

# MA35D1 GUI Development Environment

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# | Agenda

- DirectFB Introduction
- QT Creator Cross-Compile Environment Setup

# DirectFB Introduction

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# | DirectFB Introduction

- Nuvoton provide DirectFB to easily use 2D graphic engine to offload the CPU usage
- CPU usage depends on the content of the applications

Test item	CPU loading
QT with DirectFB and 2D	41%
QT with DirectFB without 2D	86%
QT without DirectFB and 2D	78%

- GC520L (2D graphic engine) shared library is located at [/usr/lib/directfb-1.7-7/gfxdrivers/libdirectfb\\_gal.so](#)
- Remove libdirectfb\_gal.so and run the demo will use DirectFB without 2D Engine
- DirectFB can be configure by creating *directfbrc* configuration file at /etc



# QT Creator Cross- Compile Environment Setup

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# | Build Toolchain from Yocto

- First, you need to build ma35d1 toolchain from Yocto.  
`$ bitbake nvt-image-qt5 -c populate_sdk`
- Make a toolchain installer (If having done this, don't execute the command again)  
`$ cp /home/user/shared/yocto/build/tmp-glibc/deploy/sdk /share`
- After build toolchain SDK, copy it to the host Ubuntu  
`$ ./oecore-x86_64-aarch64-toolchain-5.5-dunfell.sh`
- Execute it by host Ubuntu and the toolchain will be install to the default path

```
user@ubuntu:~/sdk$ sudo ./oecore-x86_64-aarch64-toolchain-5.5-dunfell.sh
[sudo] password for user:
Nuvoton Release Distro SDK installer version 5.5-dunfell
=====
Enter target directory for SDK (default: /usr/local/oecore-x86_64):
You are about to install the SDK to "/usr/local/oecore-x86_64". Proceed [Y/n]? y
Extracting SDK.....done
.....done
Setting it up...done
SDK has been successfully set up and is ready to be used.
Each time you wish to use the SDK in a new shell session, you need to source the environment setup script e.g.
$ . /usr/local/oecore-x86_64/environment-setup-aarch64-poky-linux
```

# | Download and Install Qt Creator

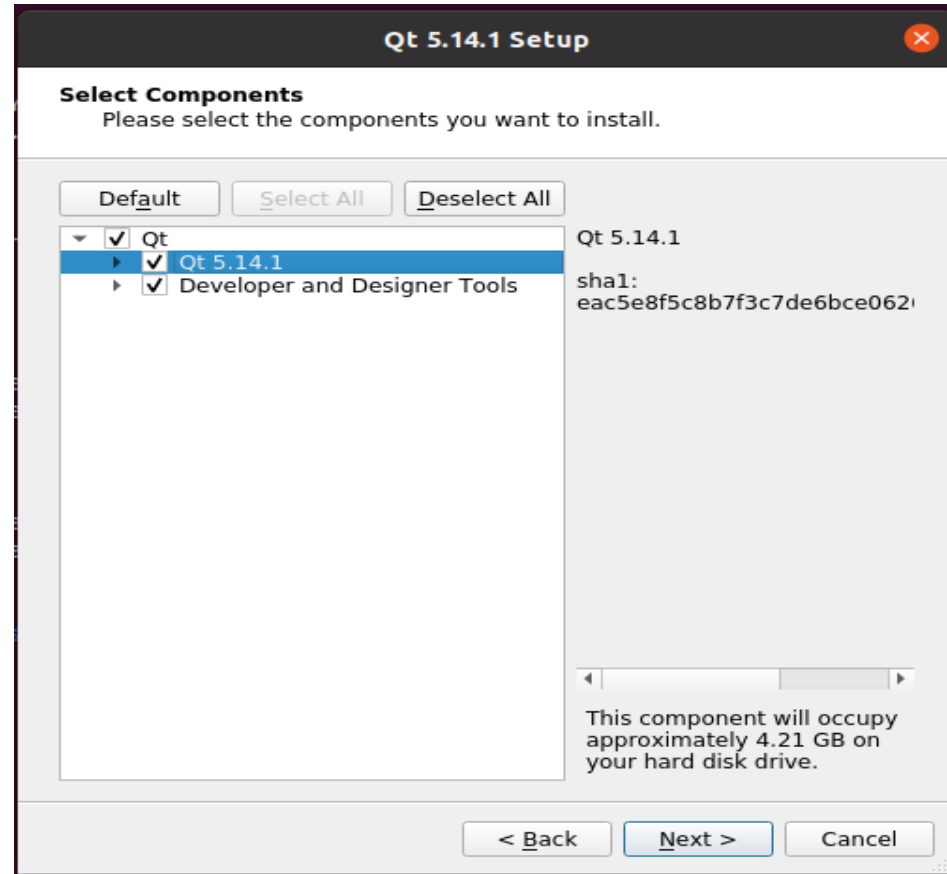
- Download QT Creator from <https://download.qt.io/archive/qt/5.14/5.14.1/> under host Ubuntu operating environment. Choose qt-opensource-linux-x64-5.14.1.run
- After downloading, create a folder you prepare to install QT Creator under /home/user

```
$ bitbake nvt-image-qt5 -c populate_sdk
```

