

Purple Pi R1 Qt Creator开发流程

Qt Creator开发流程

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Purple Pi R1

Qt Creator开发流程

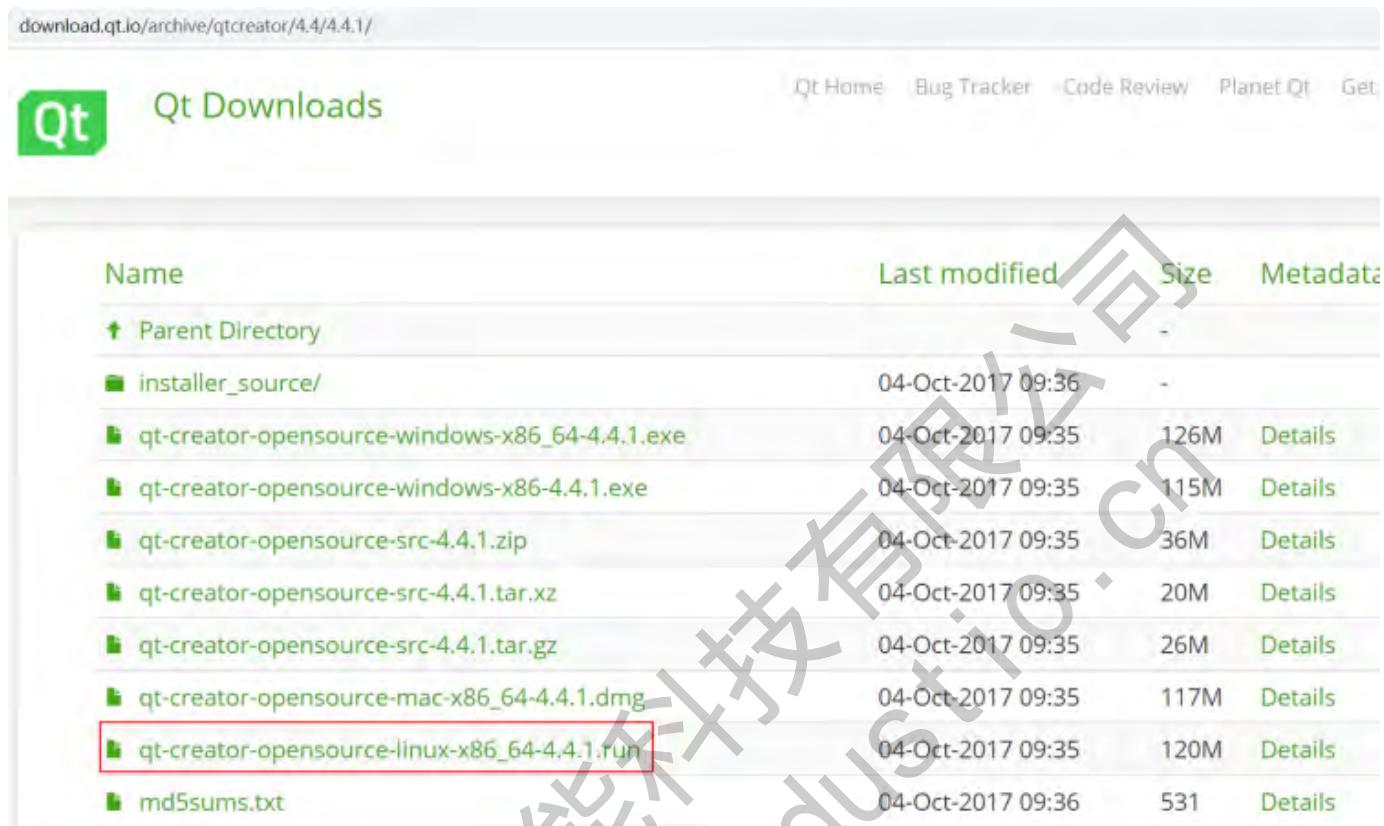
深圳触觉智能科技有限公司

www.industio.cn

Qt Creator开发流程

配置Qt开发环境

1、下载Qt Creator4.4.1下载地址：<https://download.qt.io/archive/qtcreator/4.4/4.4.1/>

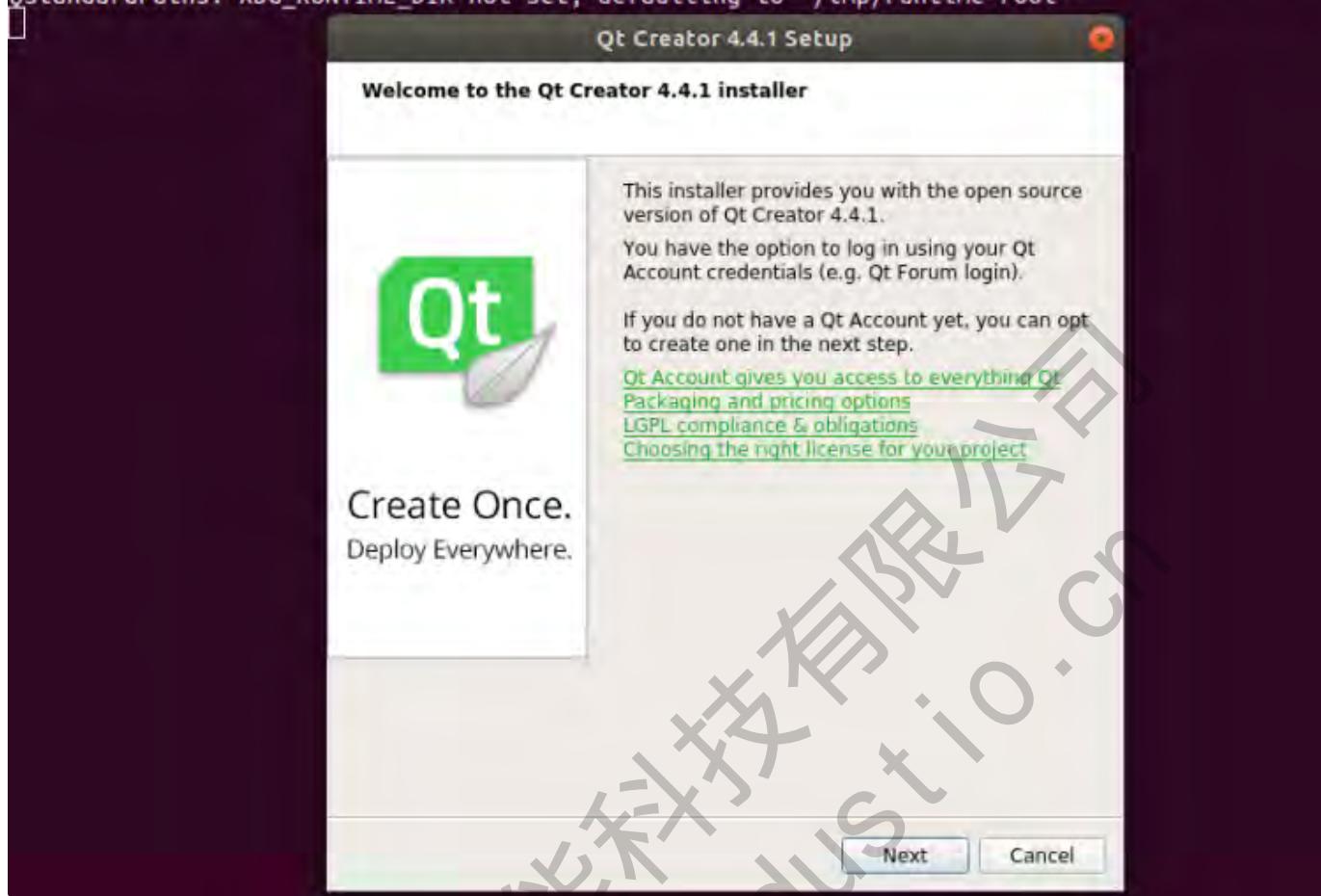


The screenshot shows a file list on the Qt Downloads page. The columns are Name, Last modified, Size, and Metadata. The 'Name' column lists various Qt Creator files: Parent Directory, installer_source/, qt-creator-opensource-windows-x86_64-4.4.1.exe, qt-creator-opensource-windows-x86-4.4.1.exe, qt-creator-opensource-src-4.4.1.zip, qt-creator-opensource-src-4.4.1.tar.xz, qt-creator-opensource-src-4.4.1.tar.gz, qt-creator-opensource-mac-x86_64-4.4.1.dmg, qt-creator-opensource-linux-x86_64-4.4.1.run, and md5sums.txt. The file 'qt-creator-opensource-linux-x86_64-4.4.1.run' is highlighted with a red box.

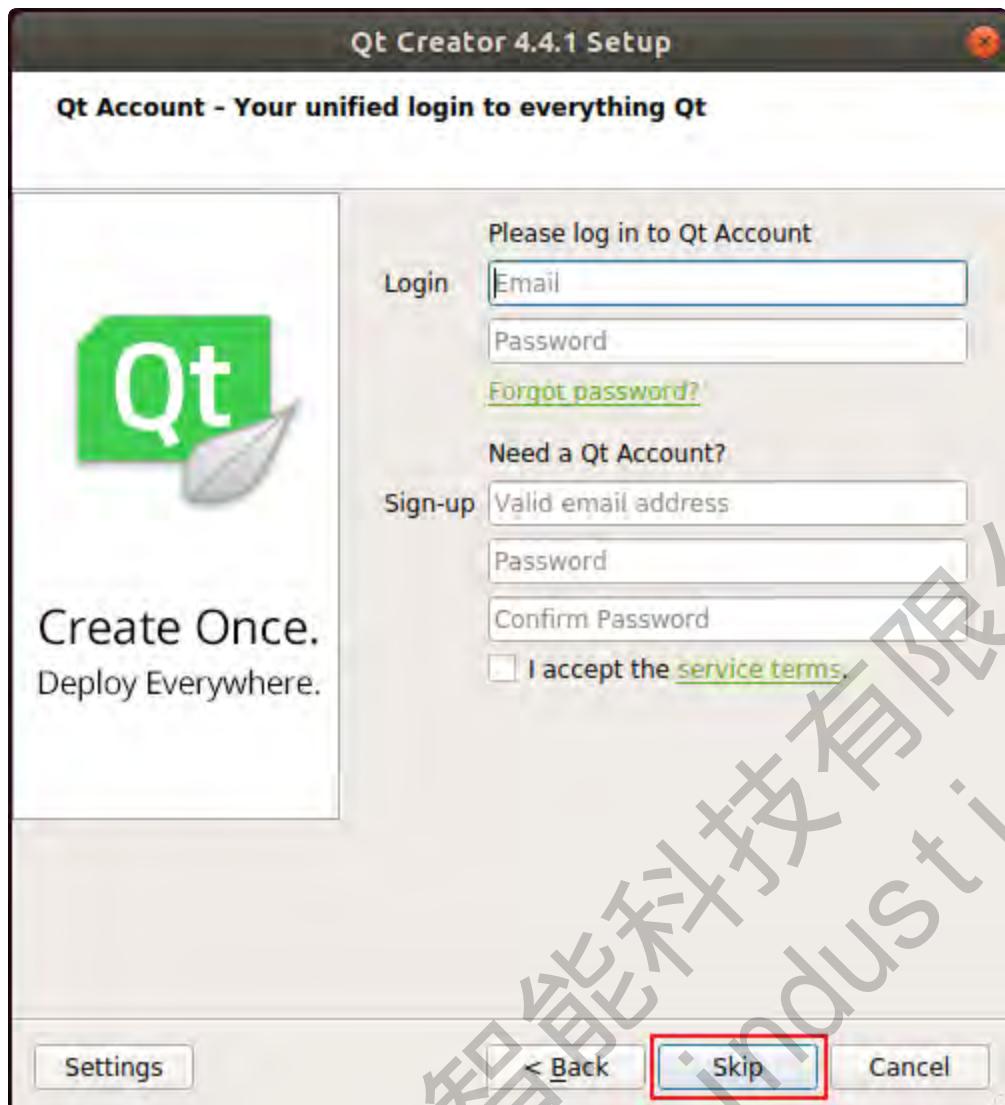
