &block, const QString &base\_name, const QString &var\_name) const
- QJsonValue **getValue** (const QString &block, const QStringList &base\_names, const QStringList &var\_↵  
names) const
- bool **contains** (const QString &block, const QString &name) const
- bool **containsAbsolute** (const QString &block, const QString &name)
- FRD\_error\_type **setValue** (const QString &block, const QString &base\_name, const QString &var\_name,  
const QString &type, QJsonValue value)
- FRD\_error\_type **setExistantValue** (const QString &block, const QString &base\_name, const QString &var\_↵  
\_name, const QString &type, QJsonValue value)
- FRD\_error\_type **setExistantValue** (const QString &block, const QStringList &base\_names, const QString↵  
List &var\_names, const QString &type, QJsonValue value)
- FRD\_error\_type **useValue** (const QString &block, const QString &name)
- void **addError** (FRD\_error\_type error\_type, const QString &msg, int row, int col, int length)
- QString **toJson** (QJsonDocument::JsonFormat=QJsonDocument::JsonFormat::Indented) const
- QString **varsToJson** (QJsonDocument::JsonFormat=QJsonDocument::JsonFormat::Indented) const
- void **clear** ()
- QString **text** () const
- QVector< [FRD\\_Error](#) > **errors** () const
- QString **layerName** (int index) const
- QString **layerFormula** (int index) const
- QString **layerColor** (int index, QString tag) const
- double **PreviewSize** (QString tag) const
- double **PreviewCentre** (QString tag) const
- int **PreviewImageSize** (QString tag) const
- double **PreviewRotation** () const
- double **PreviewTime** () const
- bool **inverseYAxis** () const
- QString **distance** (int index) const
- QString **templateMin** (int index) const
- QString **templateMax** (int index) const
- QString **iterationLimit** (int index) const
- double **fps** () const
- QString **imageDir** () const
- QString **imagePrefix** () const
- int **ImageSize** (QString tag) const
- int **outputTime** () const
- QString **videoDir** () const
- QString **videoFormat** () const
- QString **videoName** () const
- int **videoCrf** () const
- QStringList **videoMusic** () const
- int **routePointCount** (int layer) const
- double **routePoint** (int layer, int t\_index, QString tag) const
- QDateTime **runTime** () const
- QString **runVersion** () const

## Private Attributes

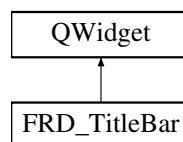
- QObject **main**
- QObject **vars**
- QString **frd\_text**

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

- D:/GitHub/TVJ Group/Fractal\_Designer/src/FRD\_Json.h
- D:/GitHub/TVJ Group/Fractal\_Designer/src/FRD\_Json.cpp

## 7.8 FRD\_TitleBar Class Reference

Inheritance diagram for FRD\_TitleBar:



## Public Slots

- void **timeUpdate** ()

## Signals

- void **requestClose** ()
- void **requestMaximize** ()
- void **requestMinimize** ()

## Public Member Functions

- **FRD\_TitleBar** (QWidget \*parent=nullptr)
- void **setWindowButtons** (QCustomAttrs::WindowButtons btns)
- QCustomAttrs::WindowButtons **windowButtons** () const
- void **setWindowButtonEnabled** (QCustomAttrs::WindowButton btn, bool enabled=true)
- void **addFRDmenu** ()
- void **updateTitleBar** ()

## Public Attributes

- QMenu \* **FileMenu**
- QMenu \* **EditMenu**
- QMenu \* **ViewMenu**
- QMenu \* **TemplateMenu**
- QMenu \* **ImageMenu**
- QMenu \* **VideoMenu**
- QMenu \* **HelpMenu**
- QMenu \* **OptionsMenu**
- QMenuBar \* **menubar**
- QTimer \* **timer**
- bool **canMove**
- bool **maximizing**
- QPoint **m\_pCursor**
- const QSize **FRAME\_BUTTON\_SIZE**
- QWidget \* **m\_parentWindow**
- QCustomAttrs::WindowButtons **m\_frameButtons**
- QLabel **lbl\_windowTitle**
- QHBoxLayout **m\_layout**
- QPushButton **btn\_minimize**
- QPushButton **btn\_maximize**
- QPushButton **btn\_close**
- QLabel **FRD\_icon**
- int **borderSize** = 5
- QRect **topHit**
- bool **bResizeByTopHit** = false
- QRect **bottomHit**
- bool **bResizeByBottomHit** = false
- QRect **leftHit**
- bool **bResizeByLeftHit** = false
- QRect **rightHit**
- bool **bResizeByRightHit** = false
- QRect **rightBottomHit**
- bool **bResizeByRbHit** = false
- QRect **rightTopHit**
- bool **bResizeByRtHit** = false
- QRect **leftBottomHit**
- bool **bResizeByLbHit** = false
- QRect **leftTopHit**
- bool **bResizeByLtHit** = false

## Protected Member Functions

- void **paintEvent** (QPaintEvent \*event) override
- void **mouseMoveEvent** (QMouseEvent \*event) override
- void **mousePressEvent** (QMouseEvent \*event) override
- void **mouseDoubleClickEvent** (QMouseEvent \*event) override

## Static Protected Member Functions

- static bool **isinSide** (QRect r, QPoint p)

## Properties

- QCustomAttrs::WindowButtons **windowButtons**

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

- D:/GitHub/TVJ Group/Fractal\_Designer/src/FRD\_TitleBar.h
- D:/GitHub/TVJ Group/Fractal\_Designer/src/FRD\_TitleBar.cpp

## 7.9 Info Class Reference

### Public Member Functions

- [FRD\\_Json](#) & **curr** ()
- [FRD\\_Json](#) **curr** () const
- [FRD\\_Json](#) & **editor** ()
- [FRD\\_Json](#) **editor** () const
- bool **print** (const QString &path) const

