



Qt Tutorial

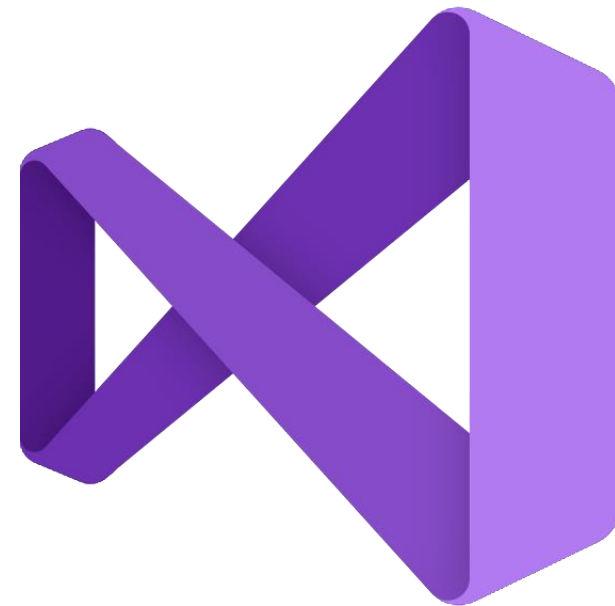
Object Oriented Programming



- Qt is cross-platform software for creating graphical user interfaces.

Tools

- Qt 5.15.2
- Visual Studio 2019 (Optional)



Authorization

- Create a Qt account
- Note: NTUST mail may not be verified
- [Link](#)



Qt Account

Your unified login to everything Qt

Sign in

[Forgot password?](#)

[Create Qt Account](#)

With Qt Account you get access to exclusive services, support and information. Use your Qt Account credentials to sign-in to all Qt services, including Qt Bugreports, Codereview, Forums & Wiki, and The Qt Company Support Center.

Authorization

- Verification

Congratulations!

Your Qt Account has been created.

We have sent confirmation link to your email. Press continue to start using your account.

Continue

Download

- Download the installer
- [Link](#)

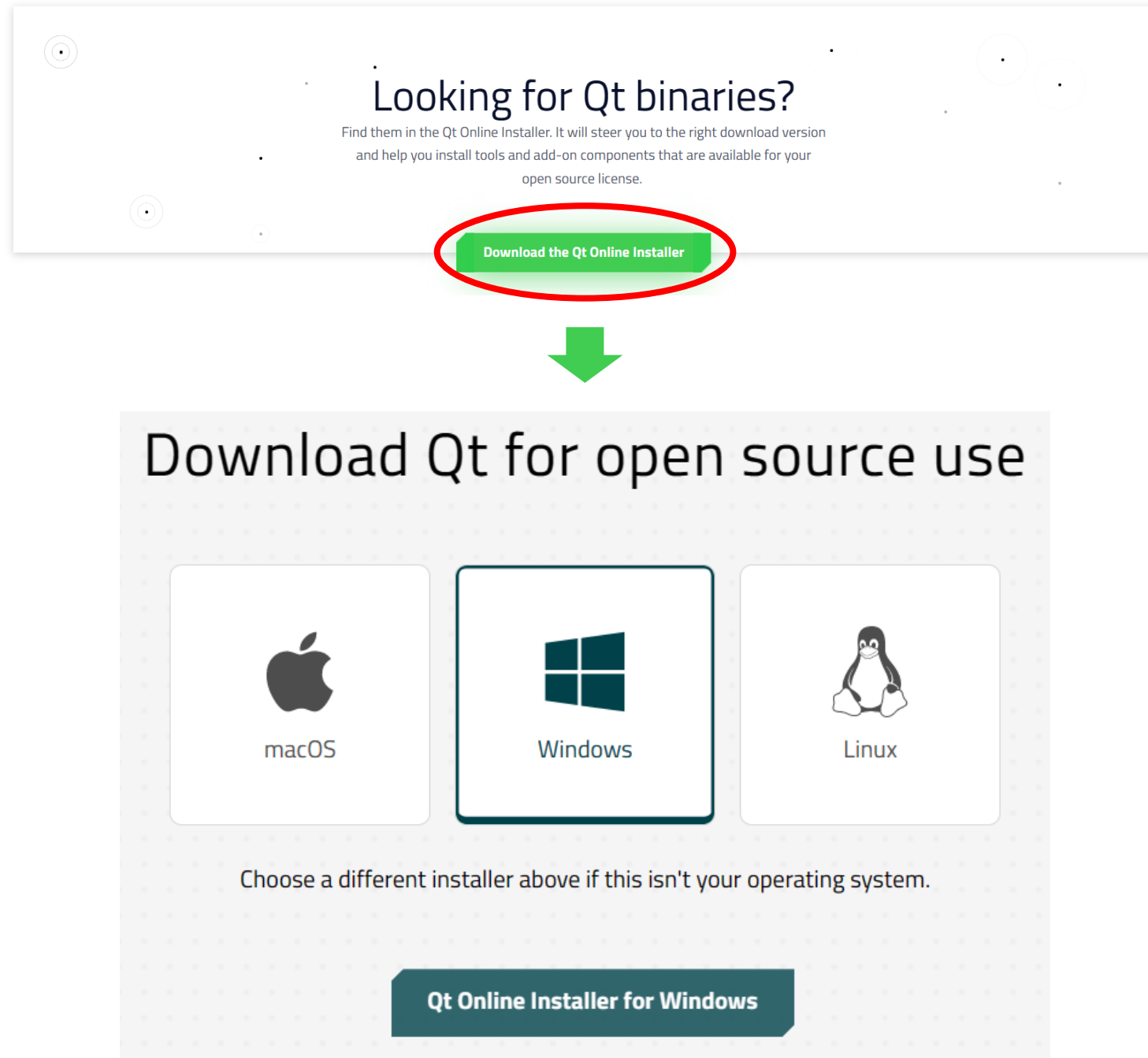
Looking for Qt binaries?

Find them in the Qt Online Installer. It will steer you to the right download version and help you install tools and add-on components that are available for your open source license.


[Download the Qt Online Installer](#)

↓


Download Qt for open source use



macOS



Windows



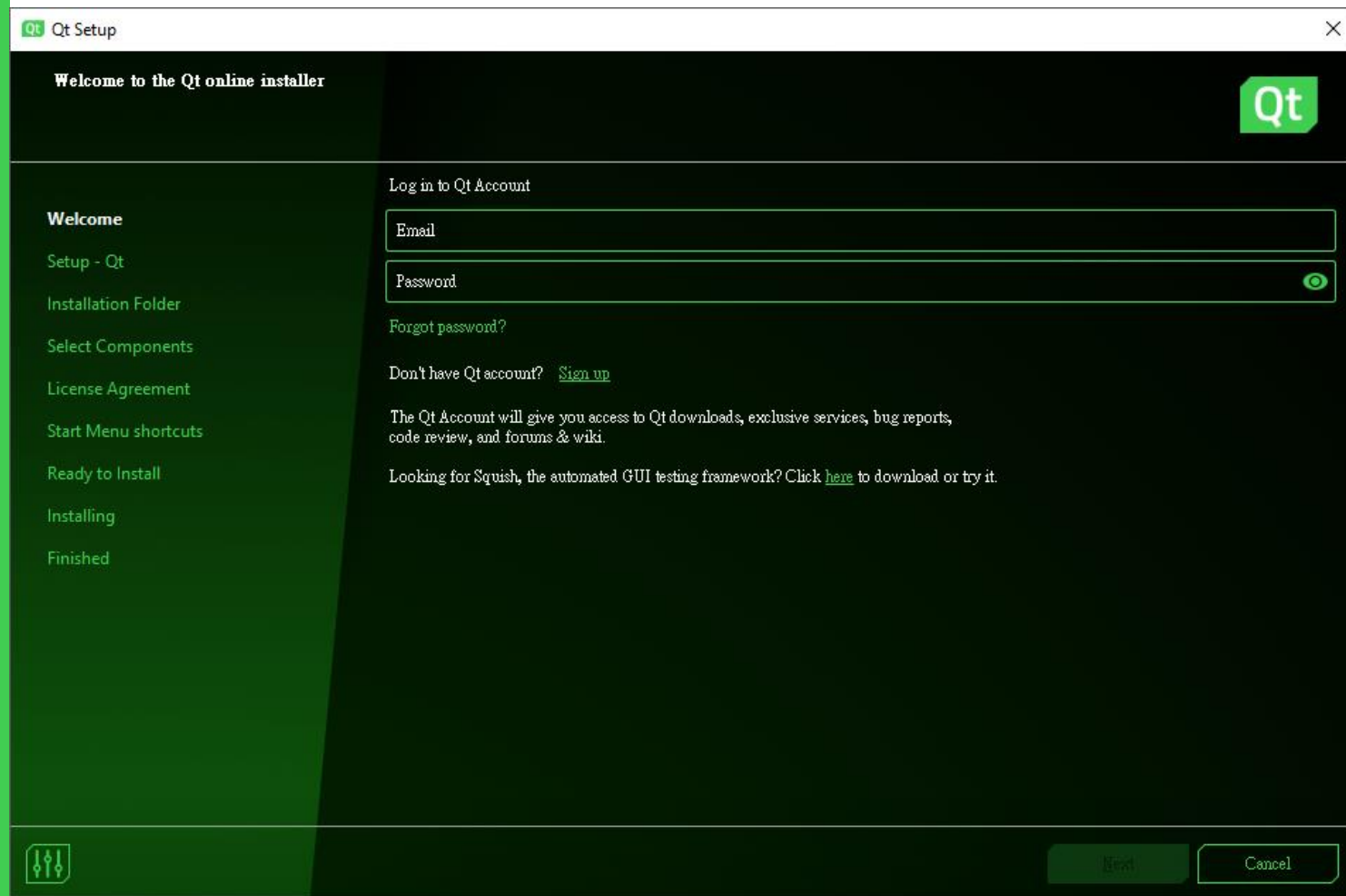
Linux

Choose a different installer above if this isn't your operating system.