Name	Last modified	Size	Metadata
Parent Directory		-	
installer_source/	04-Oct-2017 09:36	-	
qt-creator-opensource-windows-x86_64-4.4.1.exe	04-Oct-2017 09:35	126M	Details
qt-creator-opensource-windows-x86-4.4.1.exe	04-Oct-2017 09:35	115M	Details
qt-creator-opensource-src-4.4.1.zip	04-Oct-2017 09:35	36M	Details
qt-creator-opensource-src-4.4.1.tar.xz	04-Oct-2017 09:35	20M	Details
qt-creator-opensource-src-4.4.1.tar.gz	04-Oct-2017 09:35	26M	Details
qt-creator-opensource-mac-x86_64-4.4.1.dmg	04-Oct-2017 09:35	117M	Details
qt-creator-opensource-linux-x86_64-4.4.1.run	04-Oct-2017 09:35	120M	Details
md5sums.txt	04-Oct-2017 09:36	531	Details

选择下载qt-creator-opensource-linux-x86_64-4.4.1.run，并将下载的文件拷贝至Ubuntu虚拟机中。在Ubuntu终端执行sudo ./qt-creator-opensource-linux-x86_64-4.4.1.run命令打开安装向导界面,点击“Next”按键进入下一步。如下图所示

```
fu@fu-VirtualBox:/home/industio_work/Qt$ sudo ./qt-creator-opensource-linux-x86_64-4.4.1.run  
QStandardPaths: XDG_RUNTIME_DIR not set, defaulting to '/tmp/runtime-root'
```