### Private Attributes

- QVector< [FRD\\_Json](#) > **all\_**
- int **i** = -1
- [FRD\\_Json](#) **editor\_**

### 7.9.1 Member Data Documentation

#### 7.9.1.1 **all\_**

```
QVector<FRD\_Json> Info::all_ [private]
```

historic info

#### 7.9.1.2 **editor\_**

```
FRD\_Json Info::editor_ [private]
```

current info of editor

### 7.9.1.3 i

```
int Info::i = -1 [private]
```

current info index

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

- D:/GitHub/TVJ Group/Fractal\_Designer/src/Info.h
- D:/GitHub/TVJ Group/Fractal\_Designer/src/Info.cpp

## 7.10 info Struct Reference

### Public Member Functions

- **info** (char name\_1\_, char name\_2\_, qint32 length\_\_)

### Public Attributes

- QByteArray **name**
- qint32 **length**

The documentation for this struct was generated from the following file:

- D:/GitHub/TVJ Group/Fractal\_Designer/src/info\_save.h

## 7.11 Info\_Save Class Reference

### Public Member Functions

- void **setRouteInfo** (const QList< [Route\\_Info](#) > &route\_list)
- void **setImageOtherInfo** (const QString &img\_path\_, const QString &img\_prefix\_)
- void **setVideoInfo** (const QString &v\_path, const QString &v\_name, const QList< QString > &m\_list)
- void **setColourInfo** (const QString &colour, bool conv)
- void **setCustomFormulaInfo** (const QString &str)
- void **print** (QString path, uint8\_t FRD\_Version[4])

## Public Attributes

- char **template\_** = 0
- QString **CustomFormula\_**
- double **min\_class\_v** = 0
- double **max\_class\_v** = 0
- qint32 **max\_loop\_t** = 50
- bool **y\_inverse** = false
- QList< [Route\\_Info](#) > **Route\_**
- qint16 **image\_size\_x** = 1920
- qint16 **image\_size\_y** = 1080
- char **frame\_rate\_index** = 1
- QString **total\_time\_str** = "0100"
- QString **Colour1\_f**
- QString **Colour2\_f**
- QString **img\_path**
- QString **img\_prefix**
- QString **video\_path**
- QString **video\_name**
- QList< QString > **music\_list**
- [Preview\\_Info](#) **ps**
- std::complex< double > **Julia\_c1**
- std::complex< double > **Julia\_c2**
- double **Julia\_c\_rate** = 0
- std::complex< double > **Newton\_a\_1** = 1
- std::complex< double > **Newton\_a\_2** = 1
- std::complex< double > **Newton\_xn\_1** [10] {0}
- std::complex< double > **Newton\_xn\_2** [10] {0}
- std::complex< double > **Newton\_sin\_1** = 0
- std::complex< double > **Newton\_sin\_2** = 0
- std::complex< double > **Newton\_cos\_1** = 0
- std::complex< double > **Newton\_cos\_2** = 0
- std::complex< double > **Newton\_ex\_1** = 0
- std::complex< double > **Newton\_ex\_2** = 0
- double **Newton\_c\_rate** = 0

## Private Attributes

- [info](#) **Template** {'T', 'E', 1}
- [info](#) **Template\_2** {'T', '2', 40}
- [info](#) **Template\_4** {'T', '4', 456}
- [info](#) **ImageValue** {'I', 'V', 20}
- [info](#) **Colour1** {'C', '1', 0}
- [info](#) **Colour2** {'C', '2', 0}
- [info](#) **Route** {'R', 'O', 0}
- [info](#) **ImageOther** {'I', 'O', 0}
- [info](#) **VideoInfo** {'V', 'I', 0}
- [info](#) **CustomFormula** {'C', 'F', 0}
- [info](#) **Preview** {'P', 'R', 49}

### 7.11.1 Member Function Documentation

### 7.11.1.1 print()

```
void Info_Save::print (
    QString path,
    uint8_t FRD_Version[4] )
```

Preparation for Print Only [Info](#) ///

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

- D:/GitHub/TVJ Group/Fractal\_Designer/src/info\_save.h
- D:/GitHub/TVJ Group/Fractal\_Designer/src/info\_save.cpp

## 7.12 Interpreter Class Reference

the FRD script interpreter

```
#include <Interpreter.h>
```

### Public Member Functions

- [Interpreter](#) ()  
*default constructor of class [Interpreter](#)*
- bool [interpret](#) ()  
*interpret strings*

### Static Public Member Functions

- static bool [interpret](#) (const QString &text, [FRD\\_Json](#) &info)  
*interpret the text and store into info*

### Private Types

- enum [FRD\\_block\\_content](#) { [\\_FRD\\_BLOCK\\_BLANK\\_](#) , [\\_FRD\\_BLOCK\\_VARIABLE\\_](#) , [\\_FRD\\_BLOCK\\_FUNCTION\\_](#) , [\\_FRD\\_BLOCK\\_CLASS\\_](#) }



## Private Member Functions

- void **setStrings** (const QString &text)  
*set strings*
- void **setInfoPtr** (FRD\_Json &info)  
*set info\_ptr*
- bool **removeComments** ()  
*change comments into whitespace*
- bool **readVar** (FRD\_block\_content\_ content, const QString &block, const QString &name, bool existed=true, QString new\_class\_name="")  
*get the next non-space char in strings.*
- bool **readFun** (FRD\_block\_content\_ content, const QString &block, const QString &name)  
*read function definition*
- bool **readClass** ()
- bool **customClass** ()
- bool **readDef** ()
- bool **readBlock** ()
- bool **readBlock** (FRD\_block\_content\_ content, const QString &block, const QString &name)
- std::complex< double > **evalExpr** (const QString &expr, const QString &block, const QString &name, int start\_row, int start\_col, bool \*ok=nullptr)
- QChar **nextChar** ()
- QString **pureName** (const QString &name) const
- QString **nextString** (QString end\_of\_string=\_empty\_string, bool discard\_space=false, bool discard\_↵linebreak=false)