- Go to the path you downloaded and install QT Creator

```
$ chmod 777 qt-opensource-linux-x64-5.14.1.run  
$ sudo ./qt-opensource-linux-x64-5.14.1.run
```

# | Download and Install Qt Creator





# | Download and Install Qt Creator

- Add the command to the shell below to open QT Creator with environment variable
- After downloading, create a folder you prepare to install QT Creator under /home/user

```
user@ubuntu:~/QT_Creator/Tools/QtCreator/bin$ sudo vi qtcreator.sh
```

```
source /usr/local/oecore-x86_64/environment-setup-aarch64-poky-linux
```

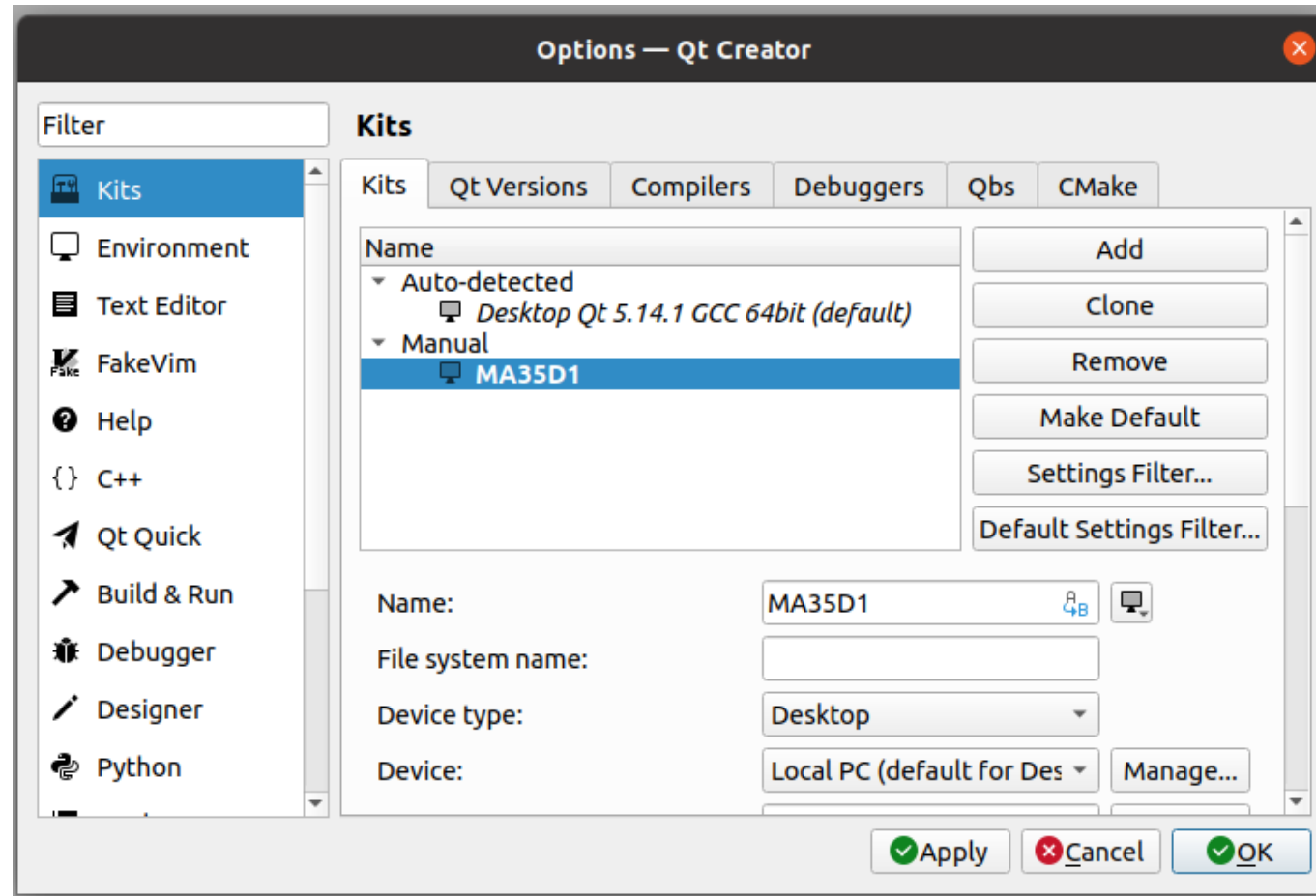
```
source /usr/local/oecore-x86_64/environment-setup-aarch64-poky-linux
#! /bin/sh

# Use this script if you add paths to LD_LIBRARY_PATH
# that contain libraries that conflict with the
# libraries that Qt Creator depends on.
```