Qt Online Installer for Windows

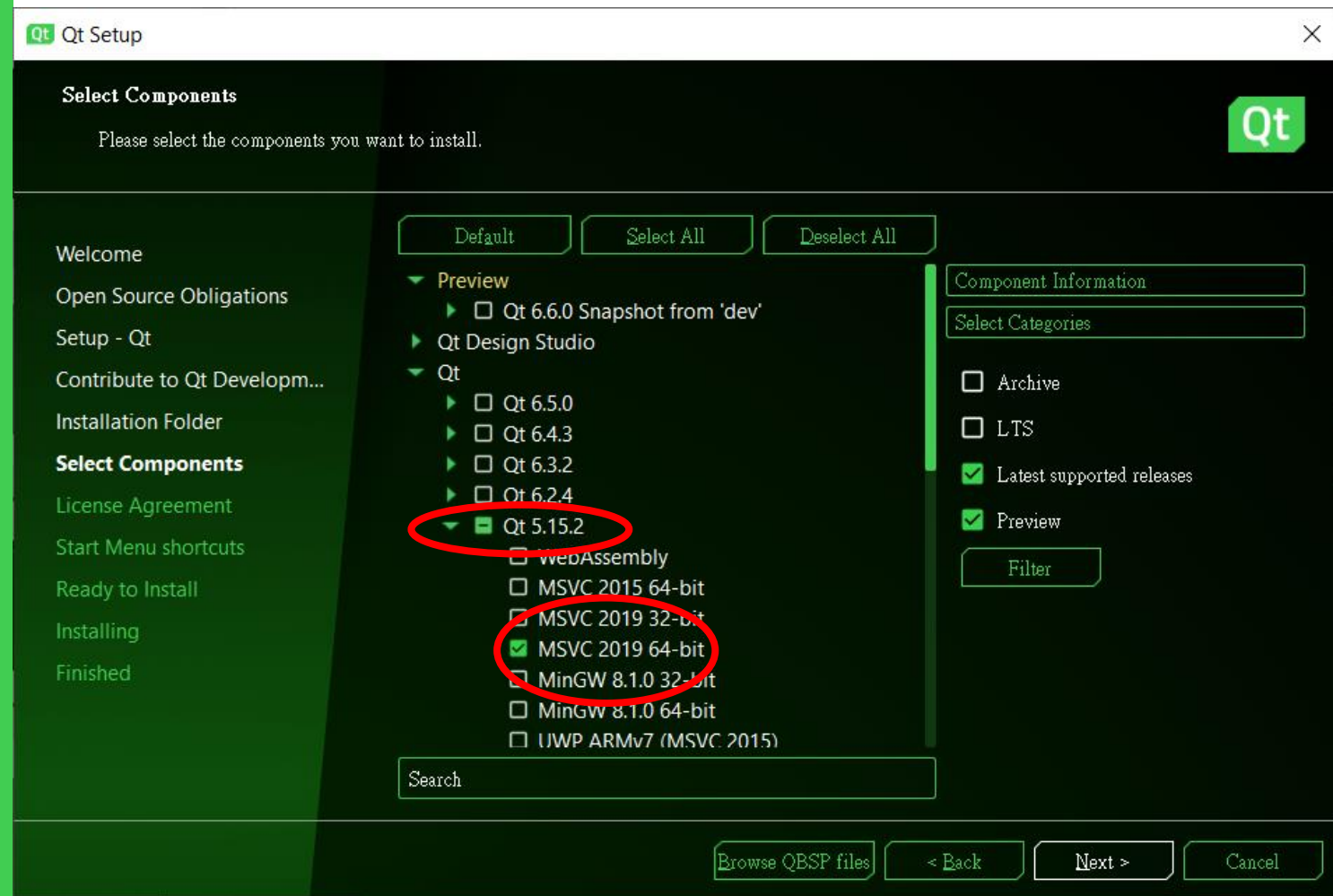
Setup

- Log in to Qt Account
- Next until next slide



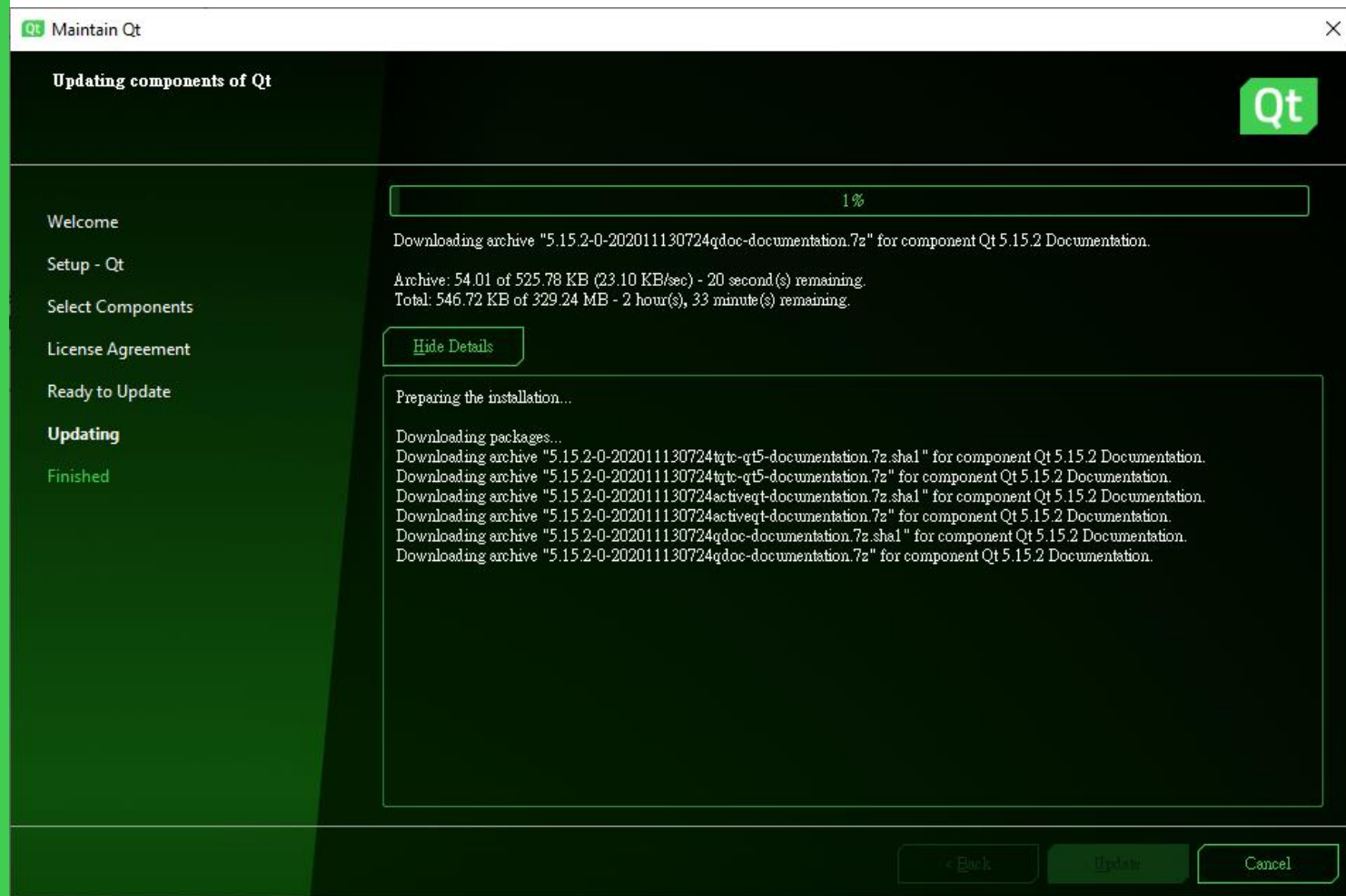
Setup

- Select MSVC 2019 64-bit
- Next



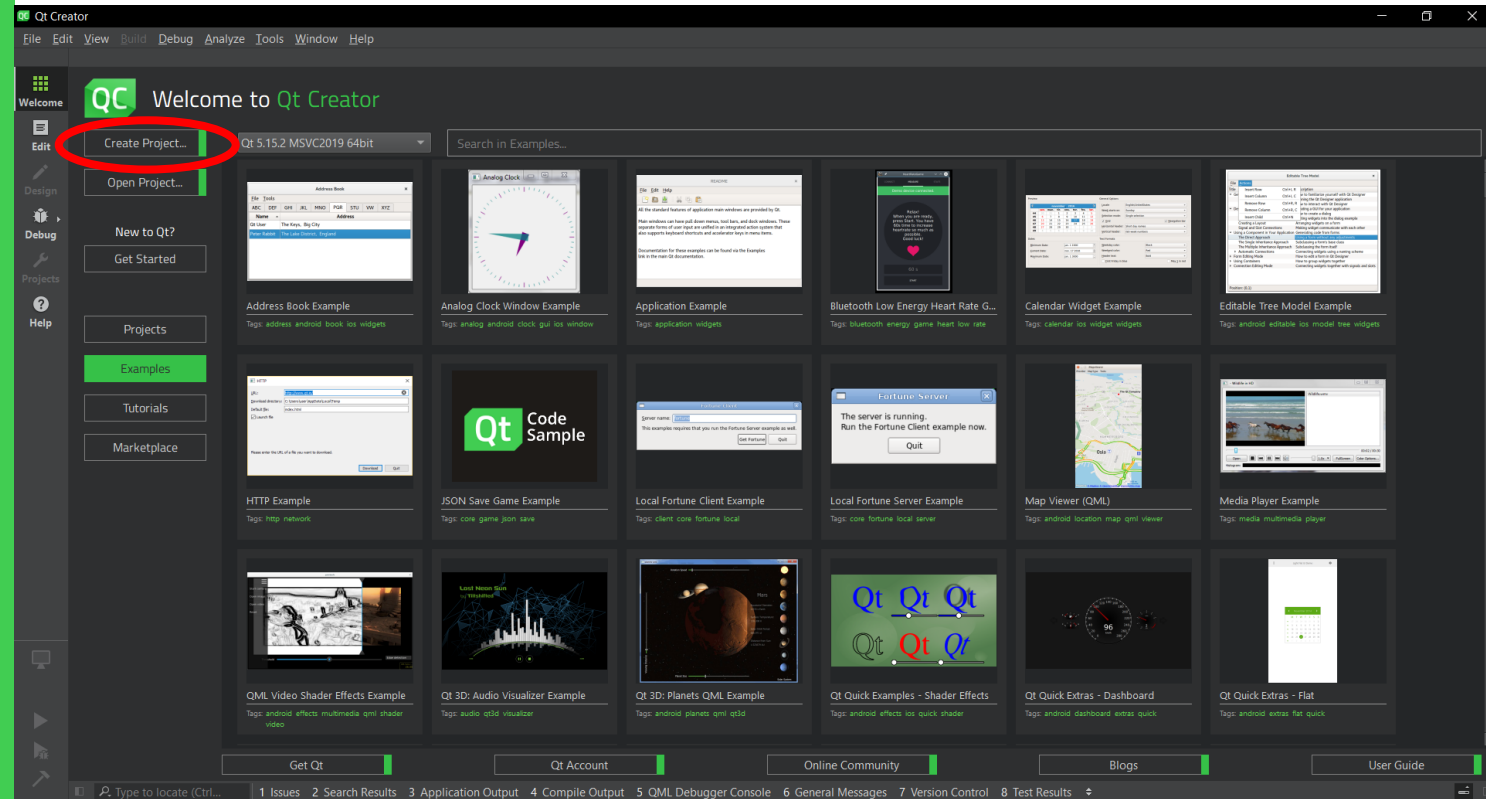
Setup

- Time: about 10 mins



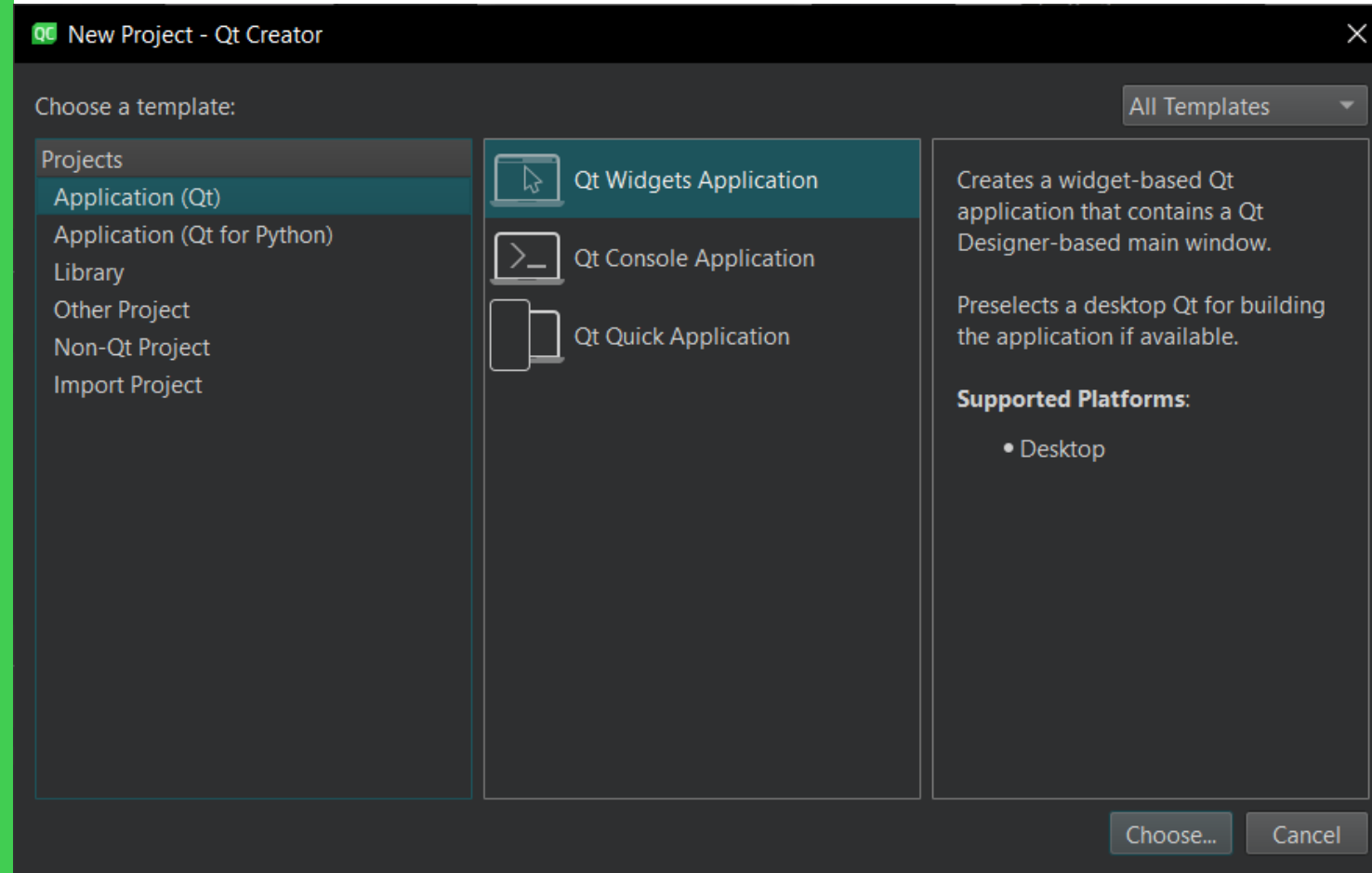
Qt Creator

- Create Project



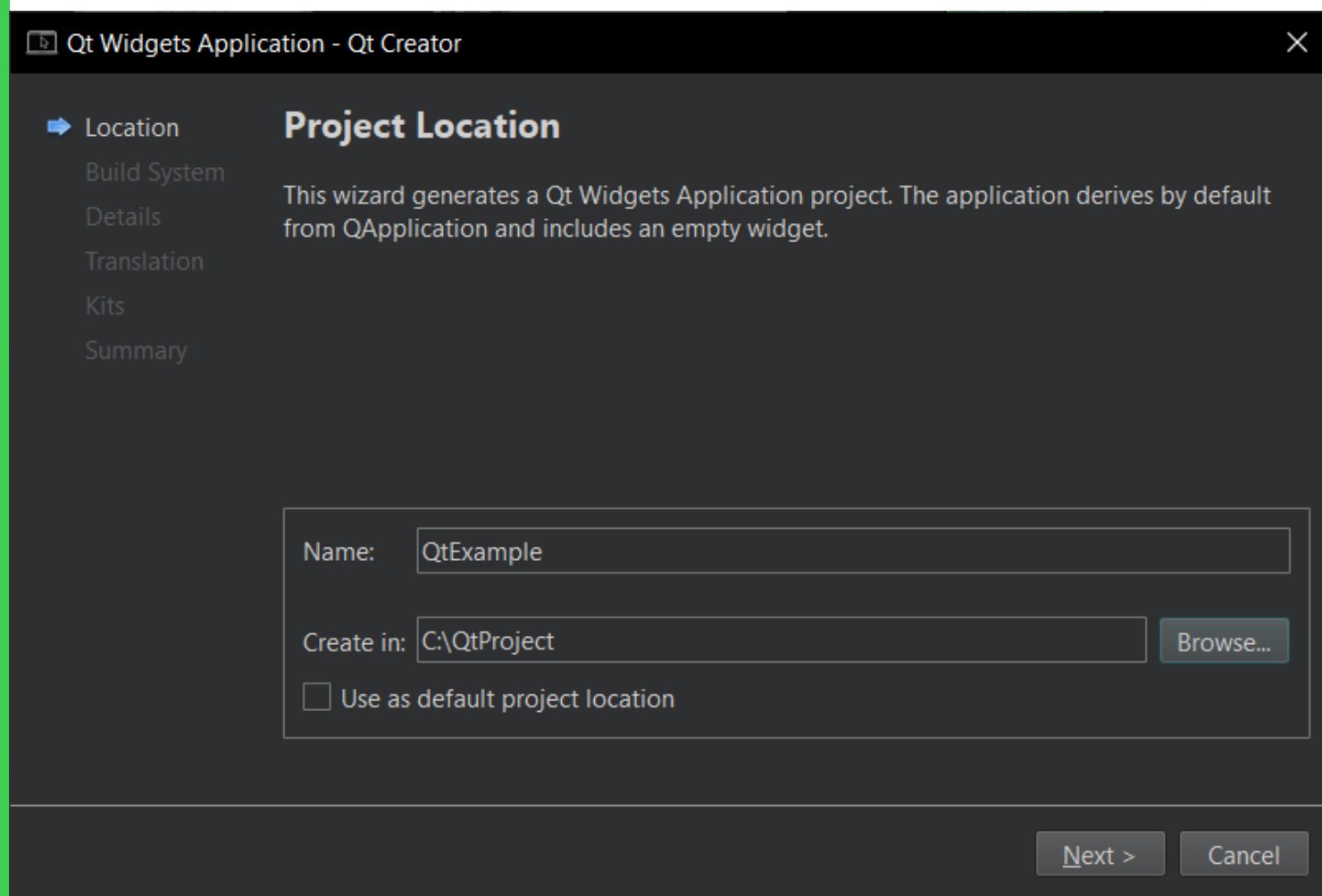
Qt Creator

- Qt Widgets Application



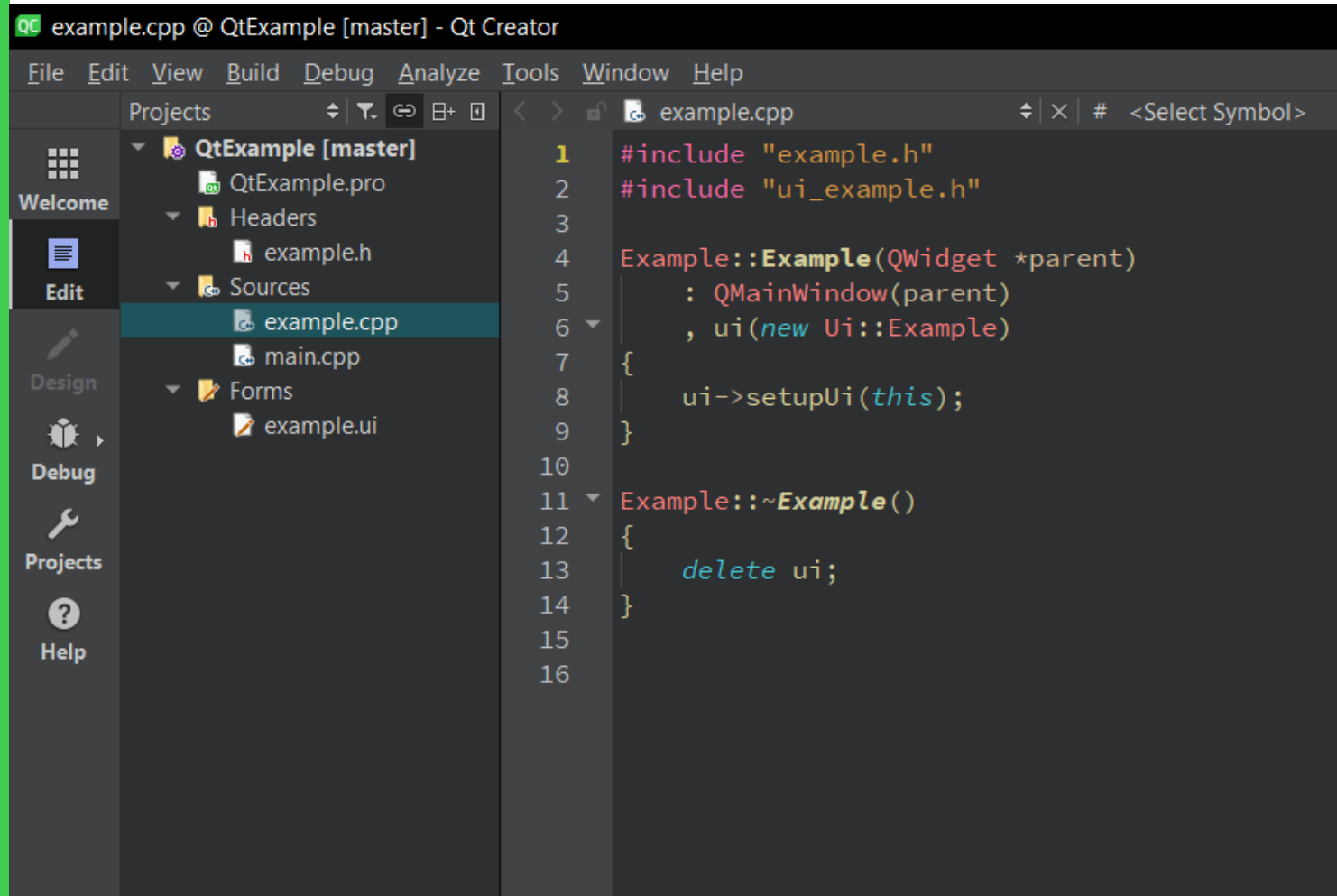
Qt Creator

- Attention!
Please **DO NOT** include
Chinese in the path
- Next




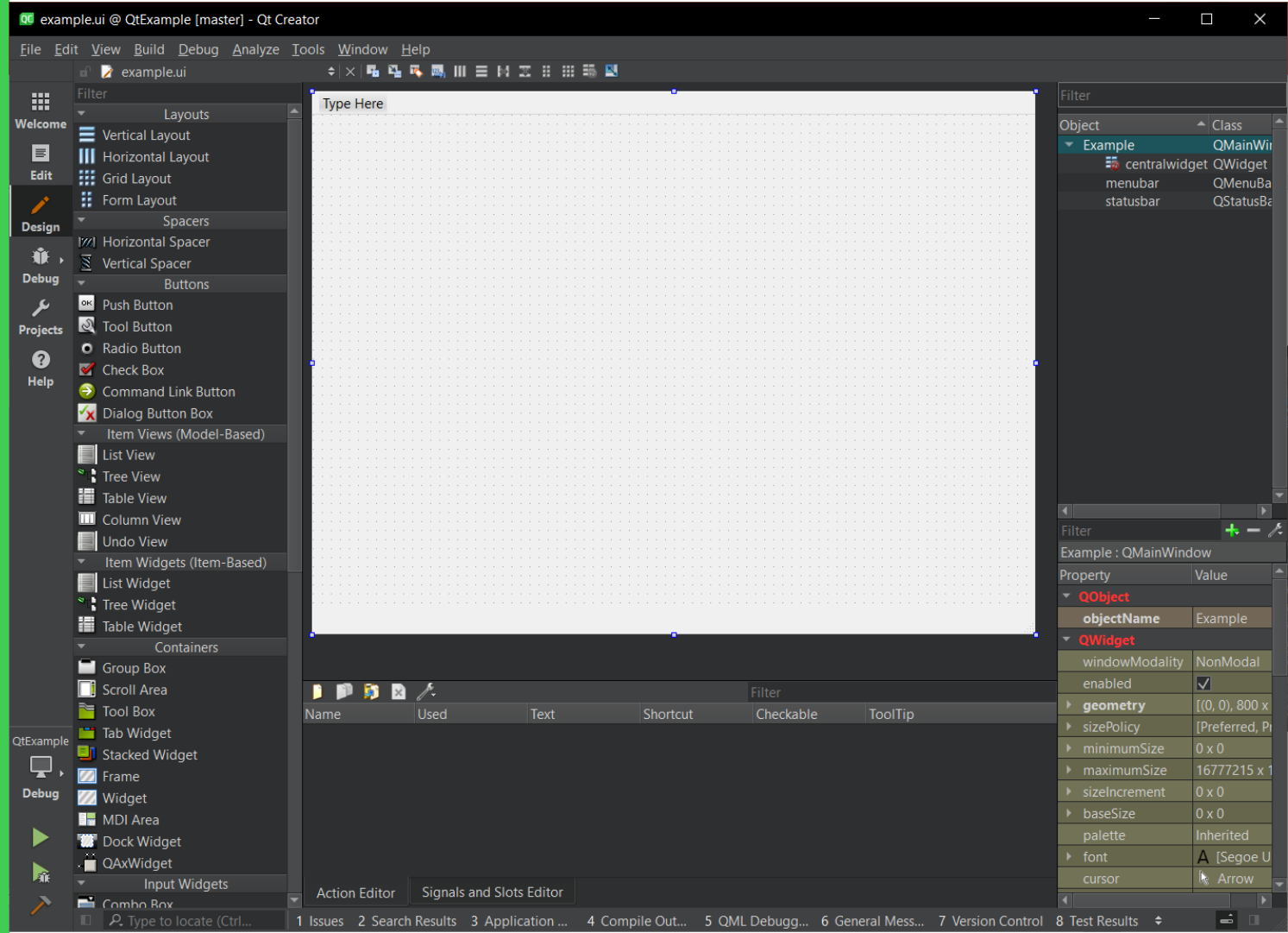
Qt Creator

- Implement in .cpp & .h
- Design UI in .ui



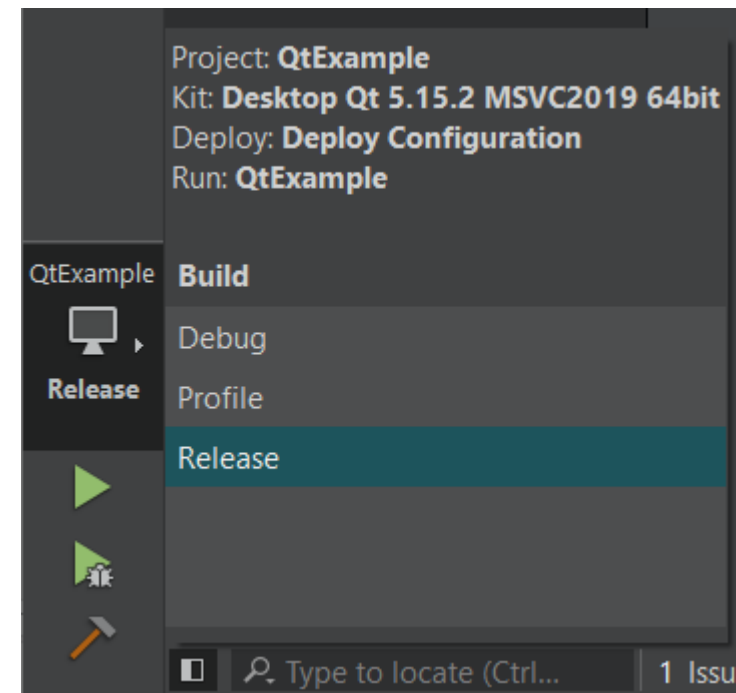
Qt Creator

- Drag components to use
- Common components:
 - Push Button
 - Check Box
 - Text Edit
 - Label
- Click  to run









Qt Creator

- Release for sharing
- Put all images or files in this directory



er (C:) > QtProject > build-QtExample-Desktop_Qt_5_15_2_MSVC2019_64bit-Release > release

Name	Date modified	Type	Size
 example.obj	3/3/2023 1:17 AM	3D Object	45 KB
 main.obj	3/3/2023 1:17 AM	3D Object	3 KB
 moc_example.cpp	3/3/2023 1:17 AM	CPP File	3 KB
 moc_example.obj	3/3/2023 1:17 AM	3D Object	3 KB
 moc_predefs.h	3/3/2023 1:17 AM	H File	1 KB
 QtExample.exe	3/3/2023 1:17 AM	Application	33 KB

Qt Creator

- Copy following .dll to .exe location:
Qt5Core.dll
Qt5Gui.dll
Qt5Widgets.dll
qwindows.dll (in platforms)

er (C:) > QtProject > build-QtExample-Desktop_Qt_5_15_2_MSVC2019_64bit-Release > release

Name	Date modified	Type	Size
example.obj	3/3/2023 1:17 AM	3D Object	45 KB
main.obj	3/3/2023 1:17 AM	3D Object	3 KB
moc_example.cpp	3/3/2023 1:17 AM	CPP File	3 KB
moc_example.obj	3/3/2023 1:17 AM	3D Object	3 KB
moc_predefs.h	3/3/2023 1:17 AM	H File	1 KB
Qt5Core.dll	11/6/2020 1:29 PM	Application extens...	5,883 KB
Qt5Gui.dll		extens...	6,844 KB
Qt5Widgets.dll	11/6/2020 1:30 PM	Application extens...	5,370 KB
QtExample.exe	3/3/2023 1:17 AM	Application	33 KB
platforms			

They will be found in C:\Qt\5.15.2\msvc2019_64\bin

It will be found in C:\Qt\5.15.2\msvc2019_64\plugins\platforms



er (C:) > QtProject > build-QtExample-Desktop_Qt_5_15_2_MSVC2019_64bit-Release > release > platforms

Name	Date modified	Type	Size
qwindows.dll	11/6/2020 1:30 PM	Application extens...	1,443 KB