## Private Attributes

- QStringList **strings**
- FRD\_Json \* **info\_ptr**
- int **row** = 1
- int **col** = 0
- bool **reach\_end** = false
- int **block\_count** = 0

## Static Private Attributes

- static const QString **\_empty\_string**

### 7.12.1 Detailed Description

the FRD script interpreter

Info.h

**Author**

Teddy-van-Jerry

**Version**

6.0

**Date**

2021-08-02

**Author**

Teddy-van-Jerry

**Version**

6.0

**Date**

2021-08-02

## 7.12.2 Member Function Documentation

### 7.12.2.1 `interpret()` [1/2]

```
bool Interpreter::interpret ( )
```

interpret strings

**Returns**

whether there is syntax error

**Return values**

<i>true</i>	There is no syntax error.
<i>false</i>	There are syntax errors.

### 7.12.2.2 `interpret()` [2/2]

```
bool Interpreter::interpret (
    const QString & text,
    FRD_Json & info ) [static]
```

interpret the text and store into info

This interprets FRD script, which is programming language to create fractal images and videos in Fractal Designer. After interpretation, if there is no syntax error, the information of the current script will be stored.

#### Parameters

<i>text</i>	the QString of Editor text
<i>info</i>	the current info

#### Returns

whether there is not syntax error

#### Return values

<i>true</i>	There is no syntax error.
<i>false</i>	There are syntax errors.

#### Remarks

This is a static function, you can call it by:

```
bool ok = Interpreter::interpret(text, info);
```

### 7.12.2.3 readFun()

```
bool Interpreter::readFun (
    FRD_block_content_ content,
    const QString & block,
    const QString & name ) [private]
```

read function definition

#### Returns

whether there is error in reading function.

#### Return values

<i>true</i>	There is no error in reading function.
<i>false</i>	There is error in reading function.

### 7.12.2.4 readVar()

```
bool Interpreter::readVar (
    FRD_block_content_ content,
```

```
const QString & block,
const QString & name,
bool existed = true,
QString new_class_name = "" ) [private]
```

get the next non-space char in strings.

#### Returns

the next char

#### Return values

<i>EOF</i>	It has already reached the end of text.
------------	---

#### Remarks

This will update the value of row and col.

read variable defination

#### Returns

whether there is error in reading variable.

#### Return values

<i>true</i>	There is no error in reading variable.
<i>false</i>	There is error in reading variable.

### 7.12.2.5 removeComments()

```
bool Interpreter::removeComments ( ) [private]
```

change comments into whitespace

#### Returns

whether there are not unfinished comments

#### Return values

<i>true</i>	There is no comment error.
<i>false</i>	There exists unfinished comments.

Replace comments with whitespace, so as not to influence row and col.

### 7.12.2.6 setInfoPtr()

```
void Interpreter::setInfoPtr (
    FRD_Json & info ) [private]
```

set info\_ptr

#### Parameters

<i>info</i>	the current info
-------------	------------------

### 7.12.2.7 setStrings()

```
void Interpreter::setStrings (
    const QString & text ) [private]
```

set strings

#### Parameters

<i>text</i>	the QString of Editor text
-------------	----------------------------

## 7.12.3 Member Data Documentation

### 7.12.3.1 col

```
int Interpreter::col = 0 [private]
```

column count that starts at 1

### 7.12.3.2 info\_ptr

```
FRD_Json* Interpreter::info_ptr [private]
```

the pointer to current info

### 7.12.3.3 row

```
int Interpreter::row = 1 [private]
```

row count that starts at 1

### 7.12.3.4 strings

```
QStringList Interpreter::strings [private]
```

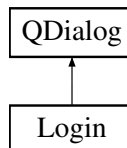
text to be interpreted stored by lines

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

- D:/GitHub/TVJ Group/Fractal\_Designer/src/[Interpreter.h](#)
- D:/GitHub/TVJ Group/Fractal\_Designer/src/Interpreter.cpp

## 7.13 Login Class Reference

Inheritance diagram for Login:



### Signals

- void **user\_name** (QString)

### Public Member Functions

- **Login** (QWidget \*parent=nullptr)
- void **initui** ()
- [FRD\\_TitleBar](#) & **FRD\_TitleBar** () const

### Public Attributes

- QString **m\_NameStr**
- QString **m\_PassStr**
- bool **m\_isRemember**
- bool **m\_isAutoLog**
- bool **m\_isLog**
- bool **init**
- QWidget \* **m\_titleBarW**
- QWidget \* **m\_menuWidget**
- QMenuBar \* **m\_menuBar**
- class::FRD\_TitleBar \* **m\_titleBar**
- QToolBar \* **m\_leftBorder**
- QToolBar \* **m\_rightBorder**
- QToolBar \* **m\_bottomBorder**
- QLabel **FRD\_icon**
- Qt::Edges **m\_lock**
- QPoint **m\_posCursor**

## Private Slots

- void **on\_Login\_login\_clicked** ()
- void **on\_Login\_cancel\_clicked** ()
- bool **ChangeRememberStateSlots** (int state)

## Private Attributes

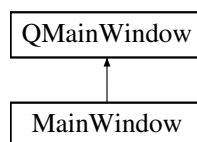
- Ui::Login \* **ui**

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

- D:/GitHub/TVJ Group/Fractal\_Designer/src/login.h
- D:/GitHub/TVJ Group/Fractal\_Designer/src/login.cpp

## 7.14 MainWindow Class Reference

Inheritance diagram for MainWindow:



## Public Types

- enum **App\_Language** { **LANGUAGE\_ENGLISH** , **LANGUAGE\_CHINESE** }

## Public Slots

- void **getImage** (QImage img)
- void **updateProgressBar** (double p)
- void **build\_image\_finished\_deal** ()
- void **build\_image\_one\_ok** ()
- void **runCode** ()
- void **updateMaxButton** ()