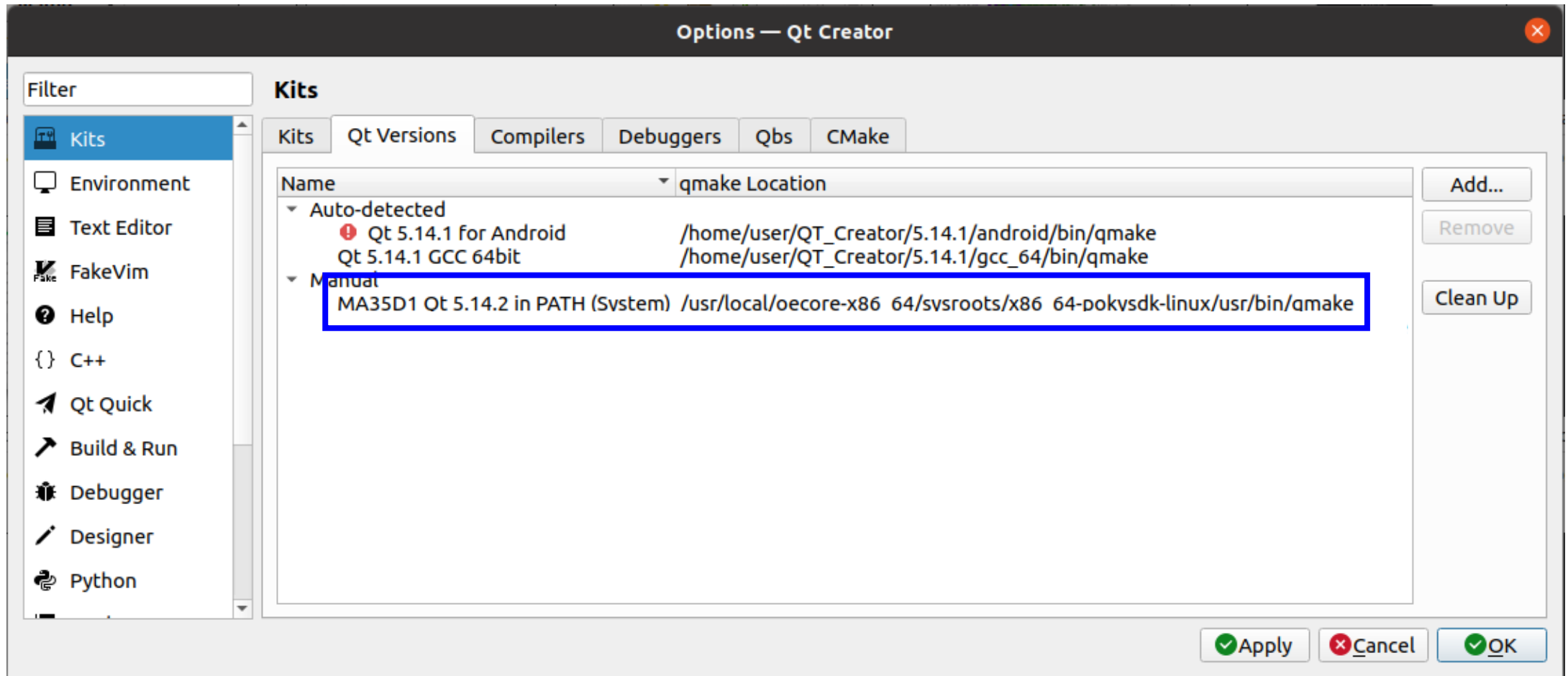
- Open QT Creator with the command below

```
user@ubuntu:~/QT_Creator/Tools/QtCreator/bin$ ./qtcreator.sh &
```