Qt Creator

- Better UI (optional)
- Copy following .dll to .exe location:
qwindowsvistastyle.dll (in styles)

er (C:) > QtProject > build-QtExample-Desktop_Qt_5_15_2_MSVC2019_64bit-Release > release

Name	Date modified	Type	Size
platforms	3/3/2023 1:27 AM	File folder	
styles			
example.obj	3/3/2023 1:17 AM	3D Object	45 KB
main.obj	3/3/2023 1:17 AM	3D Object	3 KB
moc_example.cpp	3/3/2023 1:17 AM	CPP File	3 KB
moc_example.obj	3/3/2023 1:17 AM	3D Object	3 KB
moc_predefs.h	3/3/2023 1:17 AM	H File	1 KB
Qt5Core.dll	11/6/2020 1:29 PM	Application extens...	5,883 KB
Qt5Gui.dll	11/6/2020 1:29 PM	Application extens...	6,844 KB
Qt5Widgets.dll	11/6/2020 1:30 PM	Application extens...	5,370 KB
QtExample.exe	3/3/2023 1:17 AM	Application	33 KB

It will be found in C:\Qt\5.15.2\msvc2019_64\plugins\styles

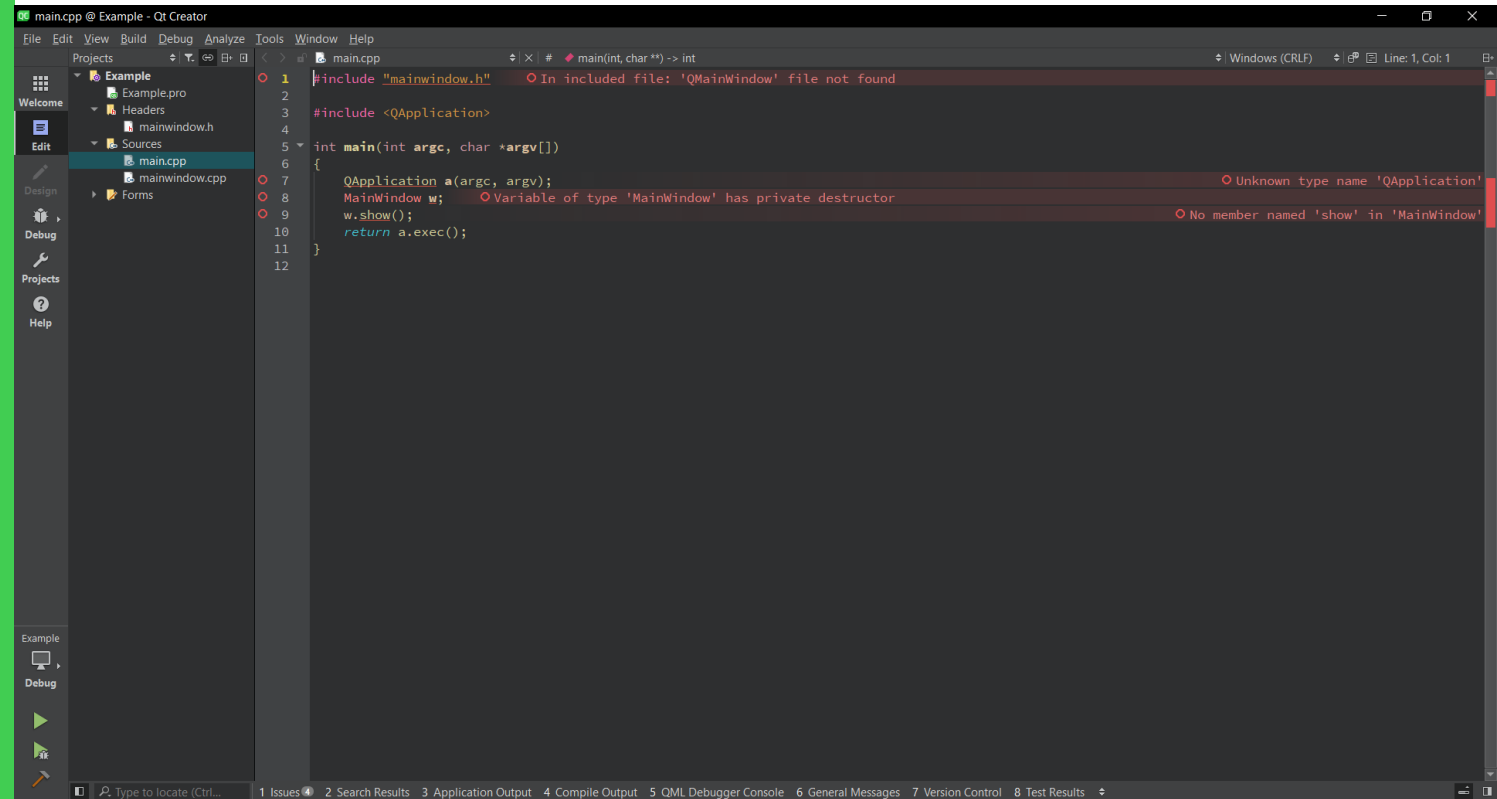


er (C:) > QtProject > build-QtExample-Desktop_Qt_5_15_2_MSVC2019_64bit-Release > release > styles

Name	Date modified	Type	Size
qwindowsvistastyle.dll	11/6/2020 1:30 PM	Application extens...	141 KB

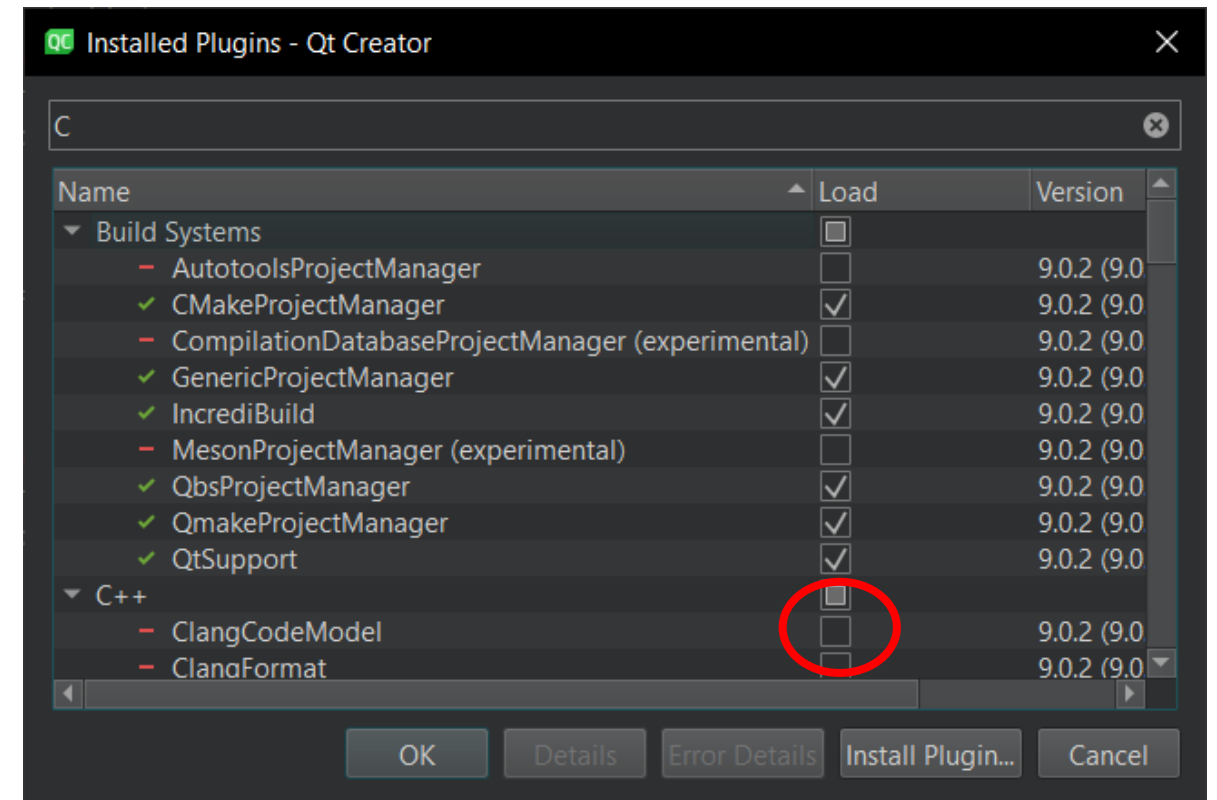
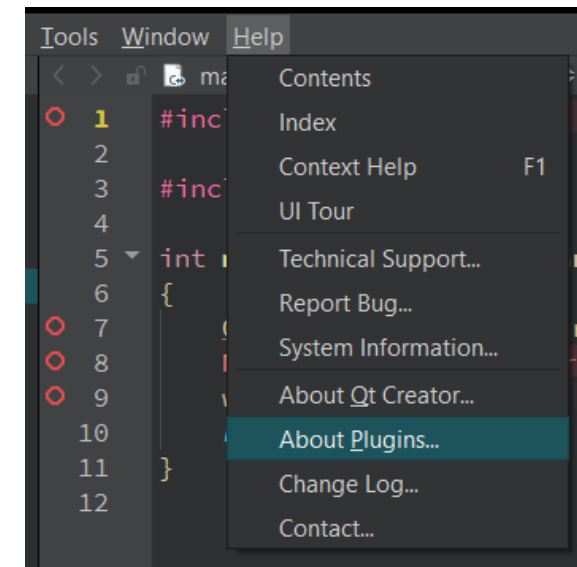
Troubleshoot (1)

- Problem:
'QMainWindow' file not found



Troubleshoot (1)

- Solution: Uncheck ClangCodeModel



Troubleshoot (2)

- Problem: Can't run
- Solution: Please **DO NOT** include Chinese in the path

```
15:41:49: The process "C:\Qt\5.15.2\msvc2019_64\bin\qmake.exe" exited with code 2.  
Error while building/deploying project Example (kit: Desktop Qt 5.15.2 MSVC2019 64bit)  
When executing step "qmake"  
15:41:49: Elapsed time: 00:00.
```


Troubleshoot (3)

- Problem: .exe can't find .dll
- Solution: Check Qt5Core.dll, Qt5Gui.dll, Qt5Widgets.dll, and qwindows.dll are in the .exe directory



Visual Studio

- Visual Studio 2019

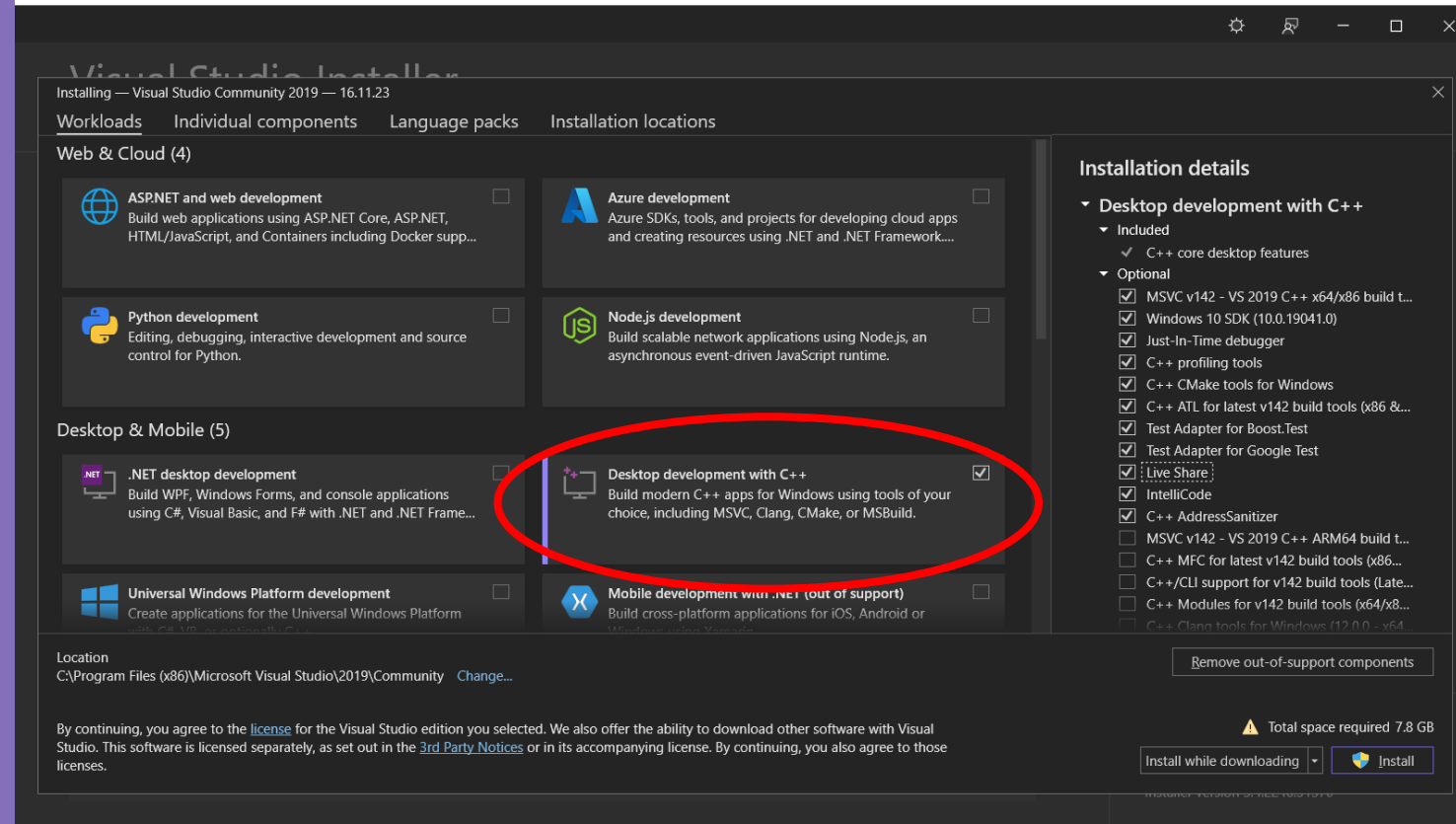
The image shows the Visual Studio 2019 splash screen. It features a dark background with a pattern of small, glowing blue dots that form a series of concentric, curved lines, creating a sense of depth and motion. The dots are more densely packed in some areas, forming a bright, glowing shape that resembles a stylized 'V' or a mountain peak. The text 'Visual Studio' is centered in the middle of the screen in a white, sans-serif font.