## Signals

- void **Search\_clicked** (QString)
- void **build\_signal** (double x, double y, double x\_width, double y\_height, int X, int Y, double rotate\_angle, double t, QString img\_format, QString img\_path, QString img\_title, QString work\_name)
- void **pathShare** (QString)
- void **InfoForColourSet\_signal** (QString)
- void **build\_image\_info\_signal** (QString name, QString format, int total, int start)
- void **build\_image\_info\_signal\_** (QString name, QString format, QList< int > list)
- void **build\_image\_updateInfo\_signal** ()
- void **shareVersion** (bool)
- void **createImageStop** ()

## Public Member Functions

- **MainWindow** (QWidget \*parent=nullptr)
- void **setOpenLocation** (QString)
- bool **OpenFRD** (int type=0)
- void **show\_preview\_image** ()
- void **edit** (int mode=EDIT\_HERE)
- void **display** ()
- bool **isColourAutoSaved** ()
- void **saveElsewhere** ()
- void **Version\_Dialog\_Support** (int index)
- void **NewFeatures** ()
- void **createImagesInList** (const QList< int > &list)
- void **createImagesInRange** (int From\_I, int To\_I)
- bool **existImage** (int) const
- void **deleteImage** (int)
- bool **createImagePre** ([Create\\_Image\\_Task](#) \*task)
- void **customTemplatePre** ([Create\\_Image\\_Task](#) \*task)
- std::complex< double > **\_curr\_complex** (const std::complex< double > &c1, const std::complex< double > &c2, double t, double k=0)
- void **setLanguage** (App\_Language la)
- void **initTitleBar** ()
- QMenu \* **createPopupMenu** () override
- void **setMenuBar** (QMenuBar \*menuBar)
- QMenuBar \* **menuBar** () const
- void **setMenuWidget** (QWidget \*widget)
- QWidget \* **menuWidget** () const
- [FRD\\_TitleBar](#) & **FRD\_TitleBar** () const

## Public Attributes

- bool **isRouteValid** = false
- bool **NO\_EDIT** = false
- uint8\_t **FRD\_Version** [4] = {5, 6, 3, 3}
- QString **Open\_Location** = ""
- QString **Project\_Template**
- QString **User\_Name**
- QStandardItemModel \* **table\_route\_model** = new QStandardItemModel()
- QStandardItemModel \* **error\_list\_model** = new QStandardItemModel()
- [Info\\_Save](#) **pre\_info** [\_MAX\_SAVE\_]
- [Info\\_Save](#) **buff\_info**
- int **current\_info\_v** = 0
- int **redo\_max\_depth** = 0
- int **from\_i** = 0
- int **to\_i** = -1
- bool **save\_or\_not** = false
- [Route\\_Tool](#) \* **route\_tool\_window**
- [FRD\\_Editor](#) \* **editor**
- [Info](#) **info**
- enum MainWindow::App\_Language **app\_language** = LANGUAGE\_ENGLISH
- bool **language\_setting\_no\_change\_now** = false



## Protected Member Functions

- bool **event** (QEvent \*event) override
- void **mousePressEvent** (QMouseEvent \*event) override
- void **mouseReleaseEvent** (QMouseEvent \*event) override
- bool **eventFilter** (QObject \*watched, QEvent \*event) override
- void **mouseDoubleClickEvent** (QMouseEvent \*event) override
- void **customMouseMoveEvent** (QMouseEvent \*event)
- void **mousePressEvent\_2** (QMouseEvent \*e)
- void **mouseMoveEvent\_2** (QMouseEvent \*e)
- void **mouseReleaseEvent\_2** (QMouseEvent \*e)

## Protected Attributes

- int **RESIZE\_LIMIT** =4

## Private Slots

- void **getUserName** (QString)
- void **on\_Button\_Login\_MainWindow\_clicked** ()
- void **on\_Button\_Search\_clicked** ()
- void **on\_MainWindow\_exit\_clicked** ()
- void **on\_actionExit\_E\_triggered** ()
- void **on\_actionChinese\_triggered** ()
- void **on\_MainWindow\_AboutTVJ\_clicked** ()
- void **on\_pushButton\_Chinese\_Help\_clicked** ()
- void **on\_actionNew\_N\_triggered** ()
- void **on\_MainWindow\_Newfile\_clicked** ()
- void **on\_actionOpen\_O\_triggered** ()
- void **on\_MainWindow\_openfile\_clicked** ()
- void **on\_actionRoute\_Tool\_triggered** ()
- void **resizeEvent** (QResizeEvent \*Event)
- void **on\_Tab\_currentChanged** (int index)
- void **on\_actionSave\_S\_triggered** ()
- void **on\_Template\_Choice\_1\_toggled** (bool checked)
- void **on\_Template\_Choice\_2\_toggled** (bool checked)
- void **on\_Template\_Choice\_3\_toggled** (bool checked)
- void **on\_Template\_Choice\_4\_toggled** (bool checked)
- void **on\_Template\_Choice\_5\_toggled** (bool checked)
- void **on\_actionPreview\_Refresh\_triggered** ()
- void **dealClose** (QObject \*sd)
- void **closeEvent** (QCloseEvent \*Event)
- void **iniTemplate** (int n)
- void **iniValue** (double, double, int)
- void **iniSize** (int, int)
- void **iniRouteInfo** (QVector< double >)
- void **inilmagePath** (QString)
- void **inilmagePrefix** (QString)
- void **iniFrameRate** (int)
- void **iniTotalTime** (QString)
- void **iniMusicAdded** (QVector< QString >)
- void **on\_Slider\_t\_valueChanged** (int value)
- void **on\_doubleSpinBox\_t\_editingFinished** ()