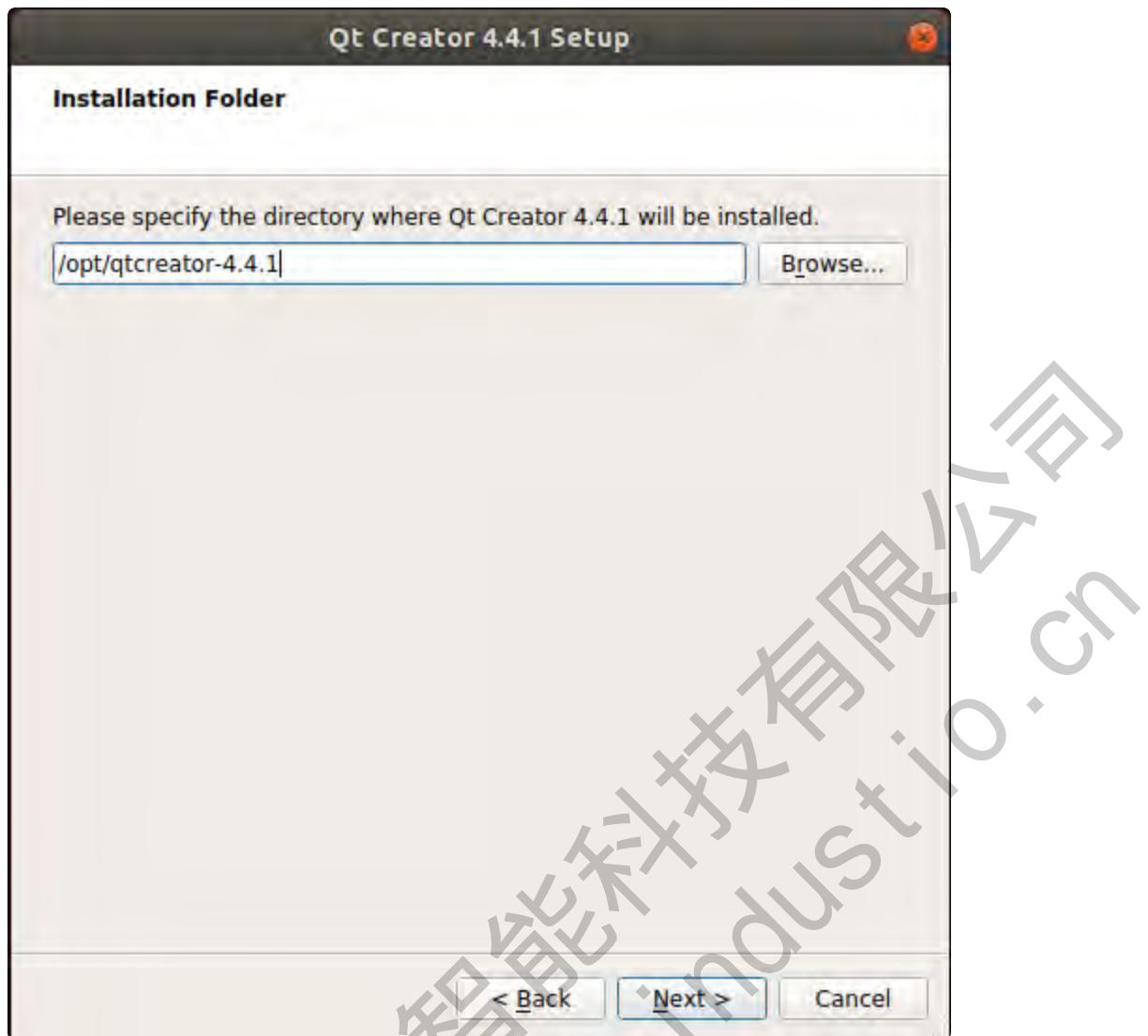
此处如果不需要登陆，点击“skip”跳过即可；



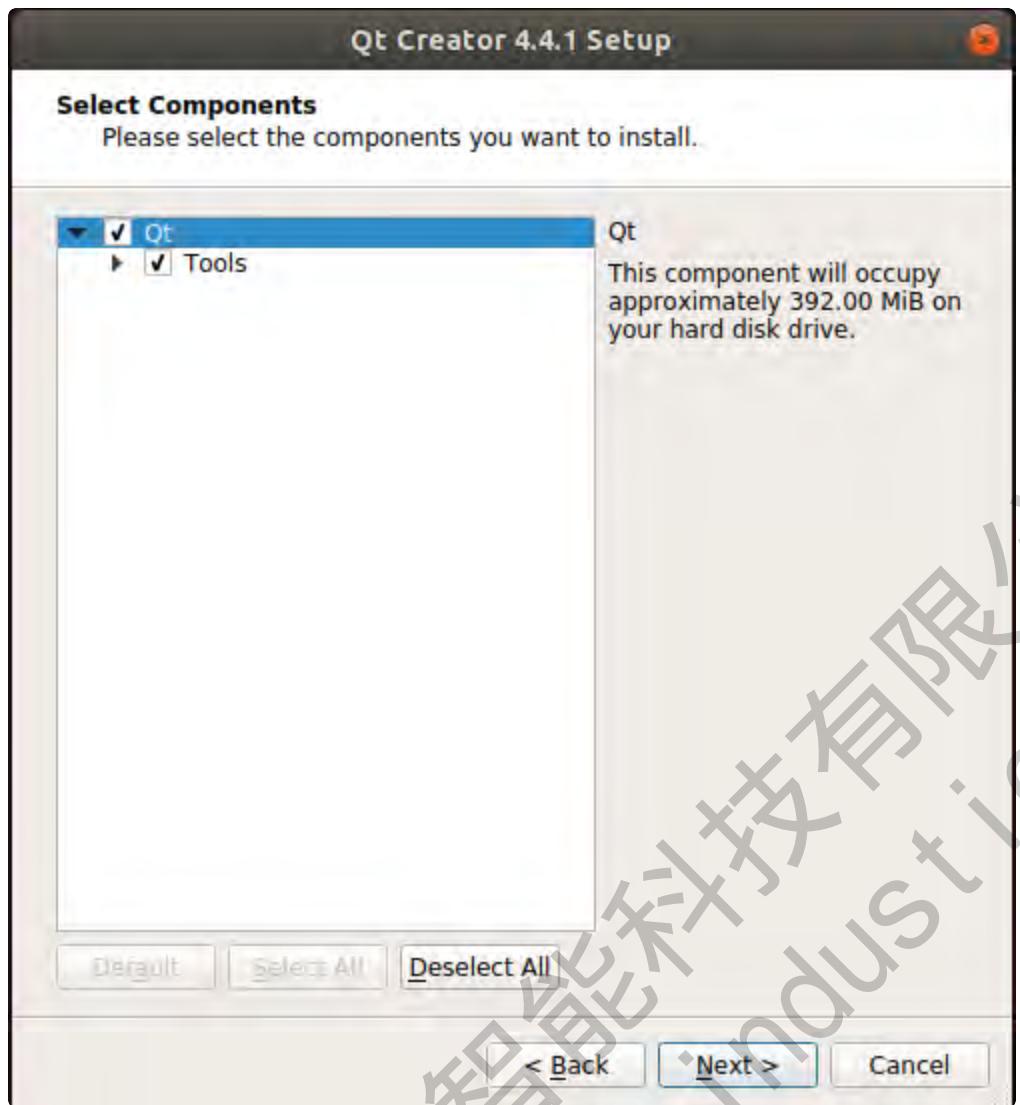
点击“Next”进入下一步；



默认安装目录为“/opt/qtcreator-4.4.1”，点击“Next”进入下一步；



保留默认的勾选安装组件内容，点击“Next”进入下一步；



阅读协议条款内容后，选择同意，点击”Next“进入下一步；



License Agreement

Please read the following license agreement. You must accept the terms contained in this agreement before continuing with the installation.

This is the GNU General Public License version 3, annotated with The Qt Company GPL Exception 1.0:

The Qt Company GPL Exception 1.0

Exception 1:

As a special exception you may create a larger work which contains the output of this application and distribute that work under terms of your choice, so long as the work is not otherwise derived from or based on this application and so long as the work does not in itself generate output that contains the output from this application in its original or modified form.