Visual Studio

2019

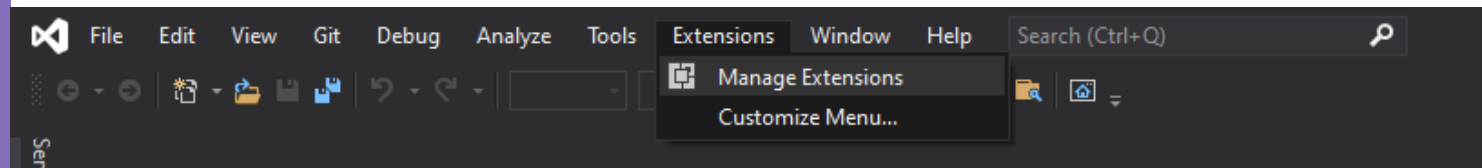
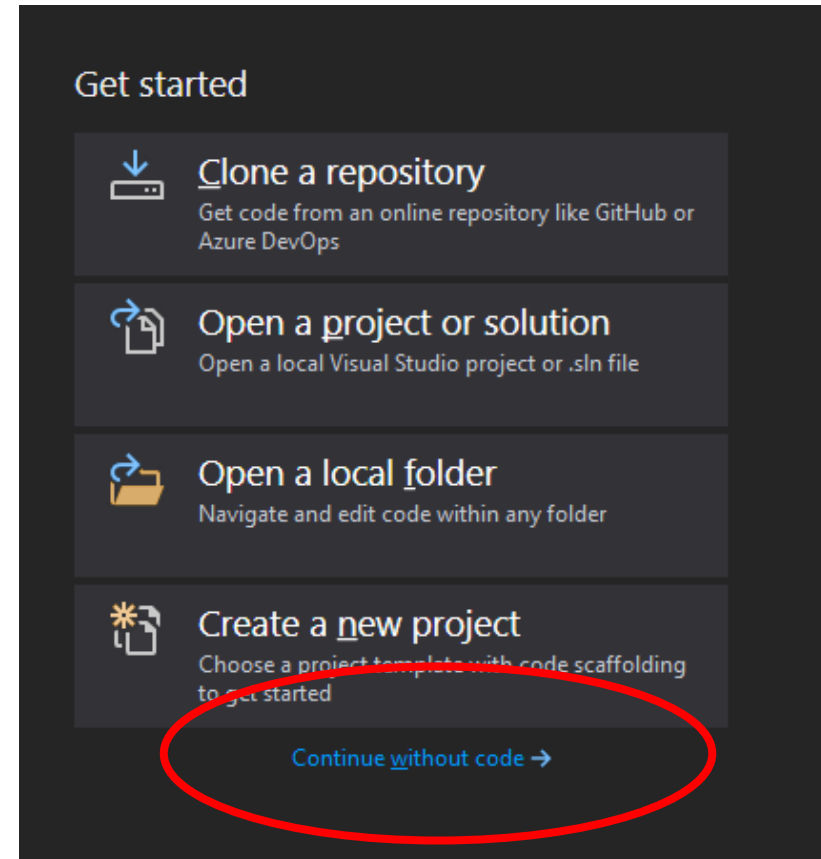
Visual Studio

- Community 2019
- Desktop development with C++



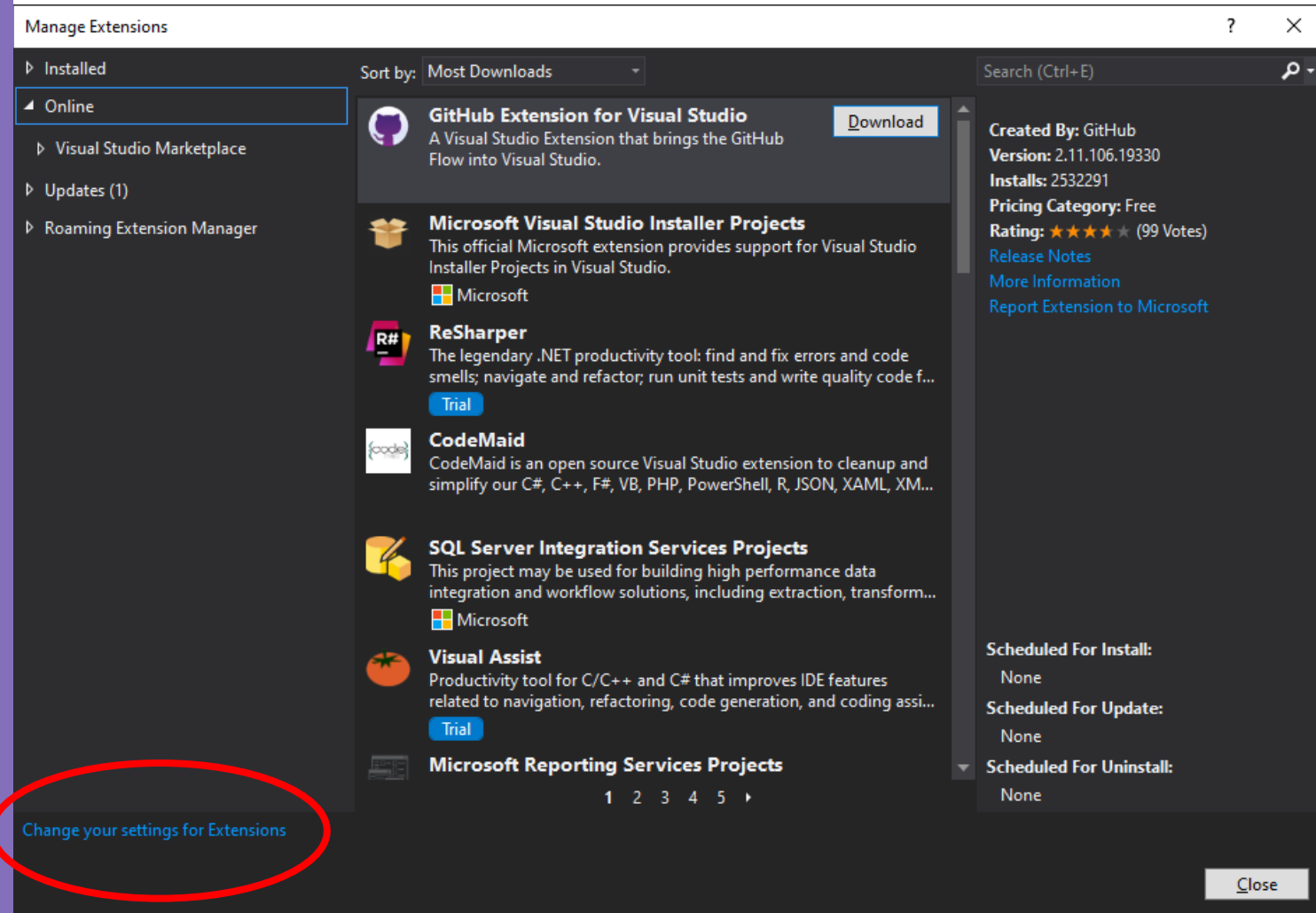
Visual Studio

- Launch Visual Studio
- Continue without code
- Click Manage Extensions



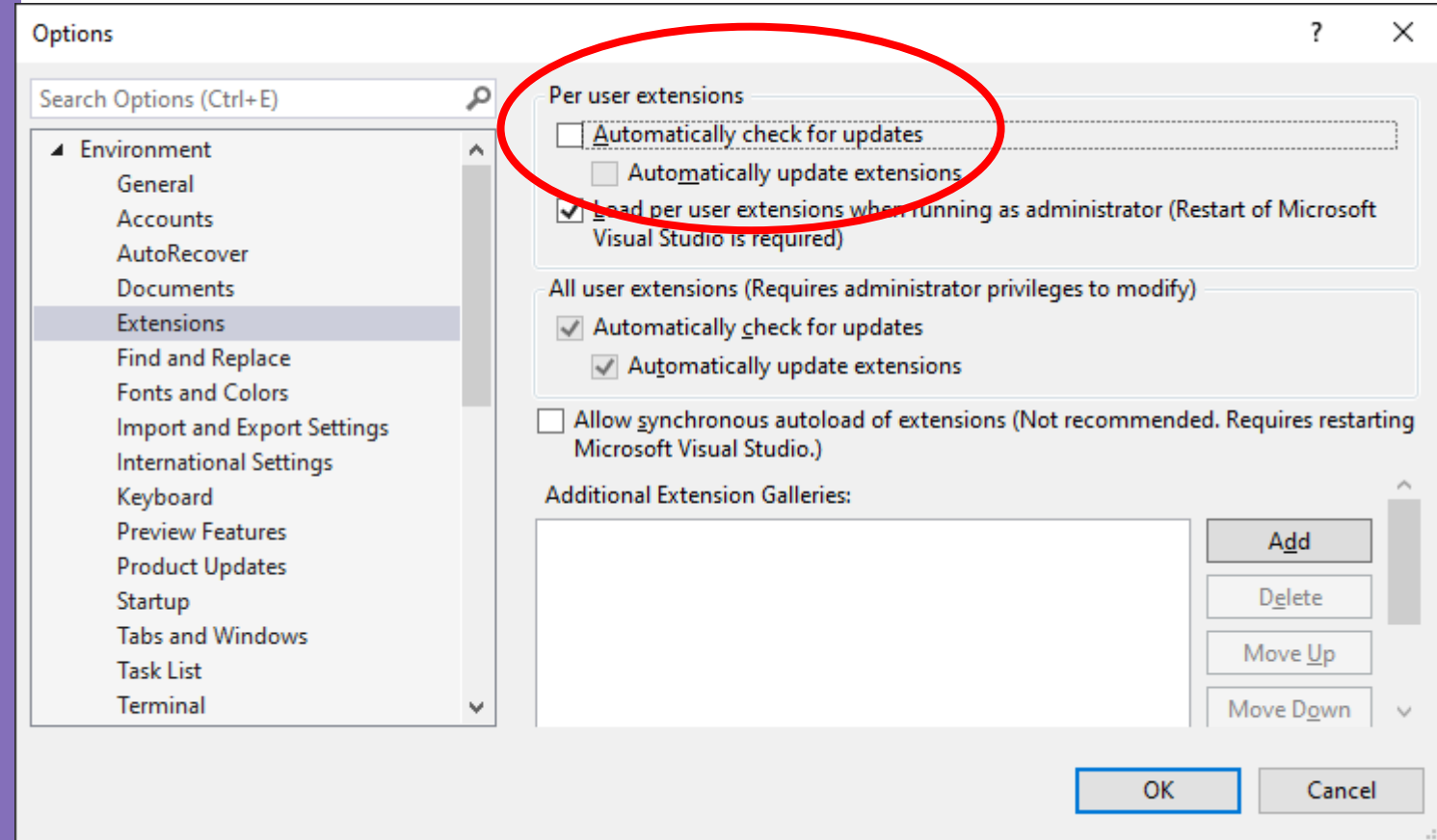
Visual Studio

- Change your settings for Extensions



Visual Studio

- Unchecked
Automatically updates







VS Qt VSIX

- MSVC 2019-2.4.3
- [Link](#)

Qt Downloads

[Qt Home](#) [Bug Tracker](#) [Code Review](#) [Planet Qt](#) [Get Qt Extensions](#)

Name	Last modified	Size	Metadata
↑ Parent Directory		-	
 qt-vsaddin-msvc2019-2.4.3.vsix	07-Jan-2020 13:54	12M	Details
 qt-vsaddin-msvc2017-2.4.3.vsix	07-Jan-2020 13:54	12M	Details
 qt-vsaddin-msvc2015-2.4.3.vsix	07-Jan-2020 13:54	12M	Details
 md5sums.txt	07-Jan-2020 13:55	195	Details

For Qt Downloads, please visit qt.io/download

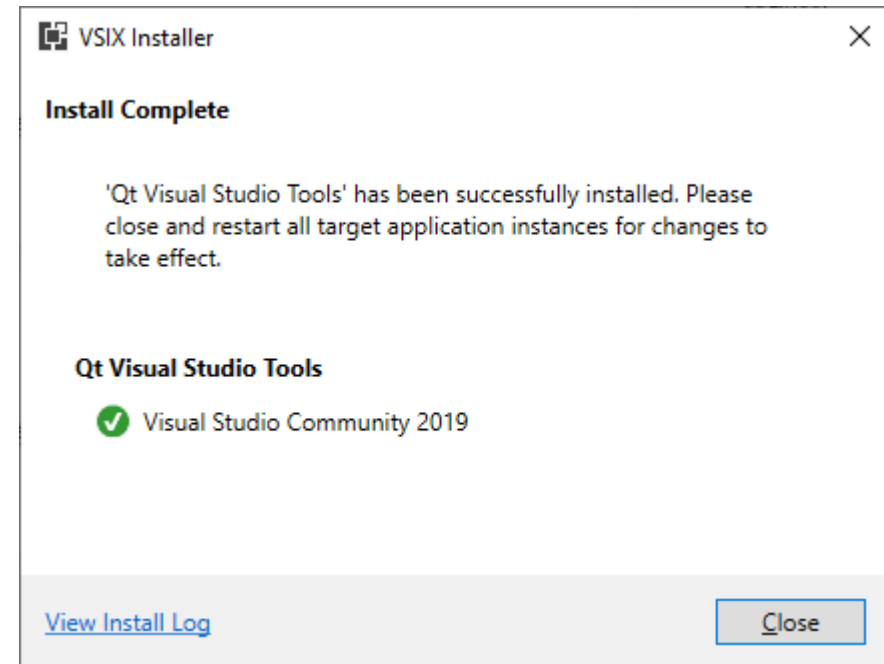
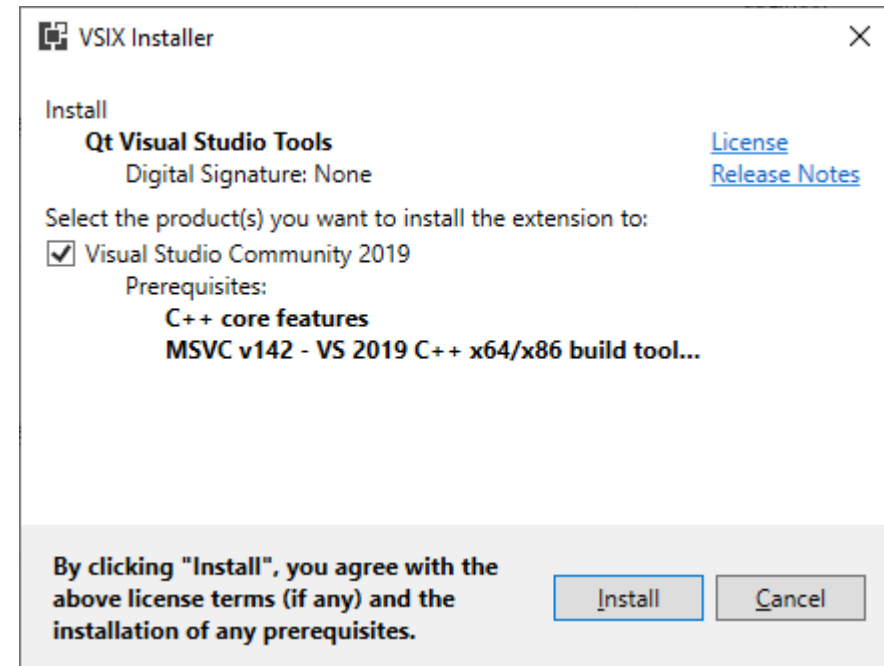
QtÅ® and the Qt logo is a registered trade mark of The Qt Company Ltd and is used pursuant to a license from The Qt Company Ltd.
All other trademarks are property of their respective owners.