- void `on_pushButton_routeAdd_clicked ()`
- void `on_pushButton_routeRemove_clicked ()`
- void `on_pushButton_routeClear_clicked ()`
- void `on_actionCreate_Images_triggered ()`
- void `on_commandLinkButton_Image_clicked ()`
- void `on_Slider_t_sliderReleased ()`
- void `on_actionStop_triggered ()`
- void `on_toolButton_imagePath_clicked ()`
- void `on_actionCreate_Video_triggered ()`
- void `on_toolButton_videoPath_clicked ()`
- void `on_actionEnglish_triggered ()`
- void `on_MainWindow_HelpEnglish_clicked ()`
- void `on_pushButton_addMusic_clicked ()`
- void `on_pushButton_deleteMusic_clicked ()`
- void `on_pushButton_UniformMotion_clicked ()`
- void `on_actionFFmpeg_triggered ()`
- void `on_actionCheck_Update_triggered ()`
- void `on_actionUndo_triggered ()`
- void `on_actionRedo_triggered ()`
- void `on_Template_Choice_1_clicked ()`
- void `on_Template_Choice_2_clicked ()`
- void `on_Template_Choice_3_clicked ()`
- void `on_Template_Choice_4_clicked ()`
- void `on_Template_Choice_5_clicked ()`
- void `routeEdit (QStandardItem *)`
- void `on_Min_class_value_editingFinished ()`
- void `on_Max_class_value_editingFinished ()`
- void `on_Max_loop_time_editingFinished ()`
- void `dealRouteSort (int)`
- void `on_Image_size_X_editingFinished ()`
- void `on_Image_size_Y_editingFinished ()`
- void `on_comboBox_fps_currentIndexChanged (int index)`
- void `on_timeEdit_editingFinished ()`
- void `on_lineEdit_imagePath_editingFinished ()`
- void `on_lineEdit_imagePrefix_editingFinished ()`
- void `on_lineEdit_videoPath_editingFinished ()`
- void `on_lineEdit_videoName_editingFinished ()`
- void `on_actionVersion_1_triggered ()`
- void `on_actionAbout_Teddy_van_Jerry_triggered ()`
- void `on_actionVersion_2_triggered ()`
- void `on_actionBug_Report_triggered ()`
- void `on_actionVersion_triggered ()`
- void `on_actionNew_Features_triggered ()`
- void `on_pushButton_Min_class_default_clicked ()`
- void `on_pushButton_Max_value_default_clicked ()`
- void `on_pushButton_Max_loop_default_clicked ()`
- void `on_pushButton_IV_clear1_clicked ()`
- void `on_pushButton_IV_clear2_clicked ()`
- void `on_pushButton_IV_clear3_clicked ()`
- void `on_actionClose_triggered ()`
- void `on_commandLinkButton_3_clicked ()`
- void `on_actionCreate_Images_in_Range_triggered ()`
- void `on_actionVersion_3_triggered ()`
- void `on_actionVersion_4_triggered ()`
- void `on_actionGitHub_Repository_triggered ()`

- void **on\_actionCheck\_Images\_triggered** ()
- void **on\_actionDelete\_Images\_triggered** ()
- void **on\_actionMost\_triggered** ()
- void **on\_actionMore\_triggered** ()
- void **on\_actionNormal\_triggered** ()
- void **on\_actionLess\_triggered** ()
- void **on\_actionLeast\_triggered** ()
- void **on\_actionTemplate\_2\_triggered** ()
- void **on\_actionTemplate\_6\_triggered** ()
- void **on\_actionVersion\_5\_triggered** ()
- void **on\_actionVersion\_6\_triggered** ()
- void **on\_MainWindow\_AboutFD\_clicked** ()
- void **on\_actionEnglish\_2\_triggered** ()
- void **on\_actionChinese\_2\_triggered** ()
- void **on\_Convergent\_Points\_Colour\_Formula\_textChanged** ()
- void **on\_Divergent\_Points\_Colour\_Formula\_textChanged** ()
- void **on\_lineEdit\_Custom\_Formula\_editingFinished** ()
- void **on\_actionPreview\_Settings\_triggered** ()
- void **on\_actionReset\_Colour\_Definition\_triggered** ()
- void **on\_checkBox\_yInverse\_stateChanged** (int arg1)
- void **on\_pushButton\_Template\_Help\_clicked** ()
- void **on\_actionTheme\_Light\_triggered** ()
- void **on\_actionTheme\_Amoled\_triggered** ()
- void **on\_actionTheme\_Aqua\_triggered** ()
- void **on\_actionTheme\_Console\_triggered** ()
- void **on\_actionTheme\_Elegant\_triggered** ()
- void **on\_actionTheme\_Macos\_triggered** ()
- void **on\_actionTheme\_ManjaroMix\_triggered** ()
- void **on\_actionTheme\_MaterialDark\_triggered** ()
- void **on\_actionTheme\_Ubuntu\_triggered** ()
- void **tableRouteCustomMenuRequested** (QPoint pos)
- void **tableRouteMoveUp** ()
- void **tableRouteMoveDown** ()
- void **tableRouteInsertBefore** ()
- void **tableRouteInsertAfter** ()
- void **tableRouteDeleteRow** ()
- void **on\_pushButton\_CodeRun\_clicked** ()
- void **updateEditorInfo** ()
- void **on\_actionSave\_As\_A\_triggered** ()
- void **preview** ()
- void **createImages** ()
- void **createVideo** ()
- void **showPreviewInWindow** (const QImage &img)
- void **setErrorInfo** (const FRD\_Json &frd\_json)
- void **on\_pushButton\_search\_clicked** ()
- void **on\_lineEdit\_searchName\_returnPressed** ()
- void **on\_actionRun\_Code\_triggered** ()
- void **updateTerminalProgressBar** (int percent, int finished=-1, int total=-1, double speed=-1)
- void **initTerminalProgressBar** (int total=-1)
- void **finishTerminalProgressBar** (int total=-1)
- void **updateTerminalCreateImagesProgresssBar** (int current\_num, double speed)
- void **normalTerminalMessage** (const QString &str)
- void **errorTerminalMessage** (const QString &str)
- void **outsideCommand** (const QString &cmd)
- void **terminalCommand** ()
- void **clearTerminal** ()