Exception 2:

As a special exception, you have permission to combine this application
with Plugins licensed under the terms of your choice, to produce an

I have read and agree to the terms contained in the license agreements.

I do not accept the terms and conditions of the above license agreements.

< Back

Next >

Cancel

点击“Install”开始安装；



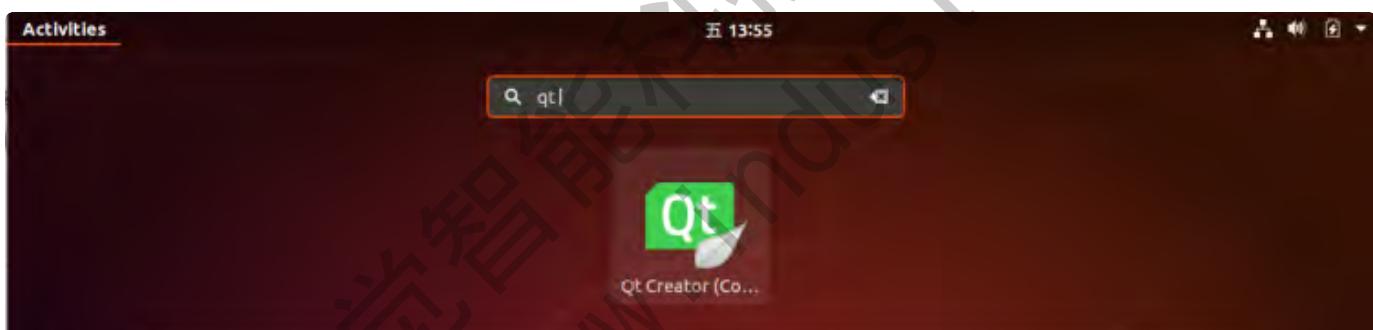
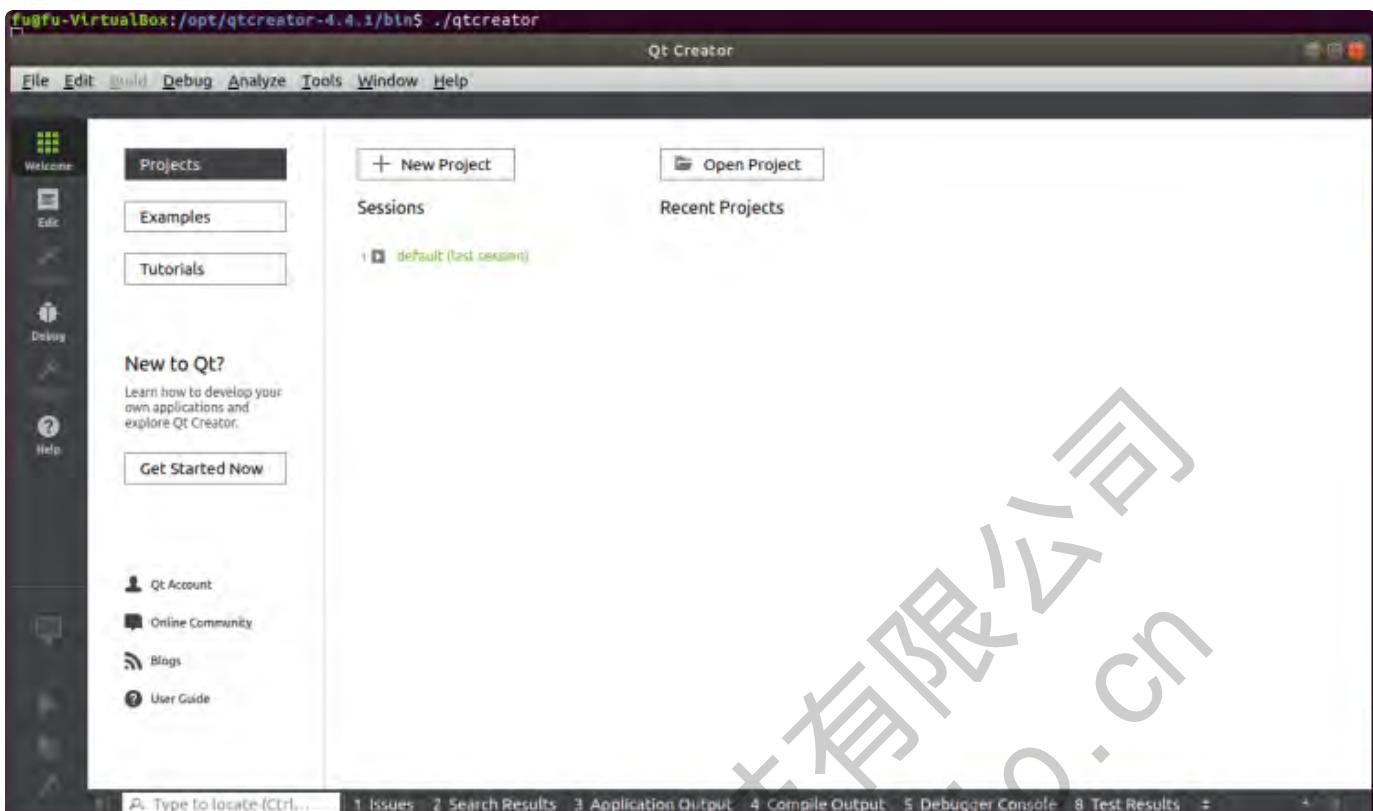
安装进度界面如下图：



安装完成后，即可在安装目录”/opt/qtcreator-4.4.1“的bin目录下找到可执行程序qtcreator

```
fu@fu-VirtualBox:/opt/qtcreator-4.4.1/bin$ ls
qbs      qbs-config-ui      qbs-qmltypes      qbs-setup-qt      qt.conf      qtcreator.sh
qbs-config  qbs-create-project  qbs-setup-android  qbs-setup-toolchains  qtcreator
```

可以在命令行的“/opt/qtcreator-4.4.1/bin”目录下，执行./qtcreator开启Qt Creator4.4.1集成开发环境；或者点击Ubuntu18.04界面的左上角“Activities”，在弹出的搜索框中输入“Qt”，在查找结果中找到Qt Creator的图标，双击图标开启Qt Creator程序。



安装Qt4.8.7

在Linux平台安装Qt4.8.7需要从官网下载源代码，通过编译源码获得可用的Qt4.8.7 sdk。

官方源码下载地址：<https://download.qt.io/archive/qt/4.8/4.8.7/>

Name	Last modified	Size	Metadata
Parent Directory	-	-	-
qt-opensource-windows-x86-vs2010-4.8.7.exe	04-Jun-2018 17:26	236M	Details
qt-opensource-windows-x86-vs2008-4.8.7.exe	04-Jun-2018 17:27	235M	Details
qt-opensource-windows-x86-mingw482-4.8.7.exe	04-Jun-2018 17:27	329M	Details
qt-opensource-mac-4.8.7.dmg	04-Jun-2018 17:27	185M	Details
qt-opensource-mac-4.8.7-debug-libs.dmg	04-Jun-2018 17:27	476M	Details
qt-everywhere-opensource-src-4.8.7.zip	04-Jun-2018 17:26	268M	Details
qt-everywhere-opensource-src-4.8.7.tar.gz	04-Jun-2018 17:27	230M	Details
md5sums-4.8.7	04-Jun-2018 17:26	517	Details
changes-4.8.7	04-Jun-2018 17:27	12K	Details