The Qt Company Ltd, Bertel Jungin aukio D3A, 02600 Espoo, Finland. Org. Nr. 2637805-2

[List of official Qt-project mirrors](#)

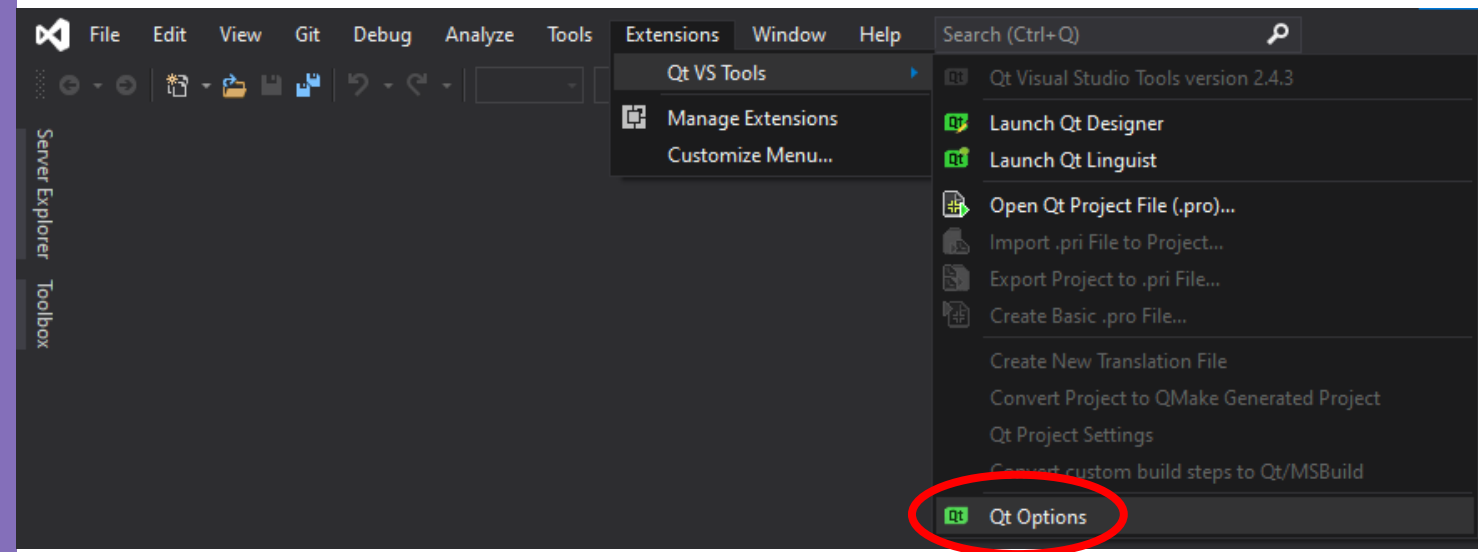
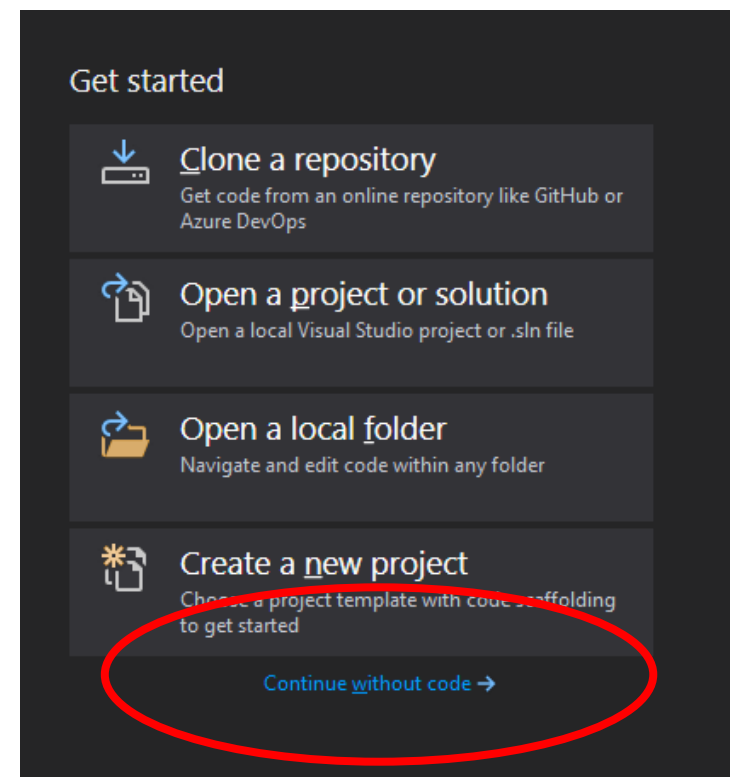
VS Qt VSIX

- Close all VS windows
- Install Qt VSIX



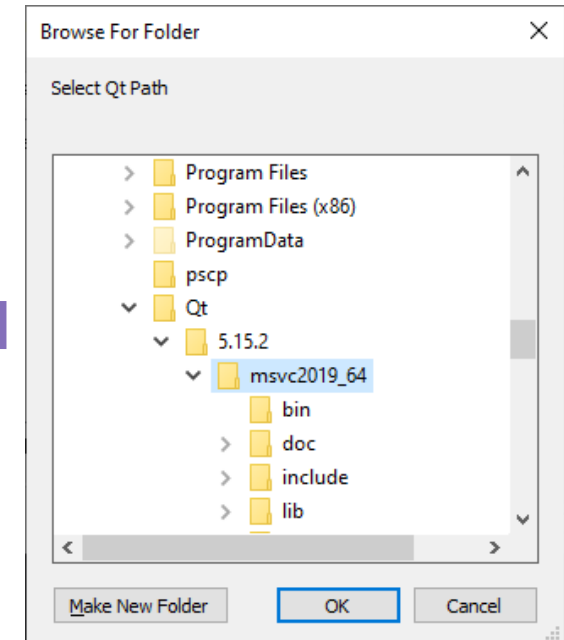
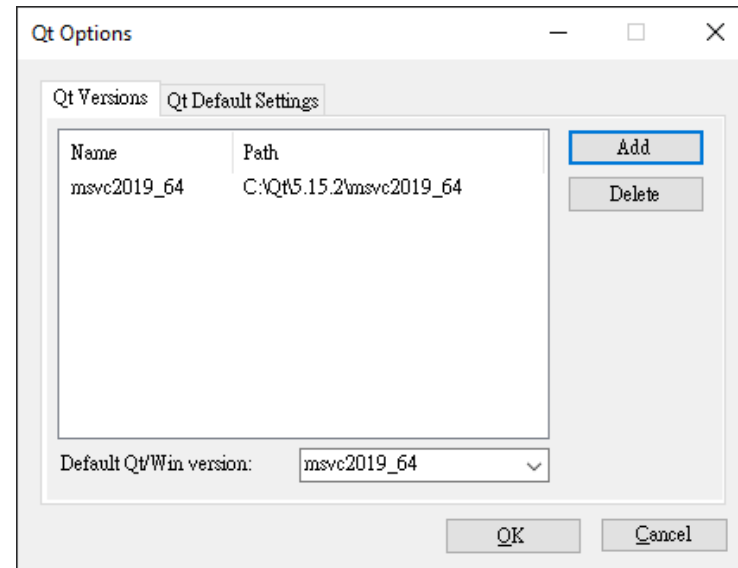
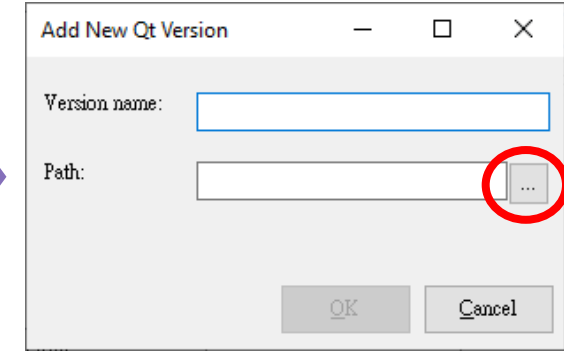
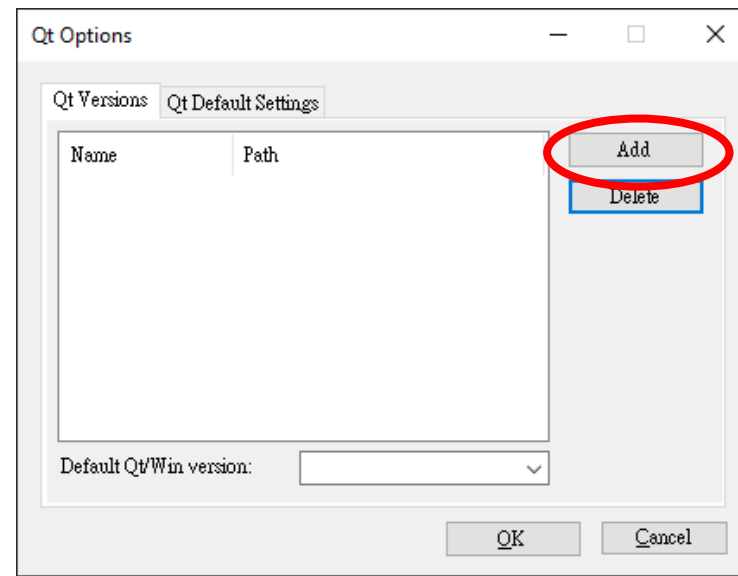
VS Qt VSIX

- Launch Visual Studio
- Continue without code
- Click Qt Options



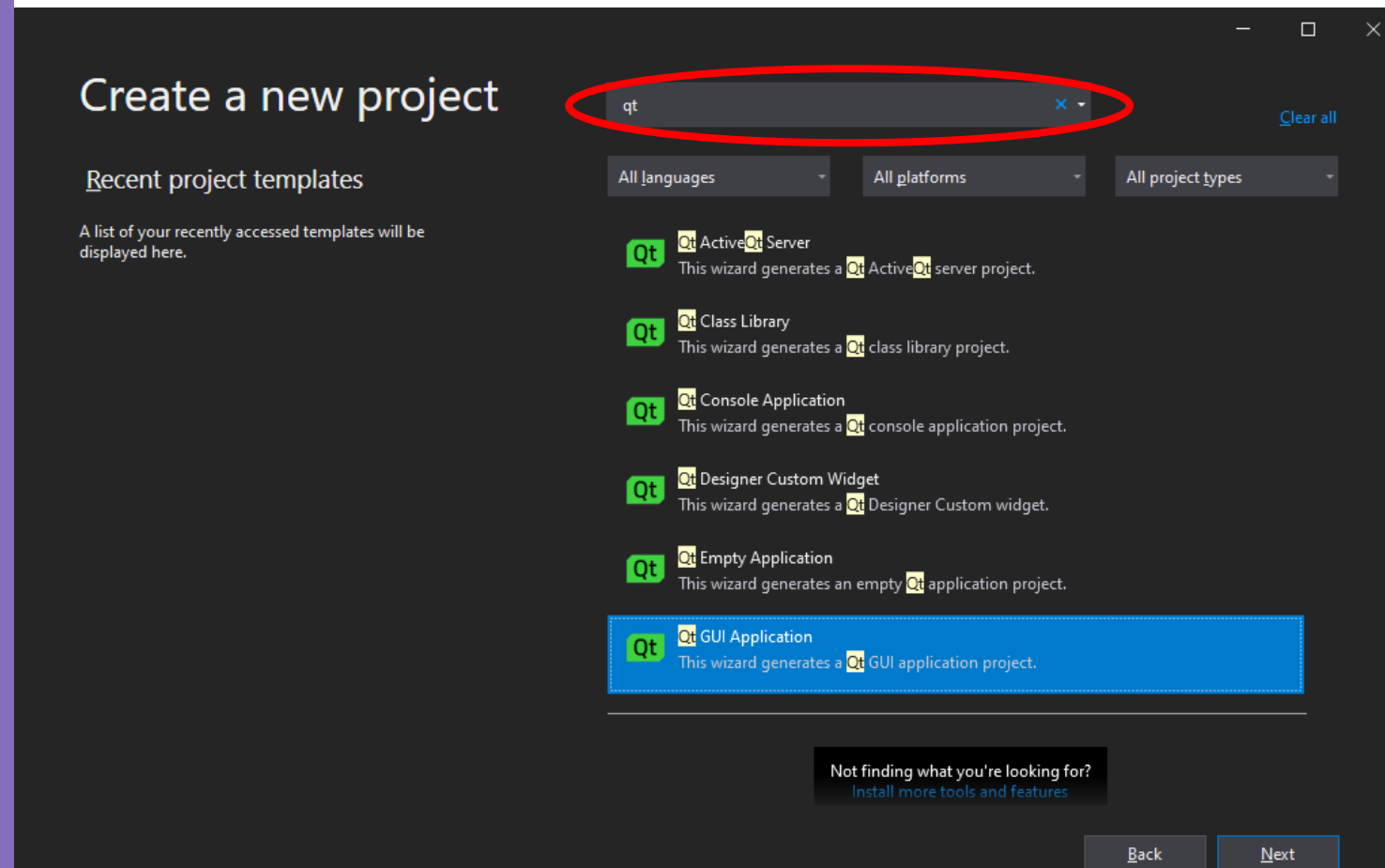
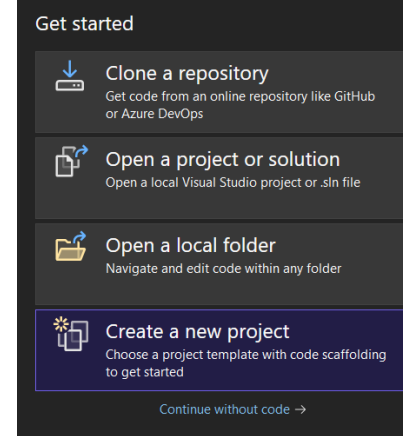
VS Qt VSIX

- Add Qt path



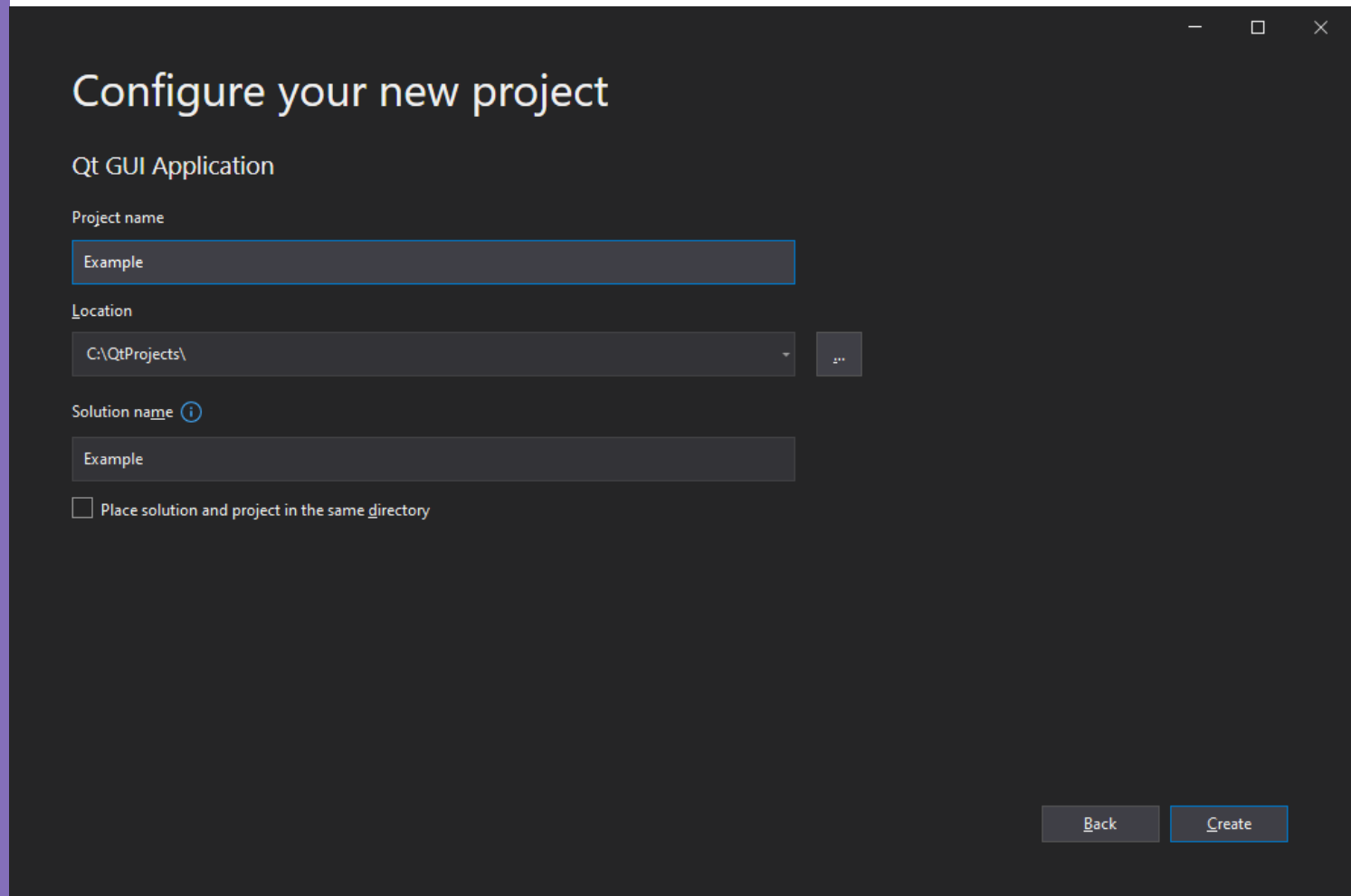
Initialization

- Close Visual Studio
- Launch Visual Studio
- Create a new project
- Type Qt in search bar
- Choose Qt GUI Application
- Next