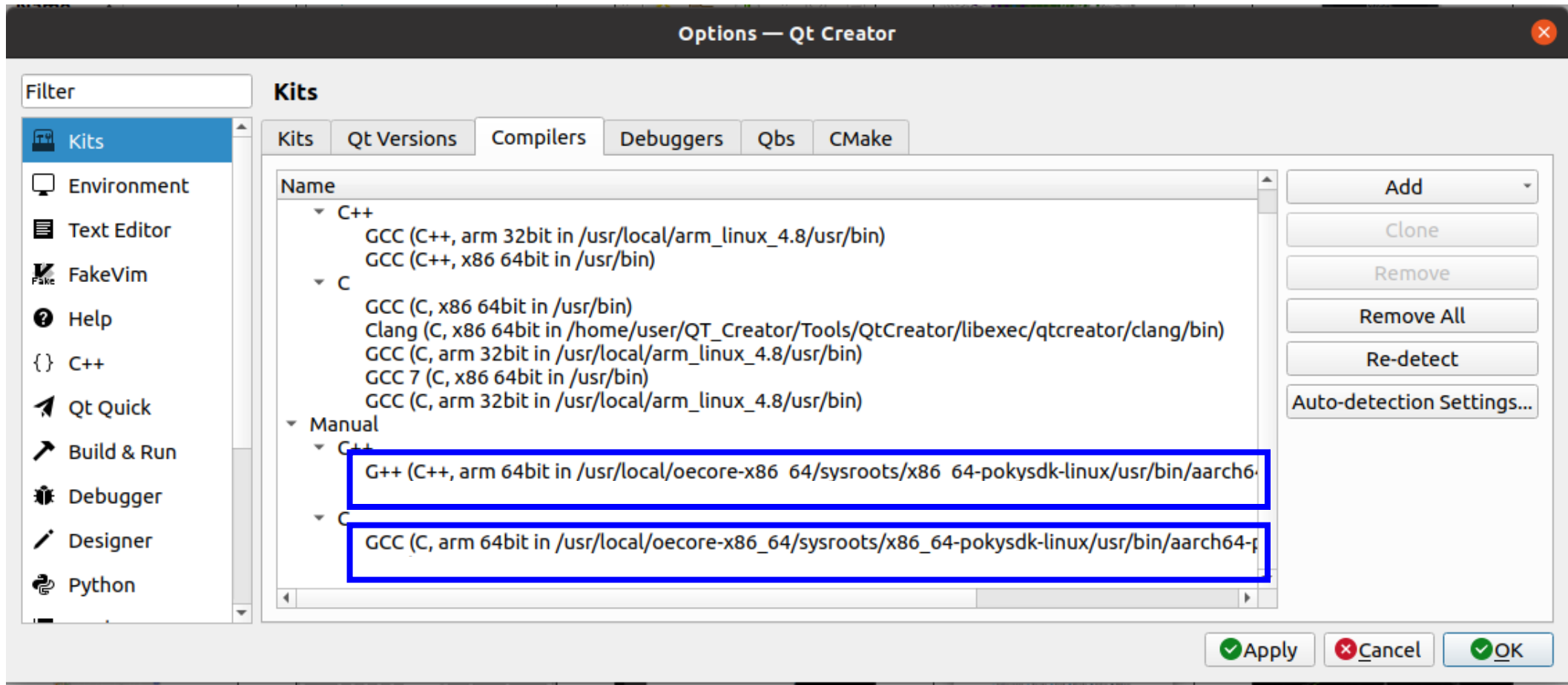
# | Qt Creator option – Kits



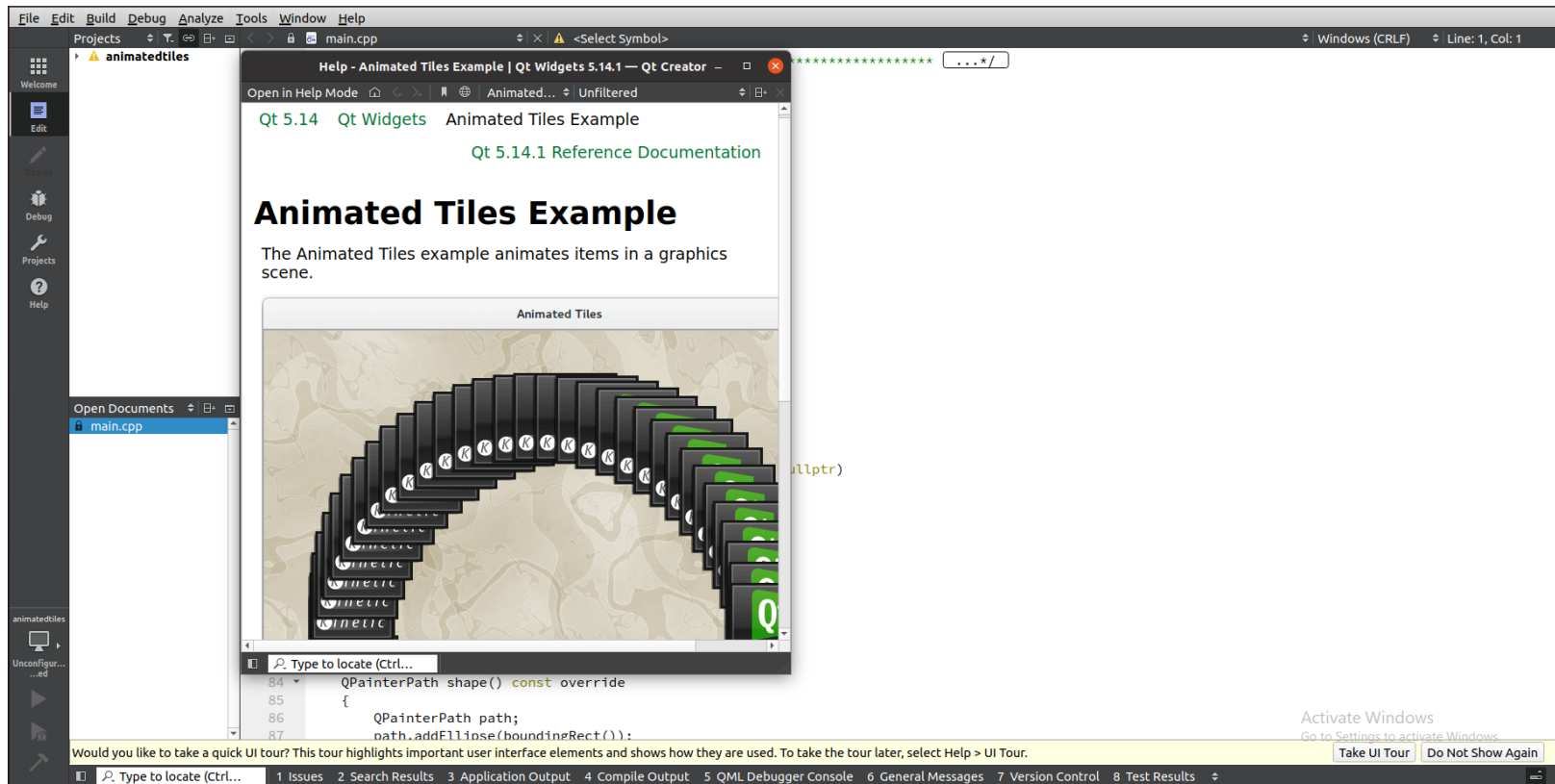
# Qt Creator option – Qt Versions



# Qt Creator option – Compilers



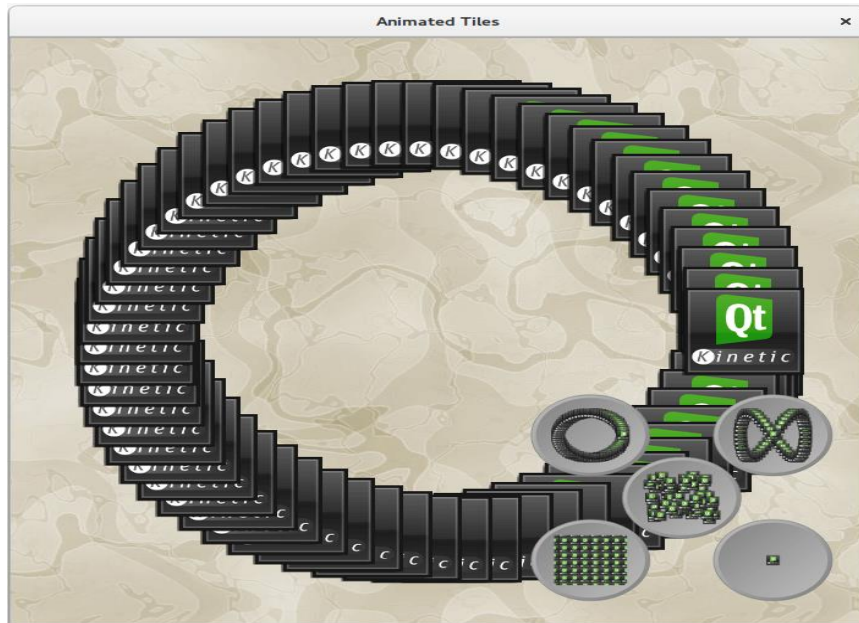
# QT Application Demo Code



# | Qt Application with DirectFB

- Nuvoton provide 2D Graphic Engine with DirectFB
- Execute the command below to run the demo with DirectFB

```
root@numaker-som-ma35d16a81:~# /usr/share/qt5everywheredemo-1.0/QtDemo –  
platform directfb
```





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Thank You

Danke

Merci

ありがとう

Gracias

Kiitos

감사합니다

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