选择下载“qt-everywhere-opensource-src-4.8.7.tar.gz”，将下载的文件拷贝至Ubuntu虚拟机中。

```
fu@fu-VirtualBox:/home/industio_work/Qt$ ls
qt-creator-opensource-linux-x86_64-4.4.1.run  qt-everywhere-opensource-src-4.8.7.tar.gz
```

在终端执行下方命令，解压源码，并切换至解压后的源码目录。

```
1 industio@industio$: tar zxfv qt-everywhere-opensource-src-4.8.7.tar.gz
2 industio@industio$: cd qt-everywhere-opensource-src-4.8.7
```

```
fu@fu-VirtualBox:/home/industio_work/Qt/qt-everywhere-opensource-src-4.8.7$ ls
bin      configure.exe  include      LICENSE.GPL3  projects.pro  tools
changes-4.8.7  demos      INSTALL      LICENSE.LGPL   qmake      translations
config.profiles  doc       LGPL_EXCEPTION.txt  LICENSE.LGPLv21  README      util
config.tests    examples    lib        LICENSE.LGPLv3   src
configure      imports    LICENSE.FDL    mkspecs      templates
```

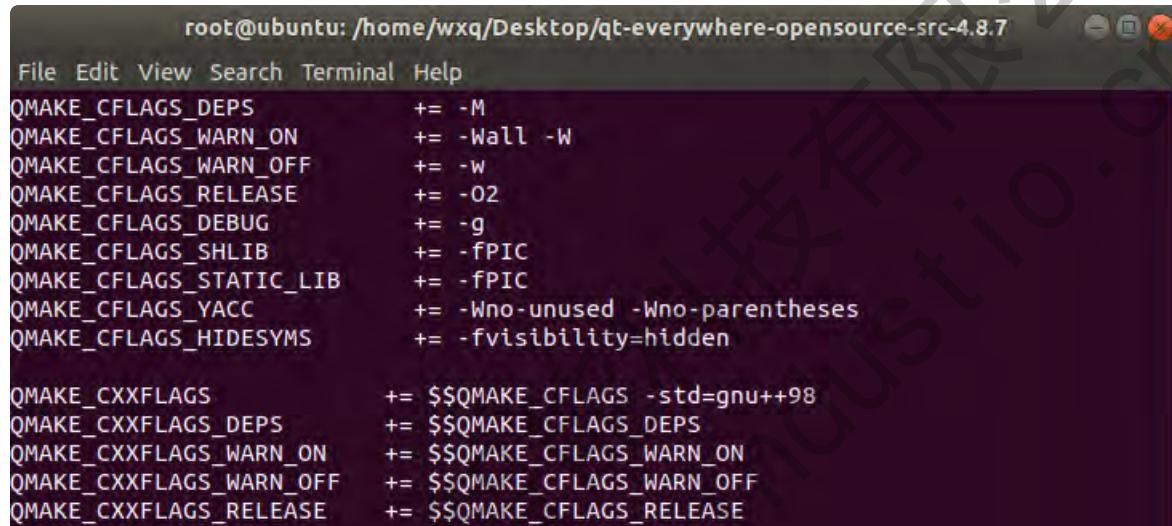
安装编译Qt需要的库

```

1 industio@industio$:sudo apt-get install gcc g++ g++-multilib make automake
2 industio@industio$:sudo apt-get install zlib1g-dev lib32ncurses5 lib32z1 libpng-dev autoconf libtool
3 industio@industio$:sudo apt-get install libxext-dev libx11-dev libxext-dev libxtst-dev
4 industio@industio$:sudo apt install libgstreamer1.0-dev libgstreamer1-perl libgstreamer-plugins-base0.10-dev libgstreamer-d3-dev
5 industio@industio$:sudo apt install freeglut3-dev mesa-utils

```

修改源码gcc/g++编译配置，指定标准为“gnu++98”，修改源码“mkspecs/common/gcc-base.conf”文件中的“QMAKE_CXXFLAGS”参数，在参数后面添加`-std=gnu++98`



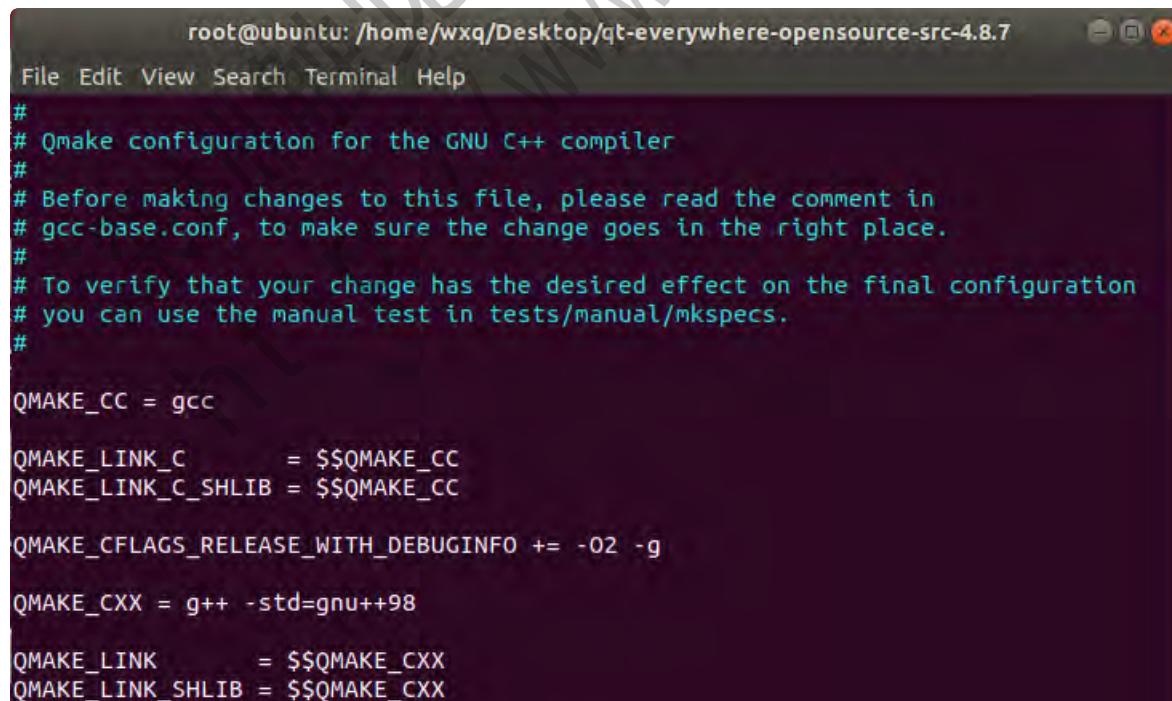
```

root@ubuntu: /home/wxq/Desktop/qt-everywhere-opensource-src-4.8.7
File Edit View Terminal Help
QMAKE_CFLAGS_DEPS      += -M
QMAKE_CFLAGS_WARN_ON    += -Wall -W
QMAKE_CFLAGS_WARN_OFF   += -w
QMAKE_CFLAGS_RELEASE    += -O2
QMAKE_CFLAGS_DEBUG      += -g
QMAKE_CFLAGS_SHLIB      += -fPIC
QMAKE_CFLAGS_STATIC_LIB += -fPIC
QMAKE_CFLAGS_YACC       += -Wno-unused -Wno-parentheses
QMAKE_CFLAGS_HIDESYMS   += -fvisibility=hidden

QMAKE_CXXFLAGS          += $$QMAKE_CFLAGS -std=gnu++98
QMAKE_CXXFLAGS_DEPS      += $$QMAKE_CFLAGS_DEPS
QMAKE_CXXFLAGS_WARN_ON   += $$QMAKE_CFLAGS_WARN_ON
QMAKE_CXXFLAGS_WARN_OFF  += $$QMAKE_CFLAGS_WARN_OFF
QMAKE_CXXFLAGS_RELEASE   += $$QMAKE_CFLAGS_RELEASE