Initialization

- Type your project name
- Create



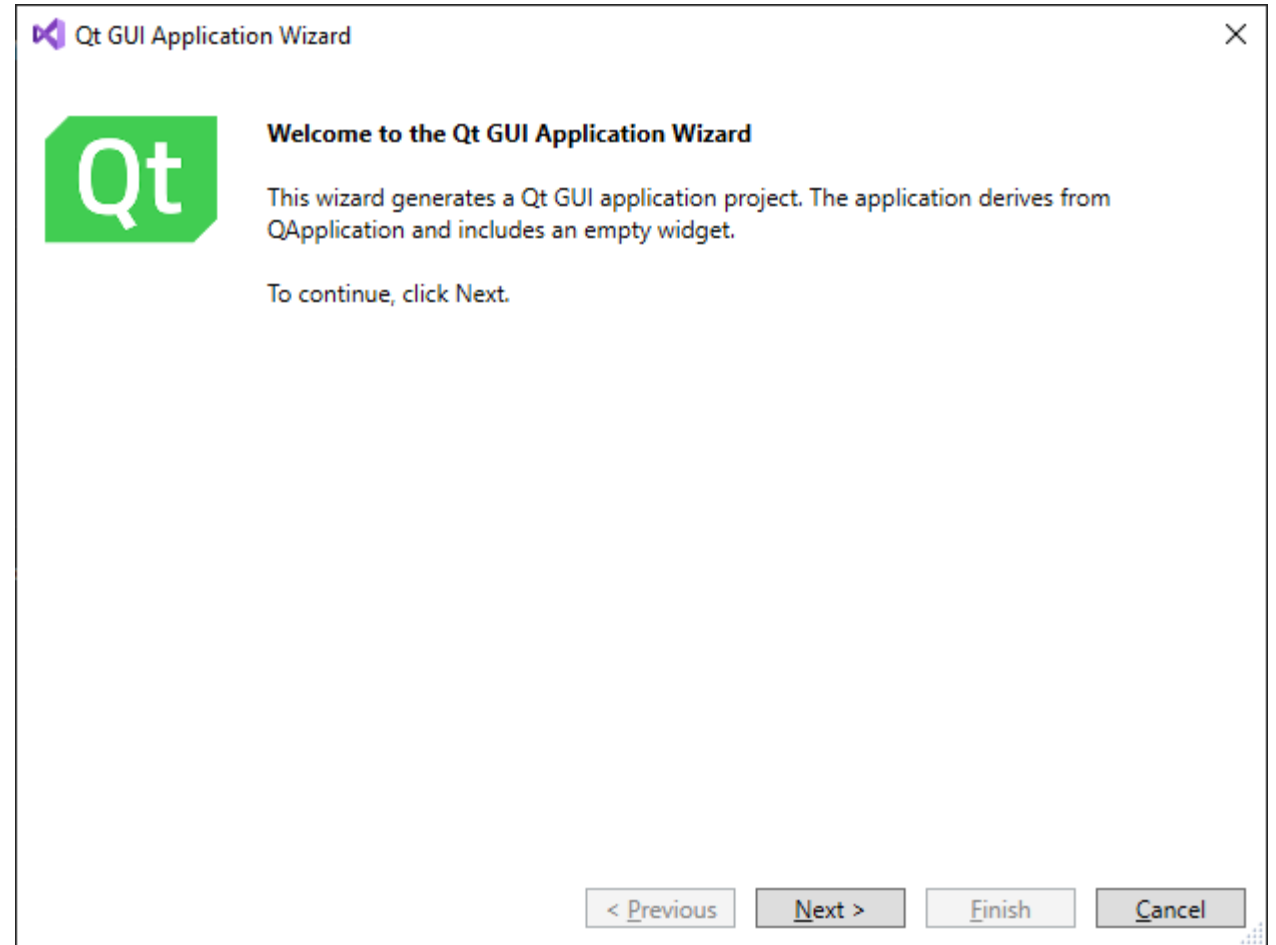
The screenshot shows a dark-themed window titled "Configure your new project" with standard Windows window controls (minimize, maximize, close) in the top right corner. The window content is as follows:

- Qt GUI Application**: The project type is selected.
- Project name**: A text input field containing "Example".
- Location**: A text input field containing "C:\QtProjects\" with a dropdown arrow on the right and a "Browse" button (three dots) to its right.
- Solution name**: A text input field containing "Example", with an information icon (i) to its right.
- ☐ Place solution and project in the same directory: An unchecked checkbox.

At the bottom right of the window, there are two buttons: "Back" and "Create".

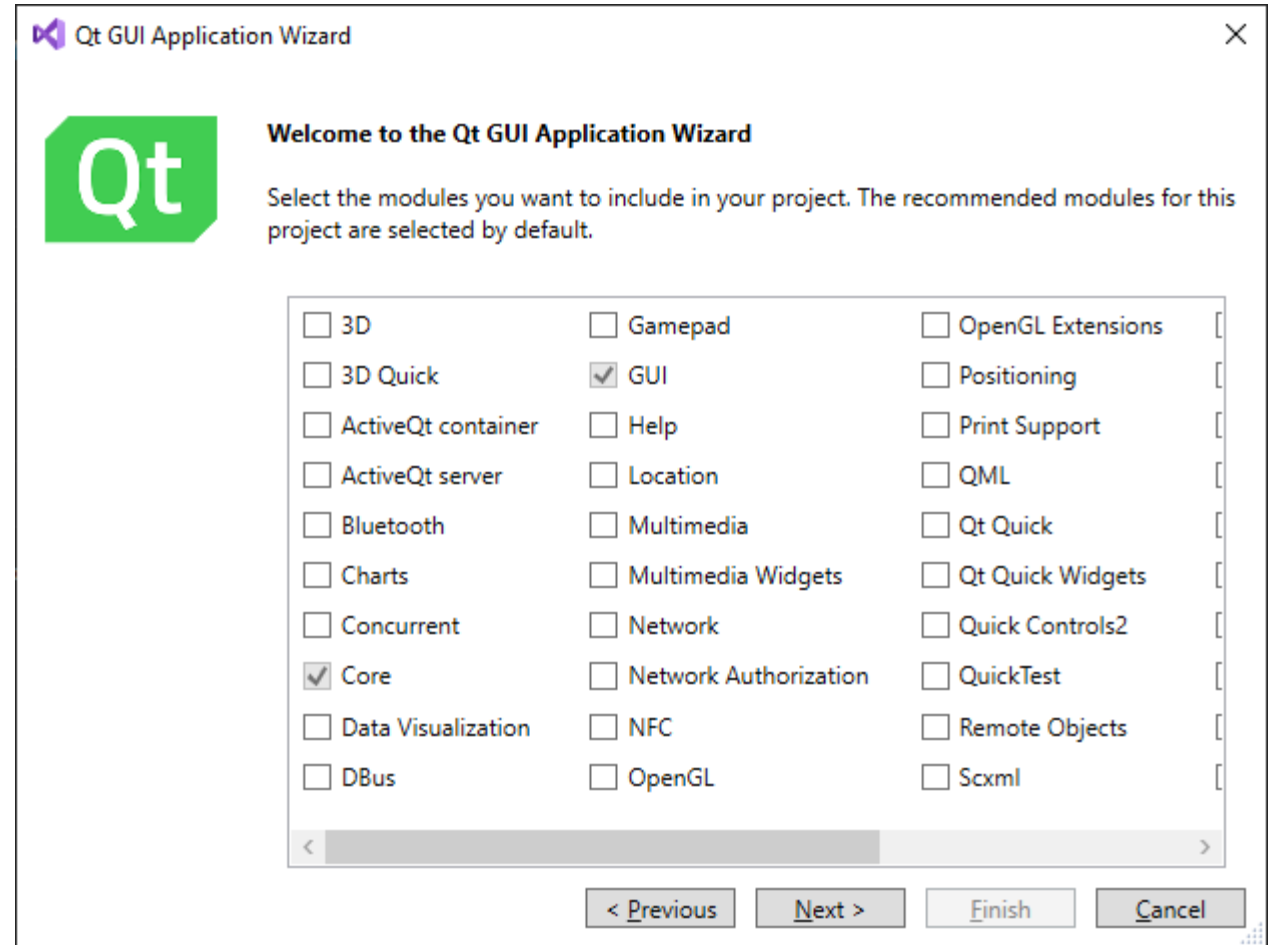
Initialization

- Next



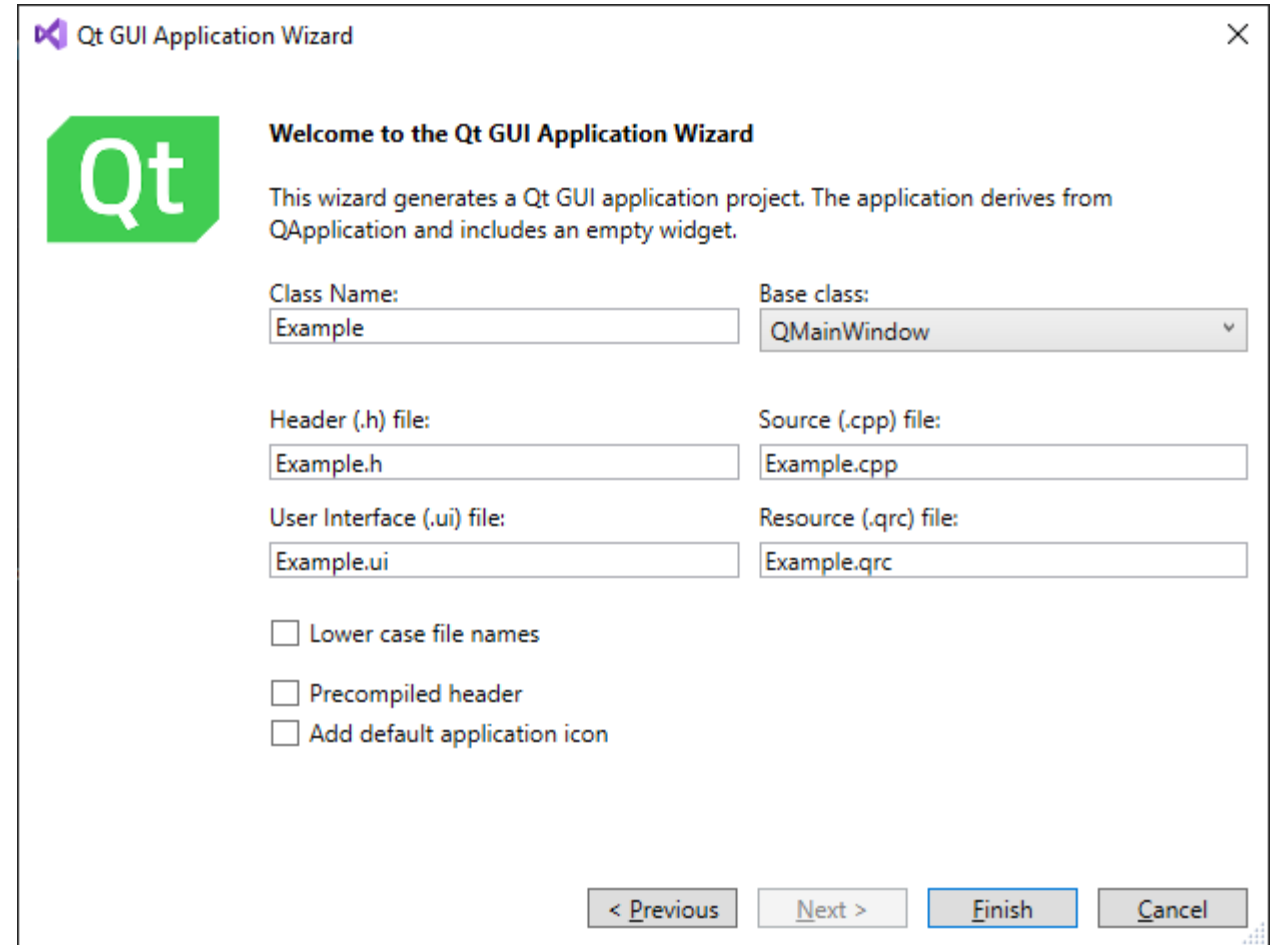
Initialization

- Use default



Initialization

- Finish



The image shows the 'Qt GUI Application Wizard' dialog box. It has a title bar with the Qt logo and the text 'Qt GUI Application Wizard'. The main area contains a green 'Qt' logo on the left and a text area on the right. The text area says 'Welcome to the Qt GUI Application Wizard' and 'This wizard generates a Qt GUI application project. The application derives from QApplication and includes an empty widget.' Below this, there are several input fields and checkboxes. The 'Class Name' field contains 'Example'. The 'Base class' dropdown menu is set to 'QMainWindow'. The 'Header (.h) file' field contains 'Example.h'. The 'Source (.cpp) file' field contains 'Example.cpp'. The 'User Interface (.ui) file' field contains 'Example.ui'. The 'Resource (.qrc) file' field contains 'Example.qrc'. There are three checkboxes: 'Lower case file names', 'Precompiled header', and 'Add default application icon', all of which are unchecked. At the bottom right, there are four buttons: '< Previous', 'Next >', 'Finish', and 'Cancel'. The 'Finish' button is highlighted with a blue border.

Qt GUI Application Wizard

Welcome to the Qt GUI Application Wizard

This wizard generates a Qt GUI application project. The application derives from QApplication and includes an empty widget.