## Private Member Functions

- void **useDarkIcon** ()
- void **useWhitelcon** ()
- QString **ReadInit** (const QString &key)
- void **WriteInit** (const QString &key, const QString &value)
- void **ReadStyle** ()
- QToolBar \* **generateBorder** (Qt::ToolBarArea area, Qt::Orientation orientation)

## Private Attributes

- bool **isDarkStyle**
- Ui::MainWindow \* **ui**
- QLineEdit \* **Line\_Search**
- QToolButton \* **Button\_Search**
- [Search\\_Result](#) \* **search\_result**
- QLabel \* **Label\_User\_Name**
- QPushButton \* **Button\_Login\_MainWindow**
- QImage **image\_preview**
- QImage **image\_T1**
- QImage **image\_T2**
- QImage **image\_T3**
- QImage **image\_T4**
- Route\_info \* **route\_info**
- [Create\\_Image\\_Info](#) \* **create\_image\_info**
- [PeciseDoubleFactory](#) **m\_factory**
- QTranslator \* **translator**
- QMenu \* **table\_route\_menu**
- QAction \* **table\_route\_action** [5]
- int **table\_route\_line** = -1
- [Template\\_2\\_Settings](#) \* **template\_2\_dialog** = new [Template\\_2\\_Settings](#)(this)
- [Template\\_4\\_Settings](#) \* **template\_4\_dialog** = new [Template\\_4\\_Settings](#)(this)
- [Preview\\_Setting](#) \* **preview\_setting** = new [Preview\\_Setting](#)(this)
- QDialog \* **preview\_dialog** = new QDialog(this)
- QHBoxLayout \* **preview\_dialog\_layout** = new QHBoxLayout(preview\_dialog)
- QLabel \* **preview\_dialog\_label** = new QLabel
- QPoint **last**
- bool **isPressWidget**
- bool **init**
- QWidget \* **m\_titleBarW**
- QWidget \* **m\_menuWidget**
- QMenuBar \* **m\_menuBar**
- class::FRD\_TitleBar \* **m\_titleBar**
- QToolBar \* **m\_leftBorder**
- QToolBar \* **m\_rightBorder**
- QToolBar \* **m\_bottomBorder**
- QLabel **FRD\_icon**
- Qt::Edges **m\_lock**
- QPoint **m\_posCursor**
- QStringList **terminalCommands**
- int **currentTerminalProgress** = 0
- QString **currentTerminalWorkName**

## Friends

- class **Search\_Result**
- class **Route\_Tool**
- class **Info\_Save**

### 7.14.1 Member Function Documentation

#### 7.14.1.1 createImages

```
void MainWindow::createImages ( ) [private], [slot]
```

**Todo** Add information check here

#### 7.14.1.2 eventFilter()

```
bool MainWindow::eventFilter (
    QObject * watched,
    QEvent * event ) [override], [protected]
```

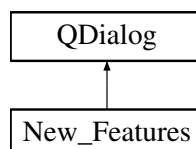
**Todo** This is only ok for Windows

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

- D:/GitHub/TVJ Group/Fractal\_Designer/src/mainwindow.h
- D:/GitHub/TVJ Group/Fractal\_Designer/src/mainwindow.cpp

## 7.15 New\_Features Class Reference

Inheritance diagram for New\_Features:



## Public Member Functions

- **New\_Features** (QWidget \*parent=nullptr)

## Private Attributes

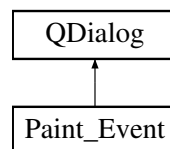
- `Ui::New_Features * ui`

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

- `D:/GitHub/TVJ Group/Fractal_Designer/src/new_features.h`
- `D:/GitHub/TVJ Group/Fractal_Designer/src/new_features.cpp`

## 7.16 Paint\_Event Class Reference

Inheritance diagram for `Paint_Event`:



## Public Member Functions

- **`Paint_Event`** (`QWidget *parent`, `int dx`, `int dy`, `const QImage &image`)
- `void paintEvent` (`QPaintEvent *event`)

## Private Attributes

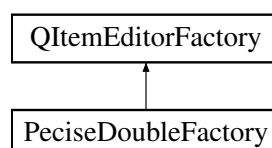
- `QWidget * p`
- `QImage img`
- `int Dx = 0`
- `int Dy = 0`

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

- `D:/GitHub/TVJ Group/Fractal_Designer/src/route_tool.cpp`

## 7.17 PeciseDoubleFactory Class Reference

Inheritance diagram for `PeciseDoubleFactory`:



## Public Member Functions

- virtual QWidget \* **createEditor** (int userType, QWidget \*parent) const override

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

- D:/GitHub/TVJ Group/Fractal\_Designer/src/[mainwindow\\_global.h](#)

## 7.18 Possible\_Result Struct Reference

### Public Attributes

- int **index** = -1
- QString **Text**
- QString **Tip**
- QStringList **Key\_Words**
- int **value** = 0

The documentation for this struct was generated from the following file:

- D:/GitHub/TVJ Group/Fractal\_Designer/src/search\_result.h

## 7.19 Preview\_Info Struct Reference

### Public Attributes

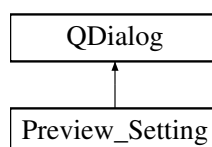
- int **width** = 800
- int **height** = 600
- double **xWidth** = 4
- double **yHeight** = 3
- double **angle** = 0
- double **centreX** = 0
- double **centreY** = 0
- bool **autoRefresh** = false

The documentation for this struct was generated from the following file:

- D:/GitHub/TVJ Group/Fractal\_Designer/src/info\_save.h

## 7.20 Preview\_Setting Class Reference

Inheritance diagram for Preview\_Setting:



## Public Member Functions

- **Preview\_Setting** (QWidget \*parent=nullptr)
- void **setTemplateInfo** (int width\_, int height\_, double xWidth\_, double yHeight\_, double angle\_, double centreX\_, double centreY\_, bool checked)
- void **updateInfo** ()

## Private Slots

- void **closeEvent** (QCloseEvent \*)
- void **on\_toolButton\_clicked** ()
- void **on\_spinBox\_Width\_valueChanged** (int arg1)
- void **on\_spinBox\_Height\_valueChanged** (int arg1)
- void **on\_doubleSpinBox\_xWidth\_valueChanged** (double arg1)
- void **on\_doubleSpinBox\_yHeight\_valueChanged** (double arg1)
- void **on\_doubleSpinBox\_angle\_valueChanged** (double arg1)
- void **on\_doubleSpinBox\_X\_valueChanged** (double arg1)
- void **on\_doubleSpinBox\_Y\_valueChanged** (double arg1)
- void **on\_checkBox\_stateChanged** (int arg1)
- void **on\_pushButton\_Default\_clicked** ()
- void **on\_pushButton\_OK\_clicked** ()
- void **on\_pushButton\_clicked** ()

## Private Attributes

- Ui::Preview\_Setting \* **ui**
- bool **edited** = false

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

- D:/GitHub/TVJ Group/Fractal\_Designer/src/preview\_setting.h
- D:/GitHub/TVJ Group/Fractal\_Designer/src/preview\_setting.cpp

## 7.21 Route\_Info Struct Reference

### Public Member Functions

- [Route\\_Info](#) **read** (QDataStream &in)
- void **print** (QDataStream &out) const
- bool **operator==** (const [Route\\_Info](#) &i) const
- bool **operator!=** (const [Route\\_Info](#) &i) const

### Public Attributes

- double **t** = 0
- double **x** = 0
- double **y** = 0
- double **angle** = 0
- double **width** = 0
- double **v\_rate** = 0

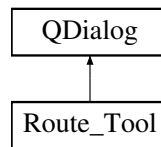
The documentation for this struct was generated from the following file:

- D:/GitHub/TVJ Group/Fractal\_Designer/src/route\_info.h



## 7.22 Route\_Tool Class Reference

Inheritance diagram for Route\_Tool:



### Public Slots

- void **getImage** (QImage)
- void **updateProgressBar** (double)
- void **setPath** (QString)

### Signals

- void **build\_signal** (double x, double y, double x\_width, double y\_height, int X, int Y, double rotate\_angle, double t, QString img\_format, QString img\_path, QString img\_title, QString work\_name)

### Public Member Functions

- **Route\_Tool** (QWidget \*parent=nullptr)

### Public Attributes

- double **width\_to\_size** = 1

### Protected Member Functions

- void **mouseMoveEvent** (QMouseEvent \*e)
- void **mouseDoubleClickEvent** (QMouseEvent \*e)
- void **mouseReleaseEvent** (QMouseEvent \*e)
- void **wheelEvent** (QWheelEvent \*e)

### Private Slots

- void **on\_pushButton\_view\_clicked** ()
- void **on\_comboBox\_axisColour\_currentIndexChanged** (int index)
- void **on\_Slider\_time\_valueChanged** (int value)
- void **on\_doubleSpinBox\_t\_editingFinished** ()
- void **on\_actionBack\_to\_main\_window\_triggered** ()
- void **on\_actionView\_triggered** ()
- void **on\_pushButton\_Save\_clicked** ()
- void **on\_actionSave\_Point\_triggered** ()
- void **on\_action0\_5\_triggered** ()
- void **on\_action0\_8\_triggered** ()
- void **on\_action1\_triggered** ()
- void **on\_action1\_2\_triggered** ()
- void **on\_action1\_5\_triggered** ()
- void **on\_action2\_0\_triggered** ()

## Private Member Functions

- void **paintEvent** (QPaintEvent \*event)

## Private Attributes

- Ui::Route\_Tool \* **ui**
- double **centreX**
- double **centreY**
- double **img\_size**
- double **t**
- QString **pro\_path**
- QImage **image**
- bool **press\_move** = false
- double **preX** = 0
- double **preY** = 0
- double **preCentreX** = 0
- double **preCentreY** = 0
- int **dx** = 0
- int **dy** = 0
- QObject \* **p** = parent()

## Friends

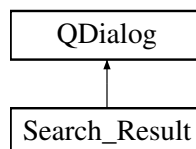
- class **Paint\_Event**

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

- D:/GitHub/TVJ Group/Fractal\_Designer/src/route\_tool.h
- D:/GitHub/TVJ Group/Fractal\_Designer/src/route\_tool.cpp

## 7.23 Search\_Result Class Reference

Inheritance diagram for Search\_Result:



## Public Slots

- void **getSearch** (QString)

## Signals

- void **search\_result\_clicked\_signal** (QString)

## Public Member Functions

- **Search\_Result** (QWidget \*parent=nullptr)

## Public Attributes

- QScrollArea \* **Scroll\_Area\_Search**

## Private Attributes

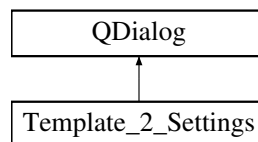
- Ui::Search\_Result \* **ui**
- QVector< QPushButton \* > **btn**
- QLabel \* **label**
- QPushButton \* **Help\_E**
- QPushButton \* **Help\_C**
- bool **already\_open** = false

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

- D:/GitHub/TVJ Group/Fractal\_Designer/src/search\_result.h
- D:/GitHub/TVJ Group/Fractal\_Designer/src/search\_result.cpp

## 7.24 Template\_2\_Settings Class Reference

Inheritance diagram for Template\_2\_Settings:



## Public Member Functions

- **Template\_2\_Settings** (QWidget \*parent=nullptr)