```

修改源码“mkspecs/common/g++-base.conf”文件中的“QMAKE_CXX”参数，在参数后面添加`-std=gnu++98`



```

root@ubuntu: /home/wxq/Desktop/qt-everywhere-opensource-src-4.8.7
File Edit View Terminal Help
#
# Qmake configuration for the GNU C++ compiler
#
# Before making changes to this file, please read the comment in
# gcc-base.conf, to make sure the change goes in the right place.
#
# To verify that your change has the desired effect on the final configuration
# you can use the manual test in tests/manual/mkspecs.
#
QMAKE_CC = gcc

QMAKE_LINK_C      = $$QMAKE_CC
QMAKE_LINK_C_SHLIB = $$QMAKE_CC

QMAKE_CFLAGS_RELEASE_WITH_DEBUGINFO += -O2 -g

QMAKE_CXX = g++ -std=gnu++98

QMAKE_LINK      = $$QMAKE_CXX
QMAKE_LINK_SHLIB = $$QMAKE_CXX

```

源码编译配置

```
Plain Text | 复制代码

1 industio@industio:~/Desktop/qt-everywhere-opensource-src-4.8.7# ./configure -static --debug-and-release -nomake demos -nomake examples -no-openssl -no-exceptions

root@ubuntu:/home/wxq/Desktop/qt-everywhere-opensource-src-4.8.7# ./configure -static --debug-and-release -nomake demos -nomake examples -no-openssl -no-exceptions
Which edition of Qt do you want to use?
Type 'c' if you want to use the Commercial Edition.
Type 'o' if you want to use the Open Source Edition.
o -----

This is the Open Source Edition.

You are licensed to use this software under the terms of
the Lesser GNU General Public License (LGPL) versions 2.1.
You are also licensed to use this software under the terms of
the GNU General Public License (GPL) versions 3.

Type '3' to view the GNU General Public License version 3.
Type 'L' to view the Lesser GNU General Public License version 2.1.
Type 'yes' to accept this license offer. -----
Type 'no' to decline this license offer.

Do you accept the terms of either license?
```

如果没有报错，配置结束后提示内容如下：

执行“make”编译源码，执行“make install”在编译完成后，将Qt4.8.7安装到默认路径“/usr/local/Trolltech/Qt-4.8.7”目录。

```
for /home/industio_work/Qt/qt-everywhere-opensource-src-4.8.7/src

Qt is now configured for building. Just run 'make'.
Once everything is built, you must run 'make install'.
Qt will be installed into /usr/local/Trolltech/Qt-4.8.7

To reconfigure, run 'make confclean' and 'configure'.
```

编译安装

```
Plain Text | 复制代码

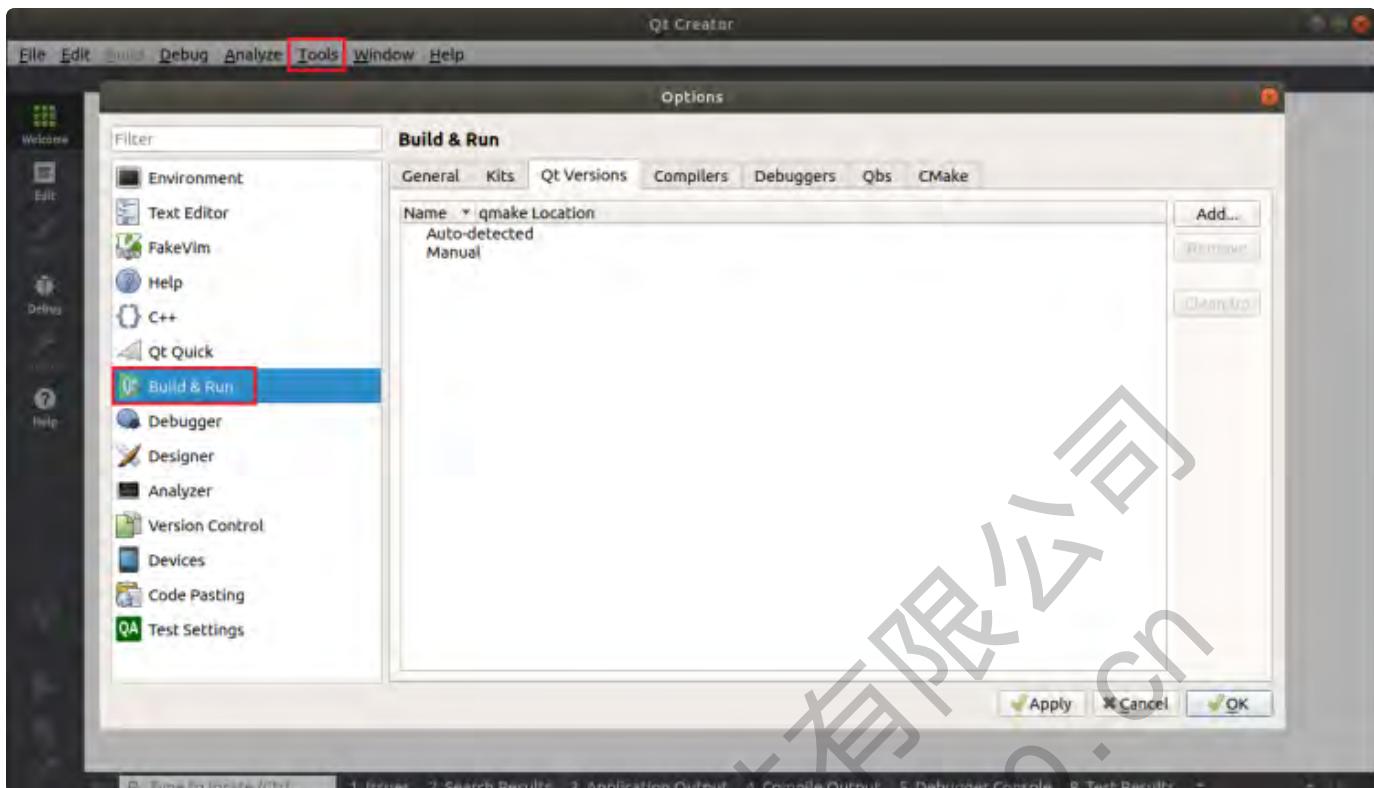
1 industio@industio:~/Desktop/qt-everywhere-opensource-src-4.8.7# make && make install
```

安装完成后，安装的文件位于“/usr/local/Trolltech/Qt-4.8.7”目录，进入sdk的bin目录，执行`./qmake -v`即可查看安装的qmake和Qt的版本。