Class Name: Example

Base class: QMainWindow

Header (.h) file: Example.h

Source (.cpp) file: Example.cpp

User Interface (.ui) file: Example.ui

Resource (.qrc) file: Example.qrc

☐ Lower case file names

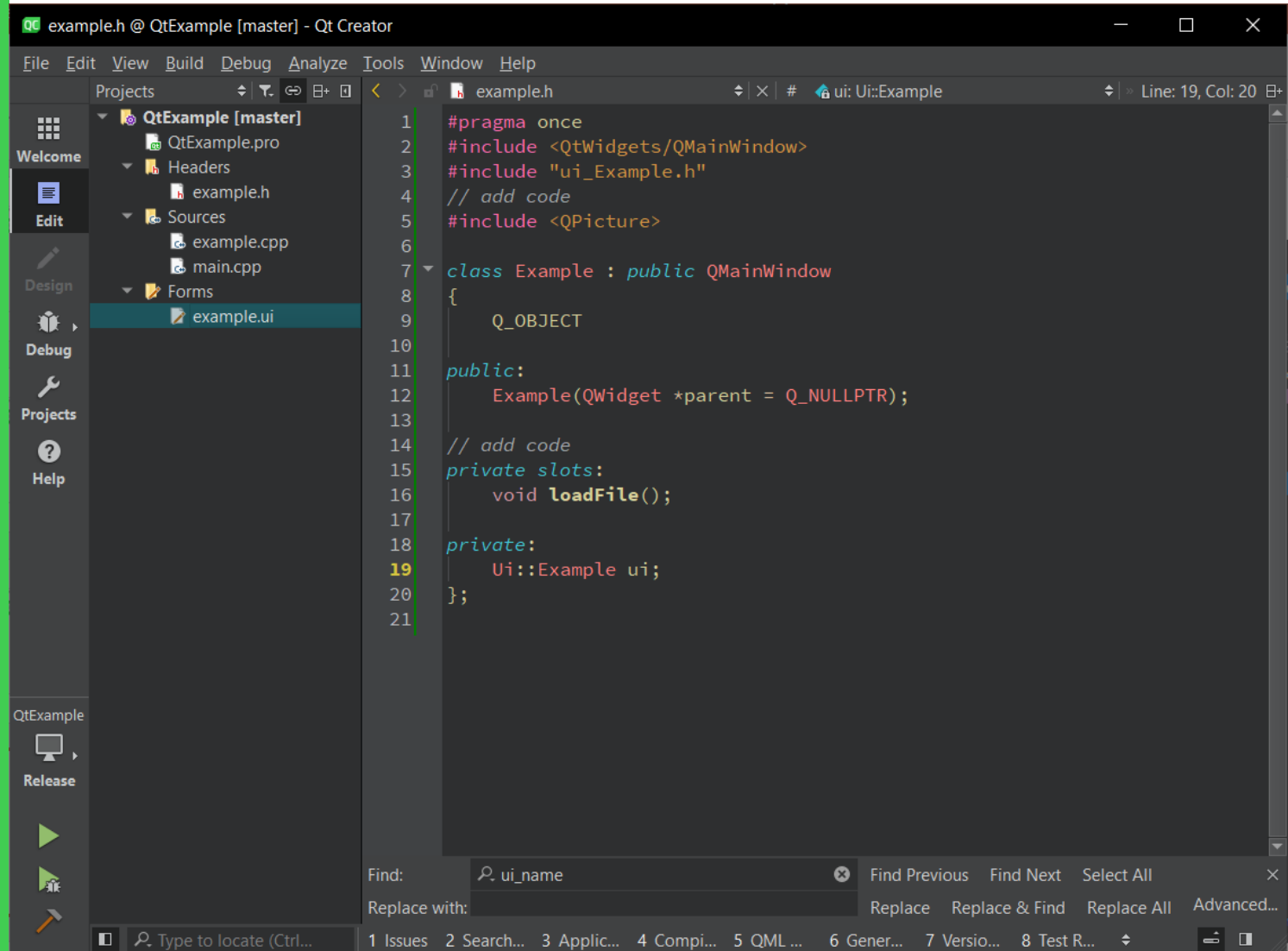
☐ Precompiled header

☐ Add default application icon

< Previous Next > Finish Cancel

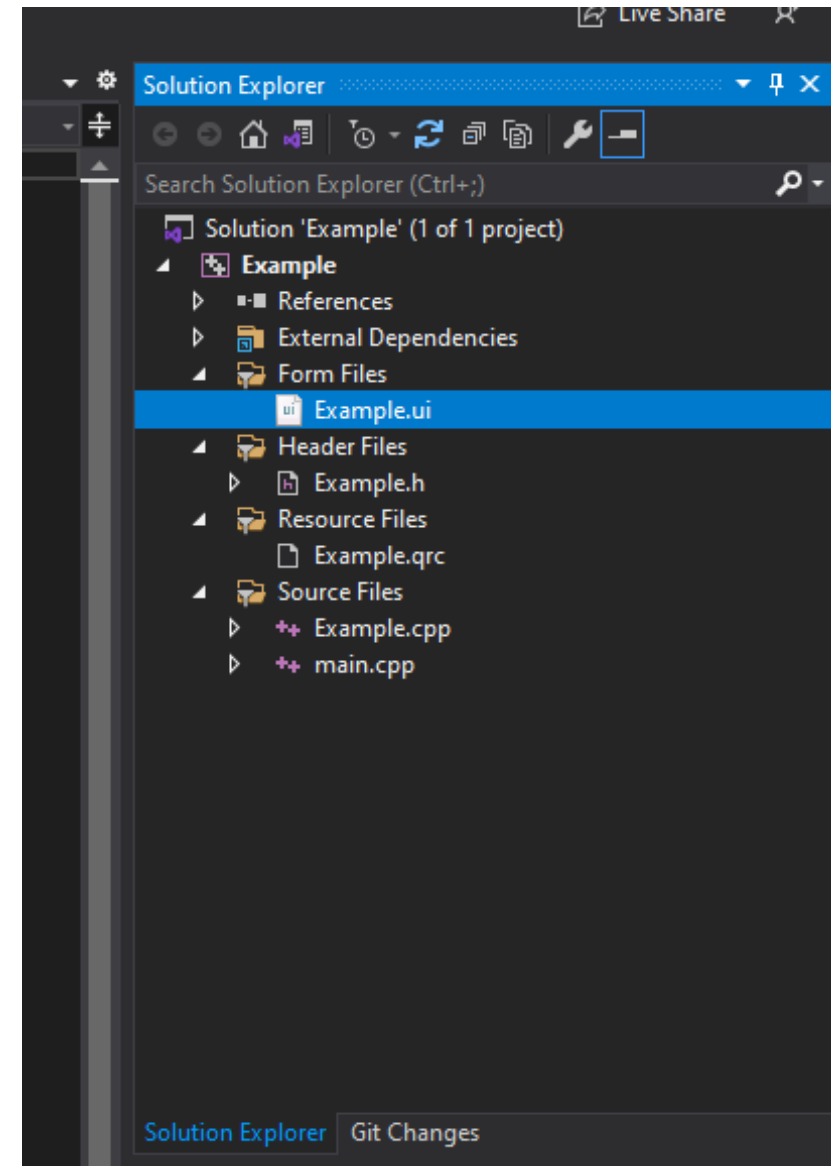
Introduction

- Double click *.ui to open Qt Designer (Qt Creator Ver.)



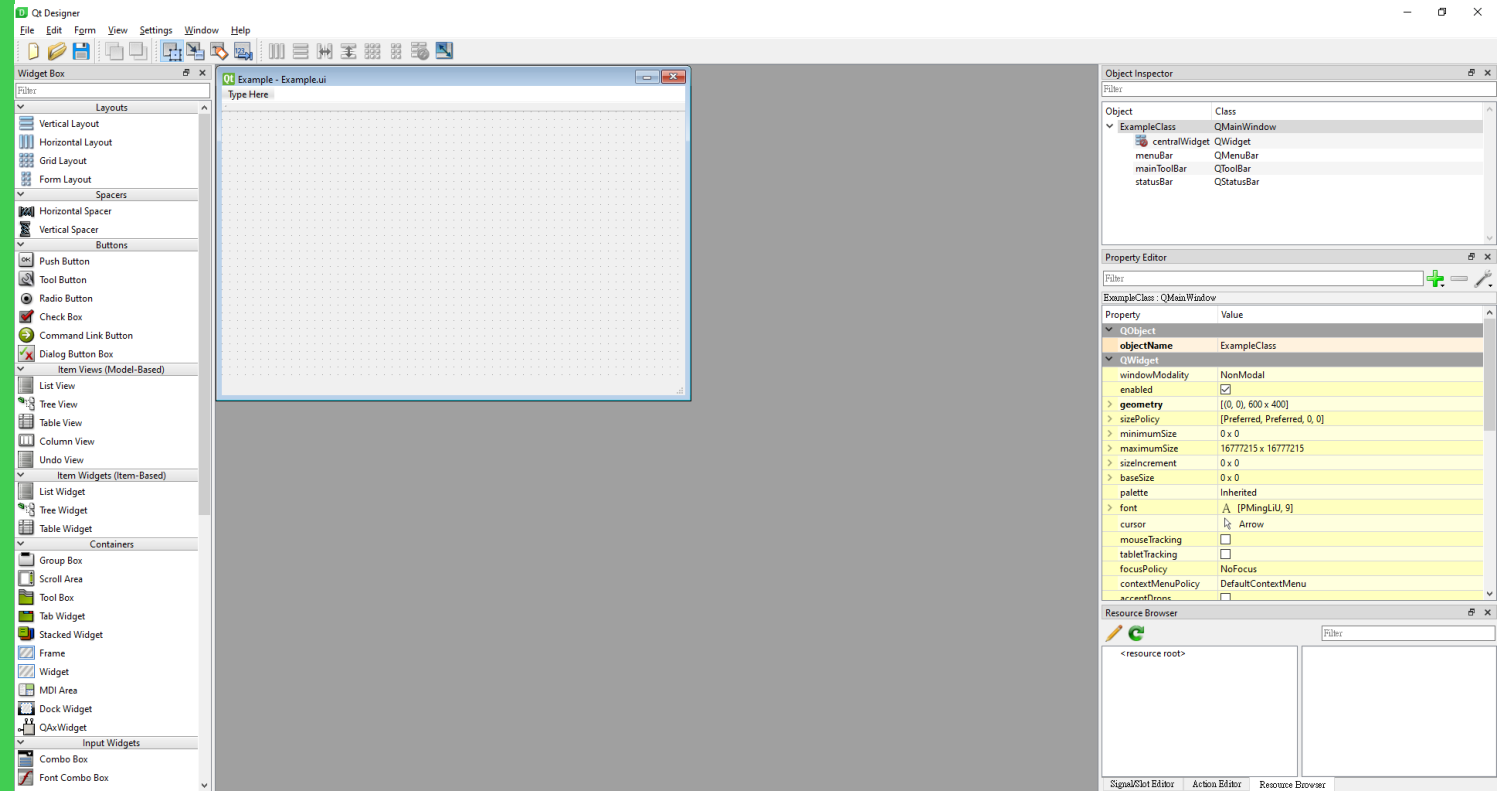
Introduction

- Double click *.ui to open Qt Designer (Visual Studio Ver.)



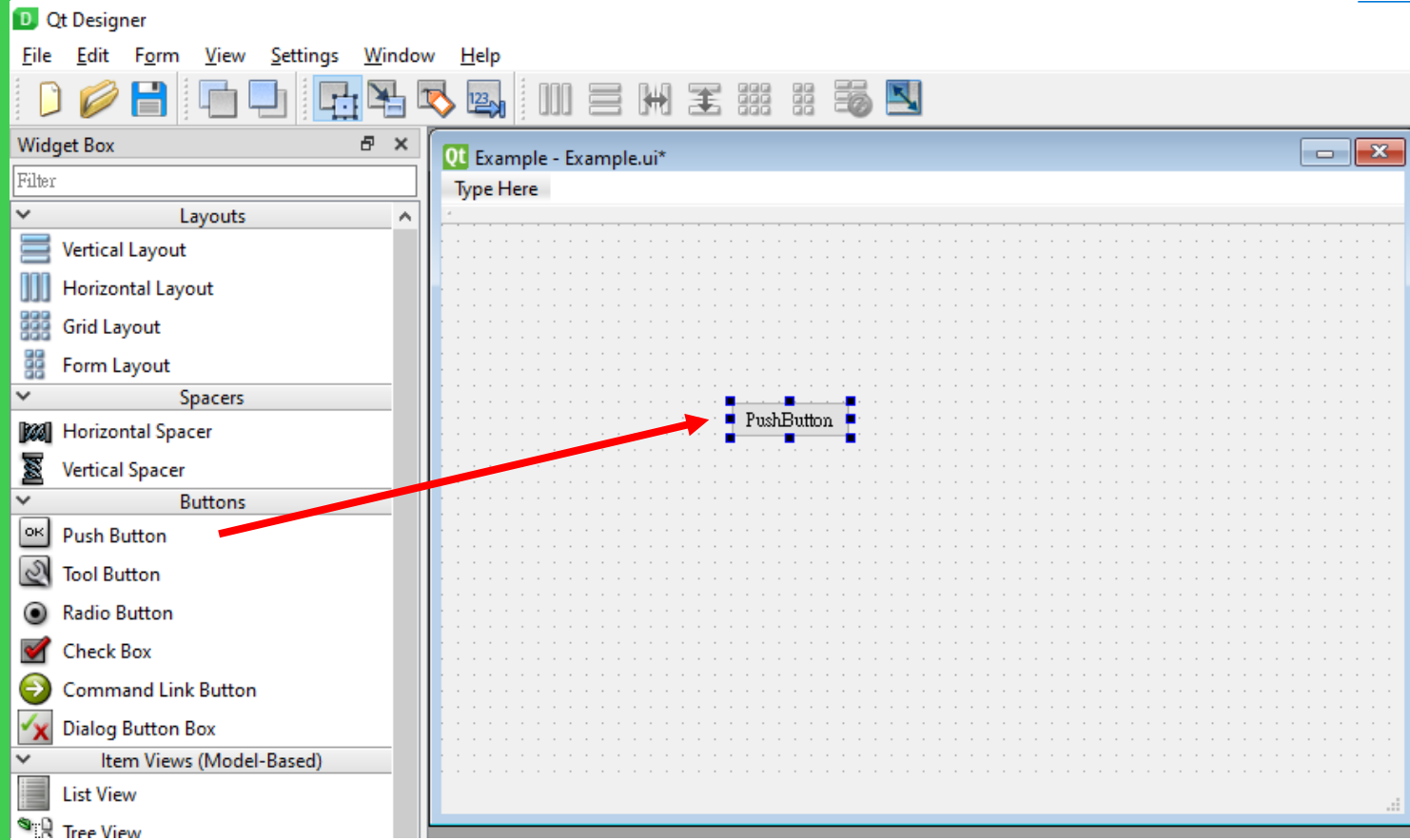
Introduction

- Qt Designer for GUI



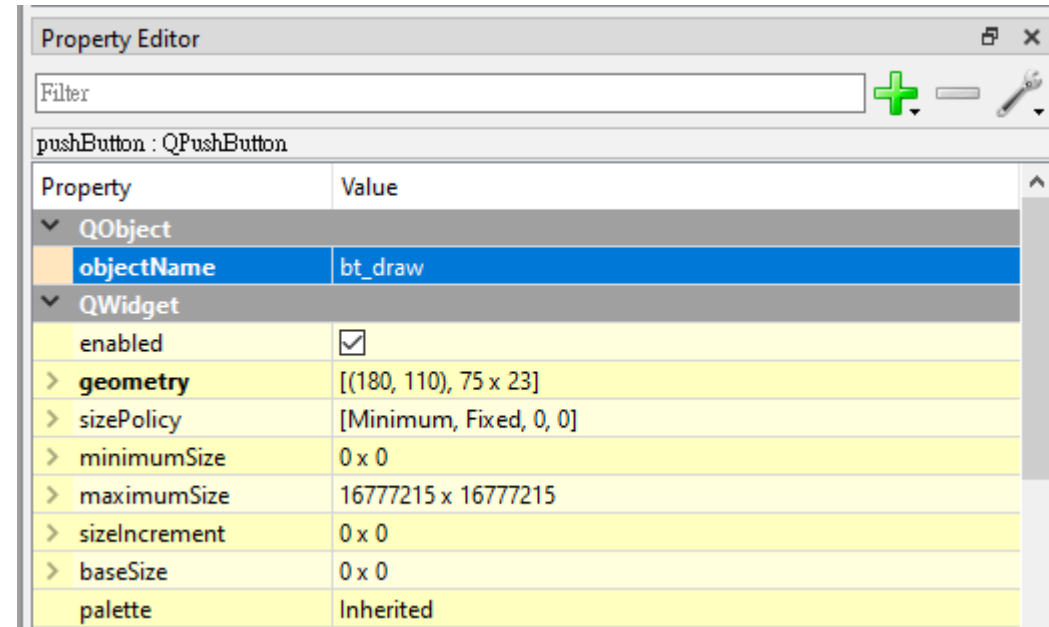
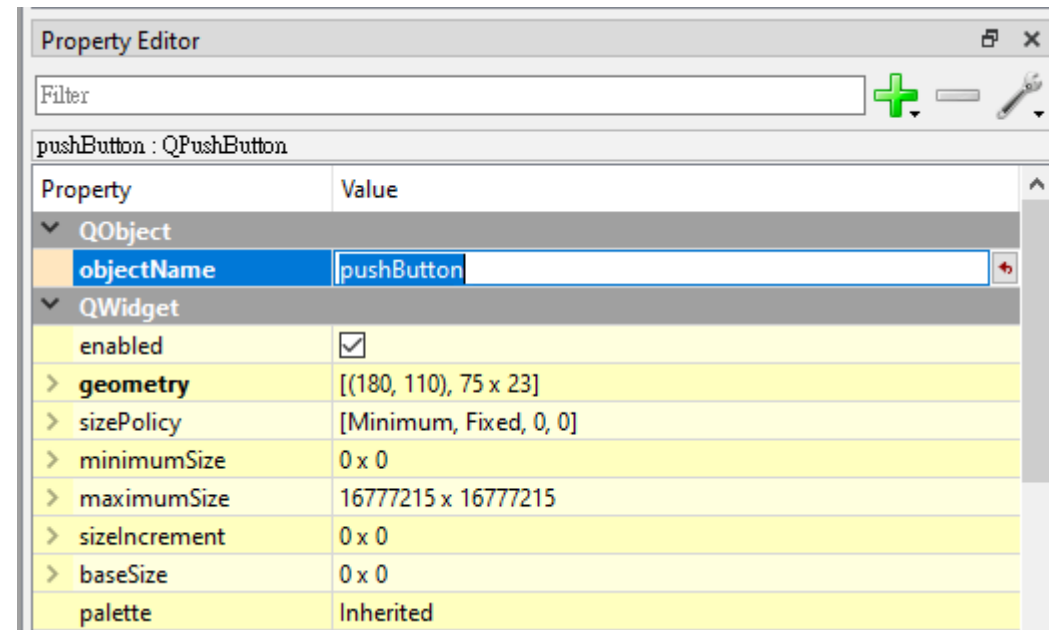
Practice