## Private Slots

- void **on\_doubleSpinBox\_C1R\_valueChanged** (double arg1)
- void **on\_doubleSpinBox\_C1I\_valueChanged** (double arg1)
- void **on\_doubleSpinBox\_C2R\_valueChanged** (double arg1)
- void **on\_doubleSpinBox\_C2I\_valueChanged** (double arg1)
- void **on\_doubleSpinBox\_Rate\_valueChanged** (double arg1)
- void **closeEvent** (QCloseEvent \*event)

## Private Attributes

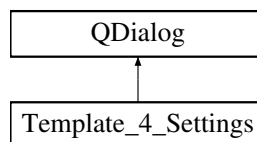
- `Ui::Template_2_Settings * ui`
- `bool edited = false`
- `bool this_NO_EDIT = false`

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

- `D:/GitHub/TVJ Group/Fractal_Designer/src/template_2_settings.h`
- `D:/GitHub/TVJ Group/Fractal_Designer/src/template_2_settings.cpp`

## 7.25 Template\_4\_Settings Class Reference

Inheritance diagram for `Template_4_Settings`:



## Public Member Functions

- `Template_4_Settings (QWidget *parent=nullptr)`

## Private Slots

- `void on_pushButton_Cancel_clicked ()`
- `void on_pushButton_Save_clicked ()`
- `void on_pushButton_Revert_clicked ()`
- `void on_pushButton_Help_clicked ()`

## Private Member Functions

- `void uilnit ()`

## Private Attributes

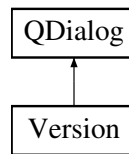
- `Ui::Template_4_Settings * ui`

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

- `D:/GitHub/TVJ Group/Fractal_Designer/src/template_4_settings.h`
- `D:/GitHub/TVJ Group/Fractal_Designer/src/template_4_settings.cpp`

## 7.26 Version Class Reference

Inheritance diagram for Version:



### Public Member Functions

- **Version** (QWidget \*parent=nullptr)

### Private Slots

- void **on\_pushButton\_Help\_clicked** ()
- void **on\_pushButton\_New\_clicked** ()
- void **on\_pushButton\_Update\_clicked** ()

### Private Attributes

- Ui::Version \* **ui**

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

- D:/GitHub/TVJ Group/Fractal\_Designer/src/version.h
- D:/GitHub/TVJ Group/Fractal\_Designer/src/version.cpp



## Chapter 8

# File Documentation

### 8.1 D:/GitHub/TVJ Group/Fractal\_Designer/src/Interpreter.h File Reference

[Interpreter.](#)

```
#include <QString>
#include <QStack>
#include <Info.h>
#include "String_Evaluate.h"
```

#### Classes

- class [Interpreter](#)  
*the FRD script interpreter*

#### 8.1.1 Detailed Description

[Interpreter.](#)

### 8.2 D:/GitHub/TVJ Group/Fractal\_Designer/src/mainwindow\_global.h File Reference

Include and global settings of class [MainWindow](#).

```
#include <QMainWindow>
#include <QMenu>
#include <QRect>
#include <QPoint>
#include <QCursor>
#include <QMenuBar>
#include <QToolBar>
```

```
#include <QStatusBar>
#include <QMetaMethod>
#include <QMetaObject>
#include <QDockWidget>
#include <QMouseEvent>
#include <QVBoxLayout>
#include <QLabel>
#include <QProgressBar>
#include <QLineEdit>
#include <QThread>
#include <QStandardItem>
#include <QStandardItemModel>
#include <QDir>
#include <QFileDialog>
#include <QScrollArea>
#include <QProcess>
#include <QIODeviceBase>
#include <QByteArray>
#include <QItemEditorFactory>
#include <QDoubleSpinBox>
#include <QStyledItemDelegate>
#include <QButtonGroup>
#include <QLayout>
#include <QThreadPool>
#include <QtConcurrent/QtConcurrent>
#include <QtNetwork/QNetworkAccessManager>
#include <QtNetwork/QNetworkRequest>
#include <QtNetwork/QNetworkReply>
#include <QJsonDocument>
#include <QJsonObject>
#include <QJsonArray>
#include <QDialog>
#include <QTextDocument>
#include <QTextBlock>
#include <complex>
#include "login.h"
#include "route_tool.h"
#include "create_image_info.h"
#include "search_result.h"
#include "info_save.h"
#include "route_info.h"
#include "version.h"
#include "new_features.h"
#include "create_images_range.h"
#include "create_image_task.h"
#include "template_2_settings.h"
#include "template_4_settings.h"
#include "preview_setting.h"
#include "FRD_Editor.h"
#include "FRD_TitleBar.h"
#include "Interpreter.h"
#include "Info.h"
```

## Classes

- class [PeciseDoubleFactory](#)



## Macros

- `#define OPEN_FILE_IN 0`
- `#define OPEN_FILE_OUT 1`
- `#define _MAX_SAVE_ 50`
- `#define curr_info pre_info[current_info_v]`
- `#define EDIT_HERE 0`
- `#define EDIT_ALREADY 1`
- `#define Tb(i, j) table_route_model->item(i, j)->data(Qt::EditRole).value<double>()`
- `#define SetTb(i, j, v) table_route_model->item(i, j)->setData(QVariant(v), Qt::EditRole)`
- `#define Namels(C1_, C2_) (name_1 == C1_ && name_2 == C2_)`
- `#define UNSUPPORTED_PLATFORM QMessageBox::critical(this, "Error", "This project now only supports Windows and Linux.")`
- `#define DBL_MAX 1E10`

## Variables

- `const QString Chinese_Help_Url = "https://frd.teddy-van-jerry.org/help/fractal-designer-6-0-help-zh"`
- `const QString English_Help_Url = "https://frd.teddy-van-jerry.org/help/fractal-designer-6-0-help"`
- `const QString Bug_Report = "https://github.com/Teddy-van-Jerry/Fractal_Designer/issues"`

### 8.2.1 Detailed Description

Include and global settings of class [MainWindow](#).



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