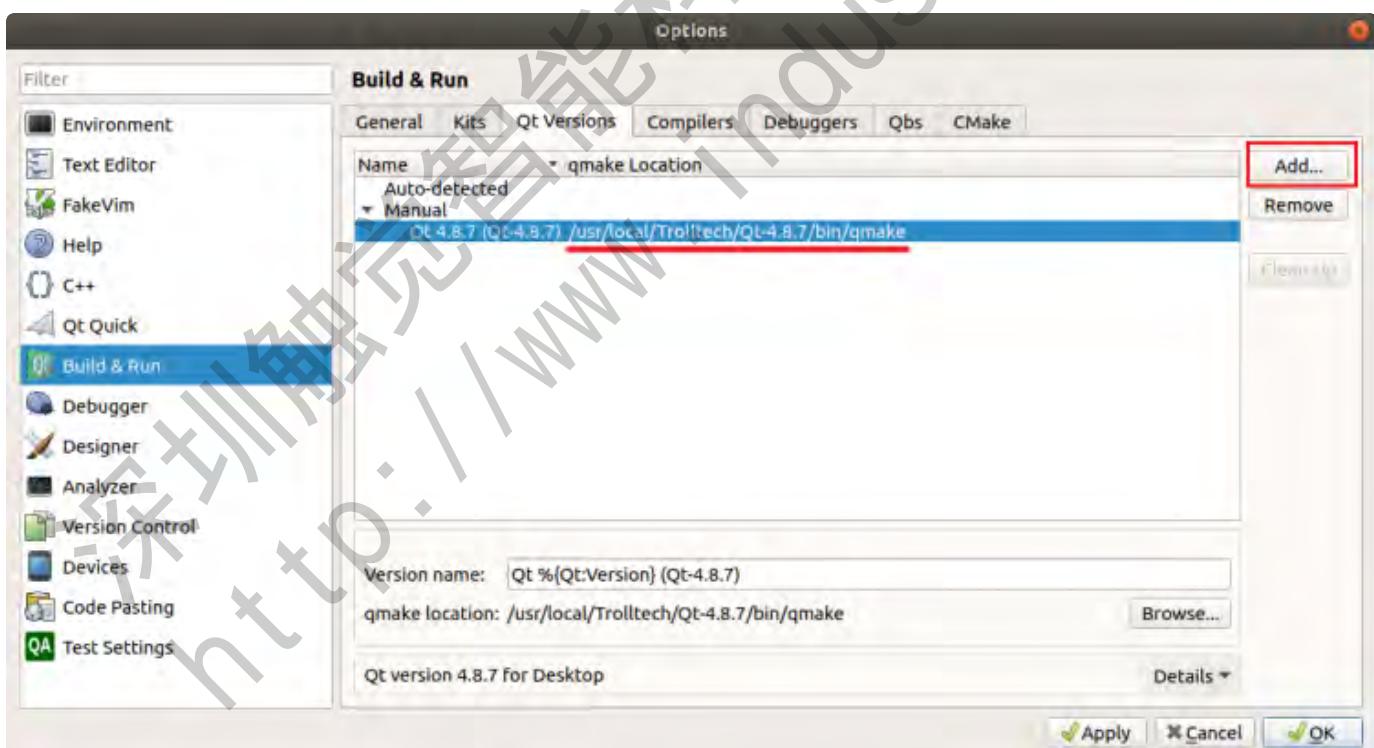
```
root@ubuntu:/usr/local/Trolltech/Qt-4.8.7/bin# ./qmake -v
QMake version 2.01a
Using Qt version 4.8.7 in /usr/local/Trolltech/Qt-4.8.7/lib
root@ubuntu:/usr/local/Trolltech/Qt-4.8.7/bin# -----
```

Qt Creator添加Qt4.8.7开发套件

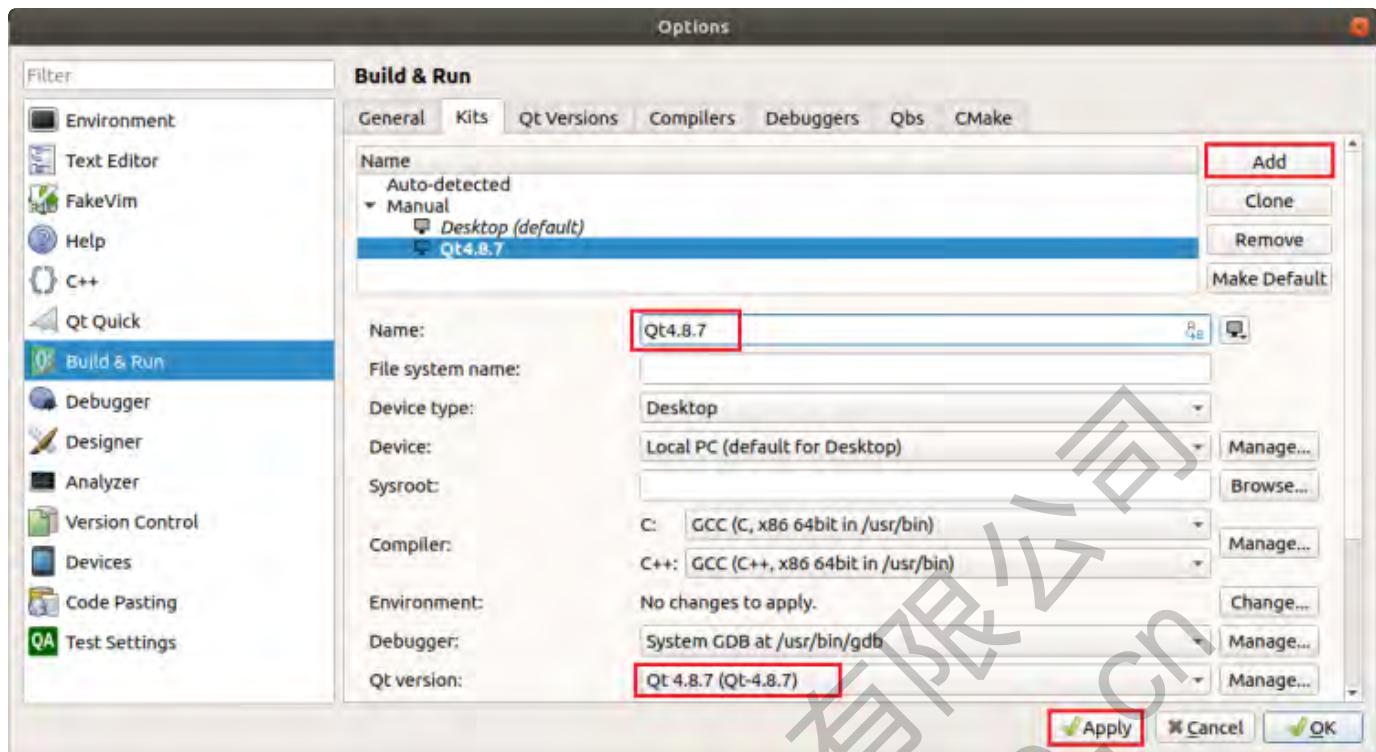
Qt Creator 4.4.1需要添加Qt4.8.7开发套件才可能在Ubuntu18.04 PC端编译、运行和调试Qt代码。打开Qt Creator 4.4.1软件，选择“Tool”→“Options”，在弹出的界面中选择“Build & Run”。