- Drag a Push Button to the window



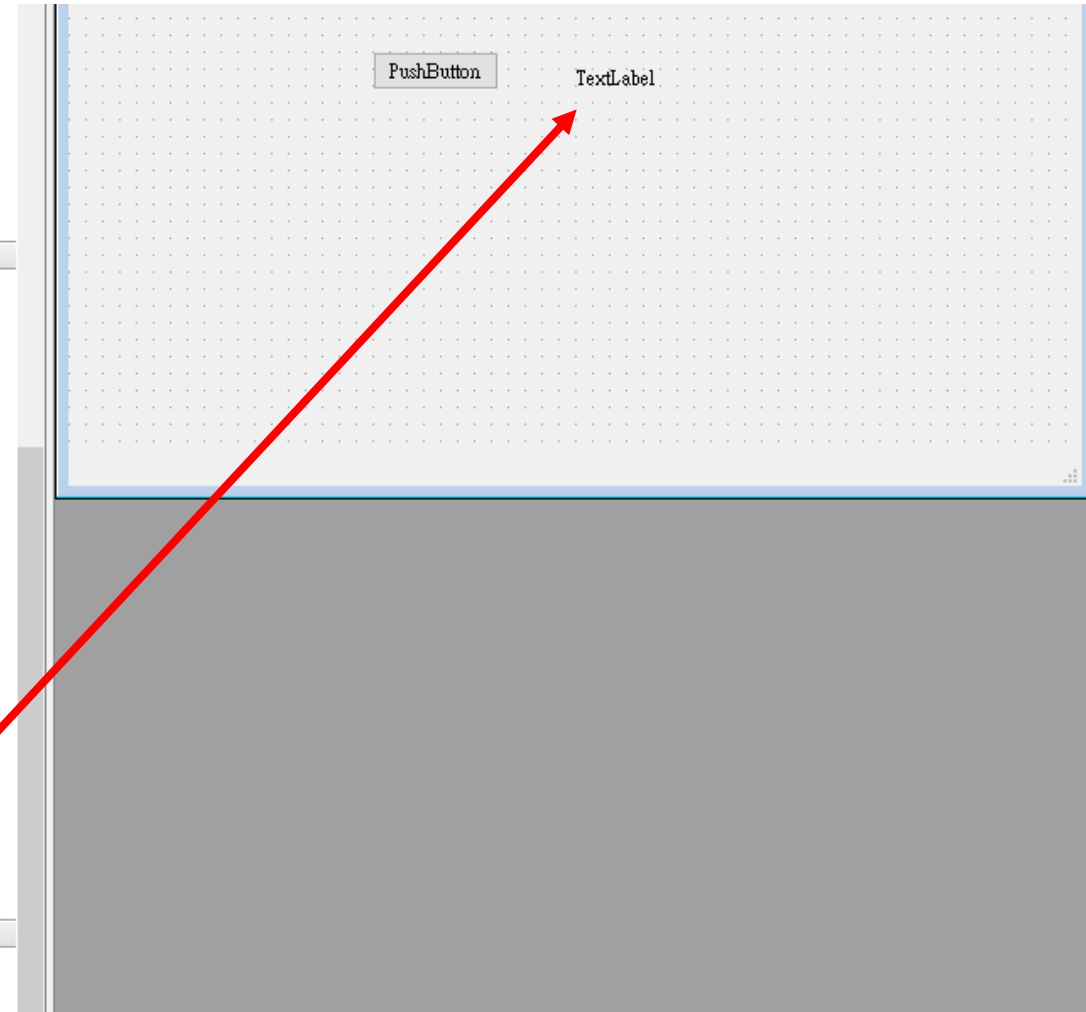
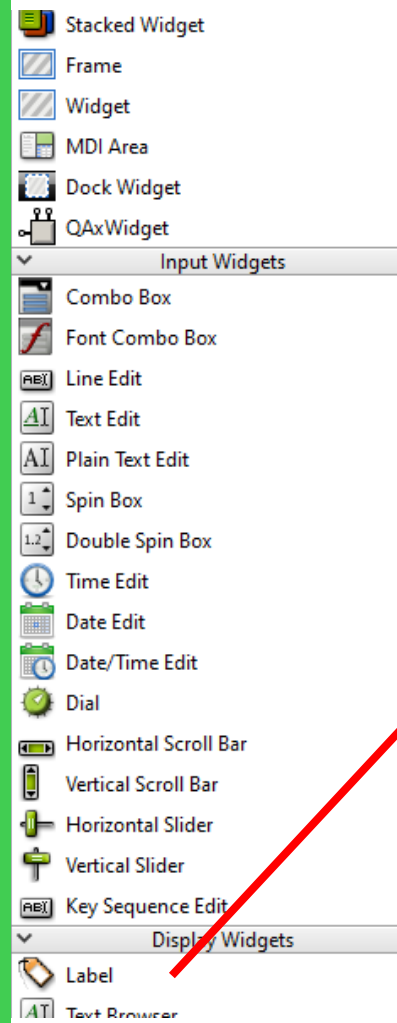
Practice

- Change the object name



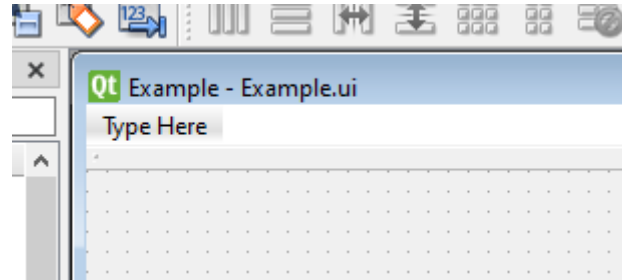
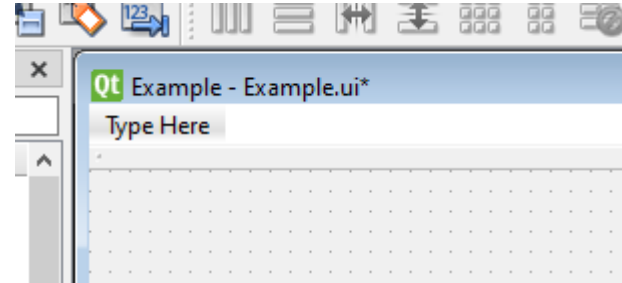
Practice

- Drag a Label to the window



Practice

- Ctrl + S to save the layout



Practice

- Example.h

```
1)  #pragma once
2)  #include <QtWidgets/QMainWindow>
3)  #include "ui_Example.h"
4)  // add code
5)  #include <QPicture>

6)  class Example : public QMainWindow
7)  {
8)      Q_OBJECT

9)  public:
10)     Example(QWidget *parent = Q_NULLPTR);

11) // add code
12) private slots:
13)     void loadFile();

14) private:
15)     Ui::ExampleClass ui;
16) };
```

Practice

- Example.cpp
- Load any picture (e.g. logo.png)
- You should put your images into release directory

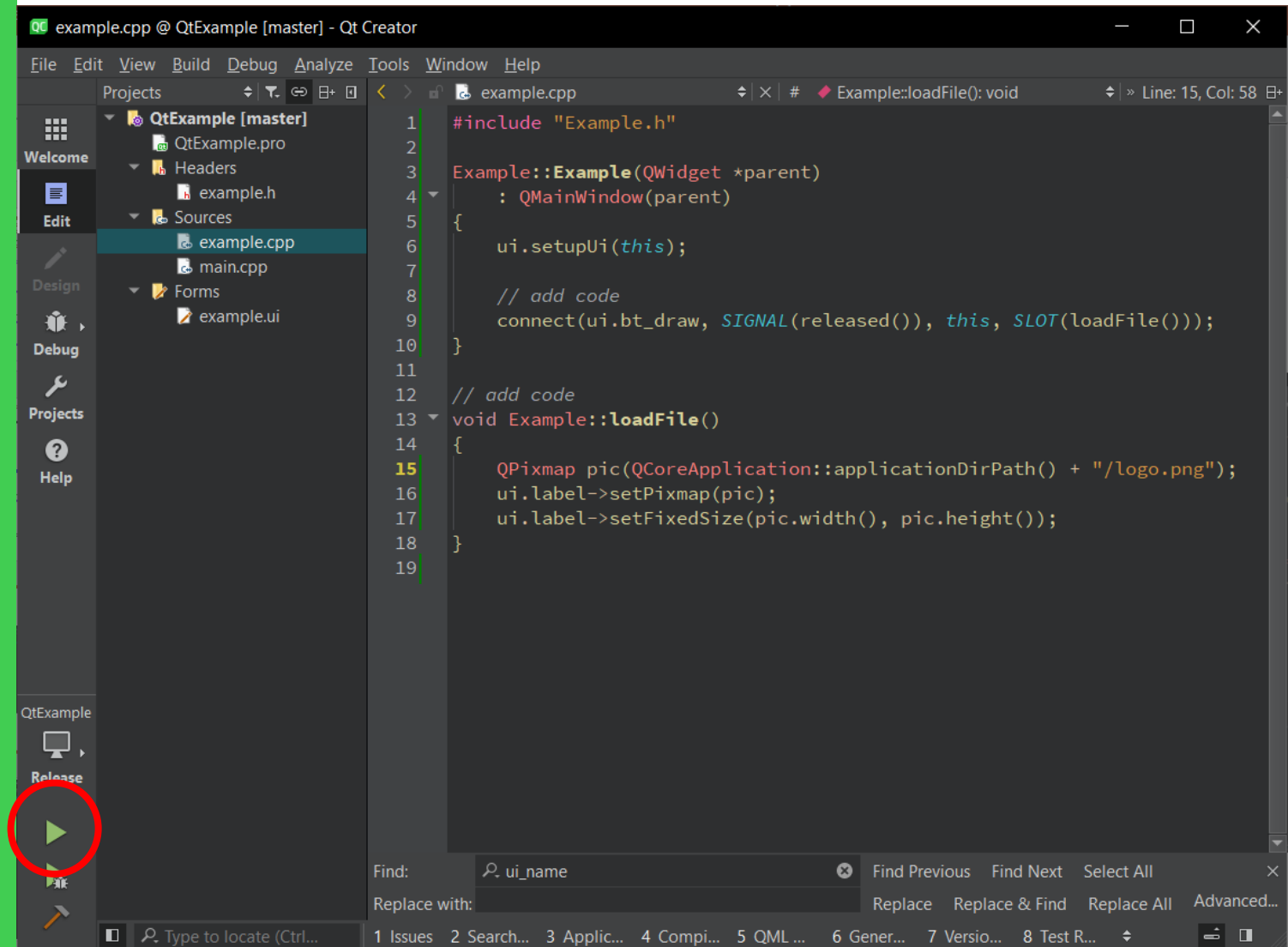
```
1)  #include "Example.h"

2)  Example::Example(QWidget *parent)
3)      : QMainWindow(parent)
4)  {
5)      ui.setupUi(this);
6)
7)      // add code
8)      connect(ui.bt_draw, SIGNAL(released()),
9)             this, SLOT(loadFile()));
10) }

10) // add code
11) void Example::loadFile()
12) {
13)     QPixmap pic("logo.png");
14)     ui.label->setPixmap(pic);
15)     ui.label->setFixedSize(pic.width(),
16)                            pic.height());
16) }
```

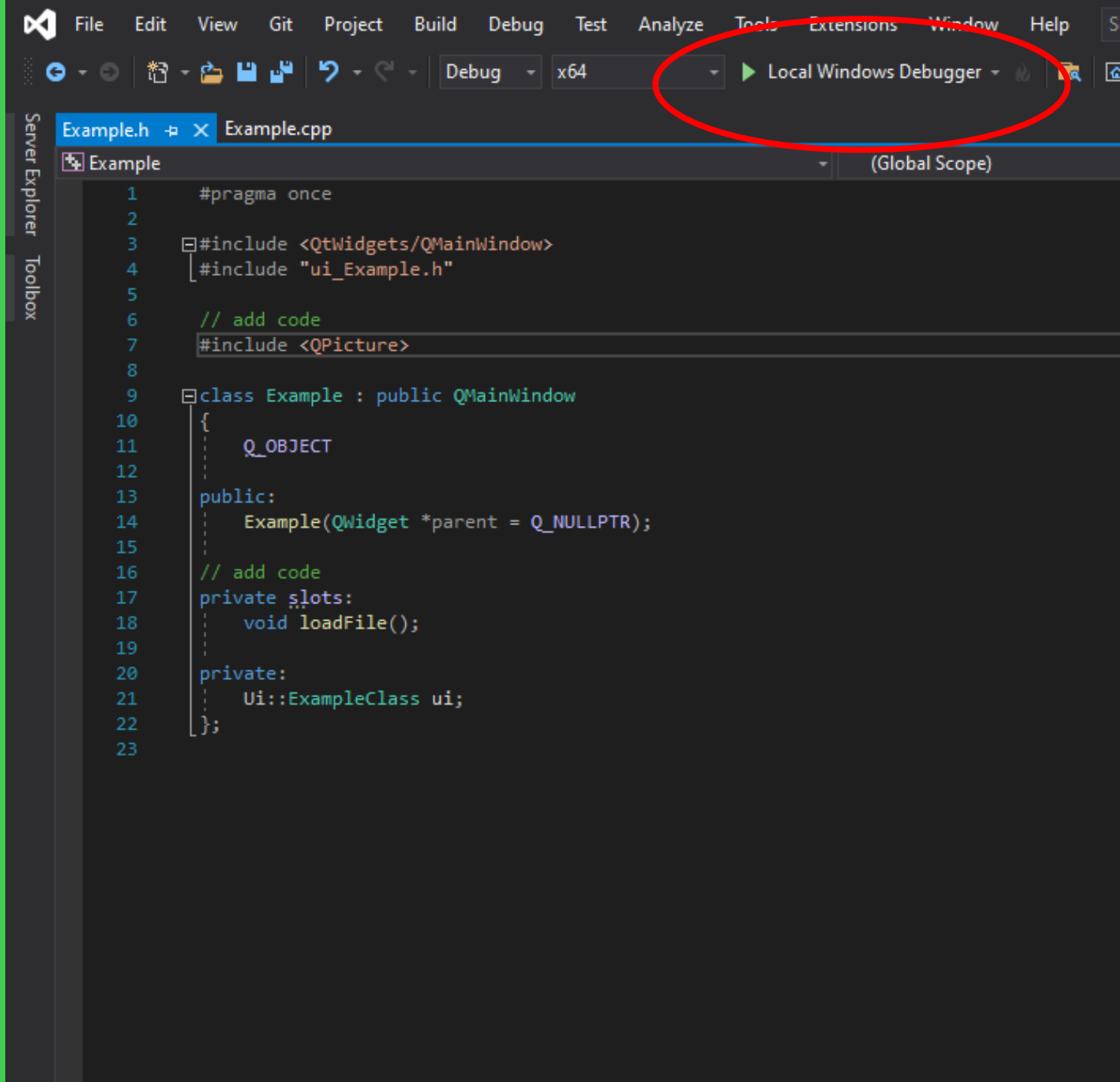
Practice

- Run (Qt Creator Ver.)
- Add
QCoreApplication::applicationDirPath()
before the file



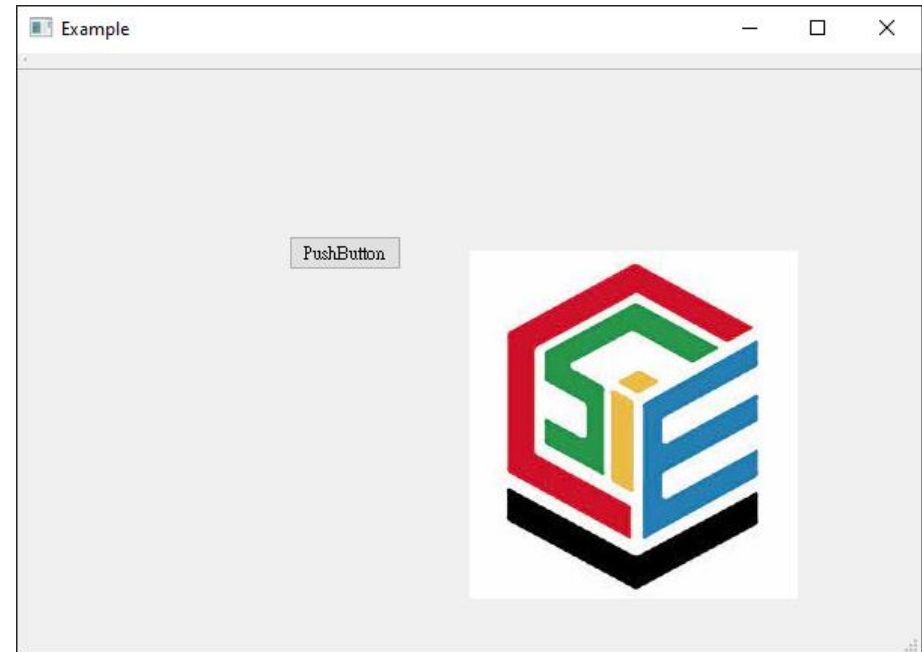
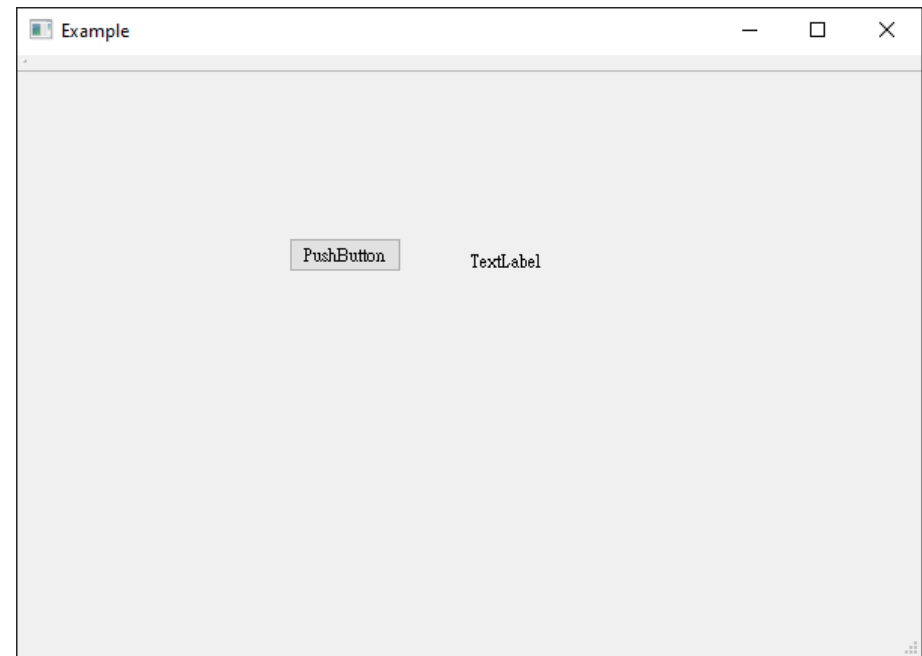
Practice

- Run (Visual Studio Ver.)



Practice

- Click PushButton
- Display logo.png





Qt Tutorial

Object Oriented Programming