Cross-Platform Development Setup (Boost, Qt, CMake)

Notes:

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Qt 4.8.7
Qt Creator 3.5.1
CMake 3.5.1
Boost 1.58.0
Visual Studio 2010 (Version 10.0.40219.1 SP1Rel)
Windows Version: Windows 7 Enterprise, SP1, 64-bit
Linux Version: Ubuntu Mate 16.04 LTS (kernel 4.1.19-v7+ armv7l), Raspberry Pi 3

Install Boost

Issue the following commands in the terminal:

```
sudo apt-get update
sudo apt-get upgrade
sudo apt-get libboost-dev libboost-dbg libboost-doc
```

Simple Boost Test

Creat a new file called main.cpp

```
sudo nano main.cpp
```

Write the following to main.cpp and save:

```
#include <iostream>
#include <boost/format.hpp>

using namespace boost;
using namespace std;

int main(int argc, char *argv[])
{
	unsigned int arr[3] = {0x05,0x04,0xAA};

	cout<<format("%02X-%02X-%02X")%arr[0]%arr[1]%arr[2]<<endl;

	return 0;
}
```

Issue the following commands in the terminal:

```
g++ -o main *.cpp
./main
```

You should see the following print out in the terminal window:

```
05-04-AA
```

Install Qt

```
sudo apt-get update
sudo apt-get upgrade
sudo apt-get install qt-sdk
```

Simple Qt Test

Open Qt Creator with

```
qtcreator
```

- Choose “New Project”.
- Select “Qt Widgets Application” and click Choose.
- Name the project “QtTest” and click Next (Should save everything in ~/QtTest)
- Click Next to use the default Desktop kit.
- Click Next to use the default class information.
- Click Next to use default Project Management settings.
- Close Qt Creator.
- In a terminal window, navigate to the “QtTest” folder where Qt Creator saved the files.

Issue the following commands in the terminal:

```
cd ~/QtTest
qmake
make
./QtTest
```

You should see a blank window pop-up.

Qt-Boost-CMake Test

Make a new directory called QtBoostCMakeTest Test

```
mkdir ~/QtBoostCMakeTest
```

Copy the following files from your untitled directory created in QtCreator:

```
cd ~/QtBoostCMakeTest
cp ~/QtTest/main.cpp main.cpp
cp ~/QtTest/mainwindow.ui mainwindow.ui
cp ~/QtTest/mainwindow.cpp mainwindow.cpp
cp ~/QtTest/mainwindow.h mainwindow.h
cp ~/QtTest/ui_mainwindow.h ui_mainwindow.h
```

Edit main.cpp to use Boost

```
nano main.cpp
```

Write the following to main.cpp and save:

```
#include "mainwindow.h"
#include <QApplication>
#include <iostream>
#include <boost/format.hpp>

using namespace std;
using namespace boost;

int main(int argc, char *argv[])
{
      unsigned int arr[3] = { 0x05, 0x04, 0xAA};

    cout << format("%02X-%02X-%02X")%arr[0]%arr[1]%arr[2]<<endl;

    QApplication a(argc, argv);
    MainWindow w;
    w.show();

    return a.exec();
}
```

Create a new document call CMakeLists.txt

```
nano CMakeLists.txt
```

Add the following to CMakeLists.txt and save:

```
cmake_minimum_required(VERSION 2.6)
PROJECT(QtBoostCMakeTestSln)

FIND_PACKAGE(Qt4 REQUIRED)
INCLUDE(${QT_USE_FILE})

FIND_PACKAGE(Boost 1.58.0)
INCLUDE_LIBRARIES(${Boost_INCLUDE_DIRS})

QT4_WRAP_UI(UISrcs mainwindow.ui)
QT4_WRAP_CPP(MOCSrcs mainwindow.h)

include_directories(${CMAKE_CURRENT_SOURCE_DIR} ${CMAKE_CURRENT_BINARY_DIR})

ADD_EXECUTABLE(QtBoostCMakeTestApp main.cpp mainwindow.cpp ${MOCSrcs} ${UISrcs})
TARGET_LINK_LIBRARIES(QtBoostCMakeTestApp ${QT_LIBRARIES})
```

Make a copy of the folder at this point. This is your source folder which you would want to store in version control.

```
cp –R ~/QtBoostCMakeTest/ ~/QtBoostCMakeTestBackup
```

Issue the following commands in the terminal:

```
cmake .
make
./QtBoostCMakeTest
```

You should see the same blank window pop-up and the following print out in the terminal window:

```
05-04-AA
```

Setup Boost on Windows

Download Boost 1.58.0 zip file
http://sourceforge.net/projects/boost/files/boost/1.58.0/boost_1_58_0.7z/download

Unzip to C:\boost_1_58_0

Add environment variable name "BOOST_ROOT" with value C:\boost_1_58_0

Setup Qt on Windows

Download and install Qt 4.8.7 (here qt-opensource-windows-x86-vs2010-4.8.7.exe) from
https://download.qt.io/official_releases/qt/4.8/4.8.7/

Add environment variable name "QTDIR" with value C:\Qt\4.8.7
Add %QTDIR%\bin to the PATH environment variable

Setup CMake on Windows

Install CMake from (here cmake-3.5.2-win32-x86.msi)
https://cmake.org/download/

Qt-Boost-CMake Test on Windows

Transfer the QtBoostCMakeTestBackup directory you made previously to your windows machine and rename it QtBoostCMakeTest.

- Open CMake (cmake-gui) from the start menu.
- Click Browse Source and select the QtBoostCMakeTest directory.
- Copy the "Where is the source code" line into the "Where to build the binaries" line, but append \Output (i.e. …\QtBoostCMakeTest\Output).
- Click "Configure" and choose the Visual Studio 10 2010 generator. Click Finish.
- When finished, click "Generate"
- When finished, browse to the Output folder and open QtBoostCMakeTestSln.sln in Visual Studio.
- Build the solution (F7).
- You can now run the QtBoostCMakeTestApp.exe located in the …\QtBoostCMakeTest\Output\Debug folder. To run the application directly from Visual Studio, you'll first need to right-click the QtBoostCMakeTestApp project in the Solution Explorer and select "Set as StartUp Project".