在”Qt Versions”栏点击右边的”Add..”按键，进入文件资源浏览界面，选择”/usr/local/Trolltech/Qt-4.8.7/bin/qmake“，点击右下方的”Apply“按键生效添加的Qt Version。



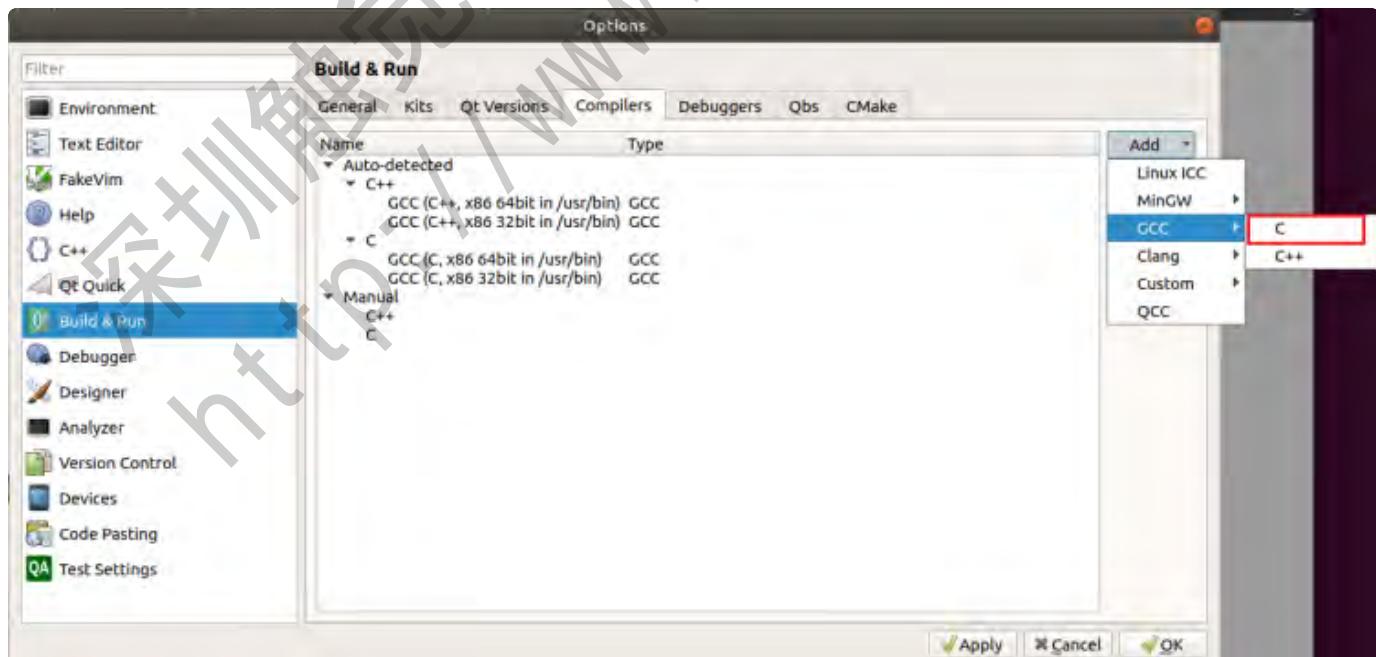
点击进入Kits栏，点击”add“按键新增一项kit，修改名字为”Qt4.8.7“，Qt Version选择步骤2中添加的Qt-4.8.7，点击”Apply“按键生效，点击”OK“按键关闭窗口。



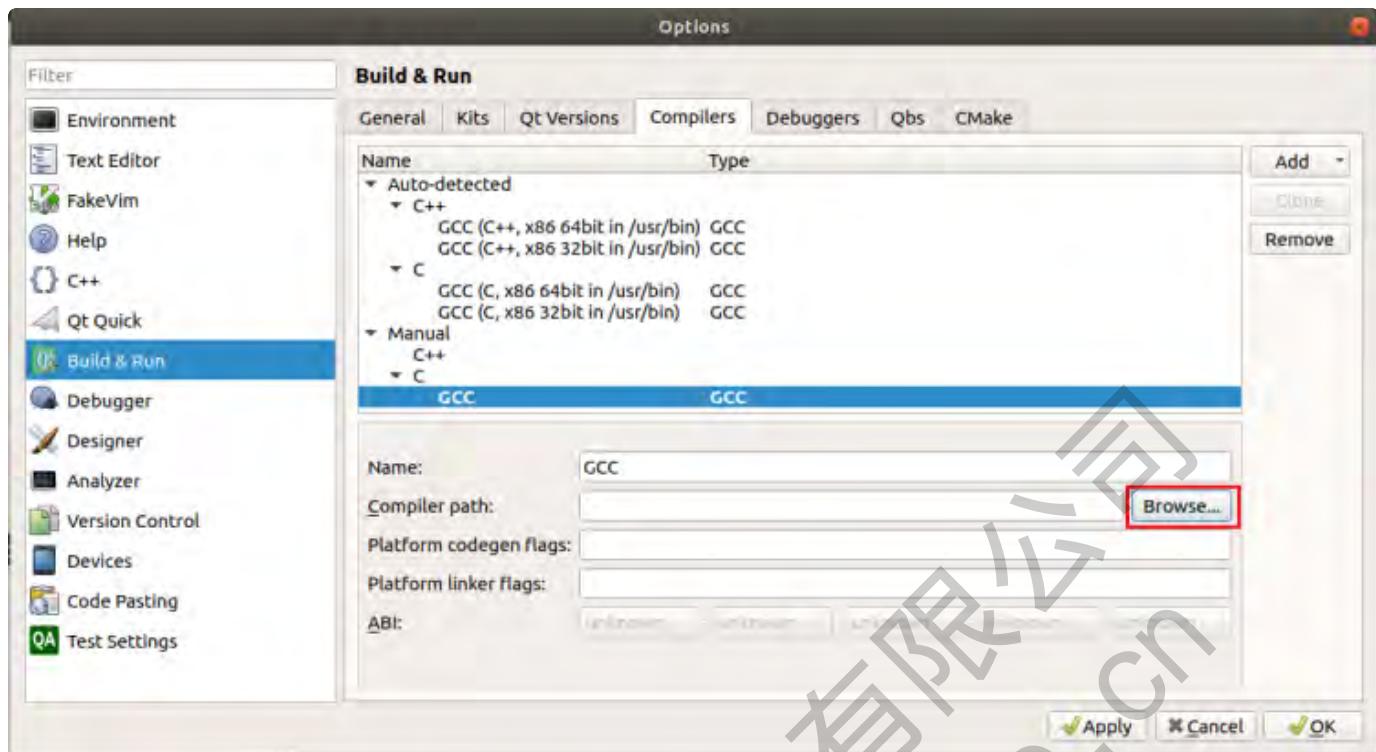
Qt Creator添加Qt4.8.7交叉编译

开发的Qt程序需要经过交叉编译工具链编译后，才可以在SSD20x开发板的Linux ARM平台上运行。QT Creator交叉编译工具链的设置界面位于的“Tools”→“Options”→“Build & Run”，需要在Compilers、Debuggers、QtVersions和Kits四配置中添加对应的文件。

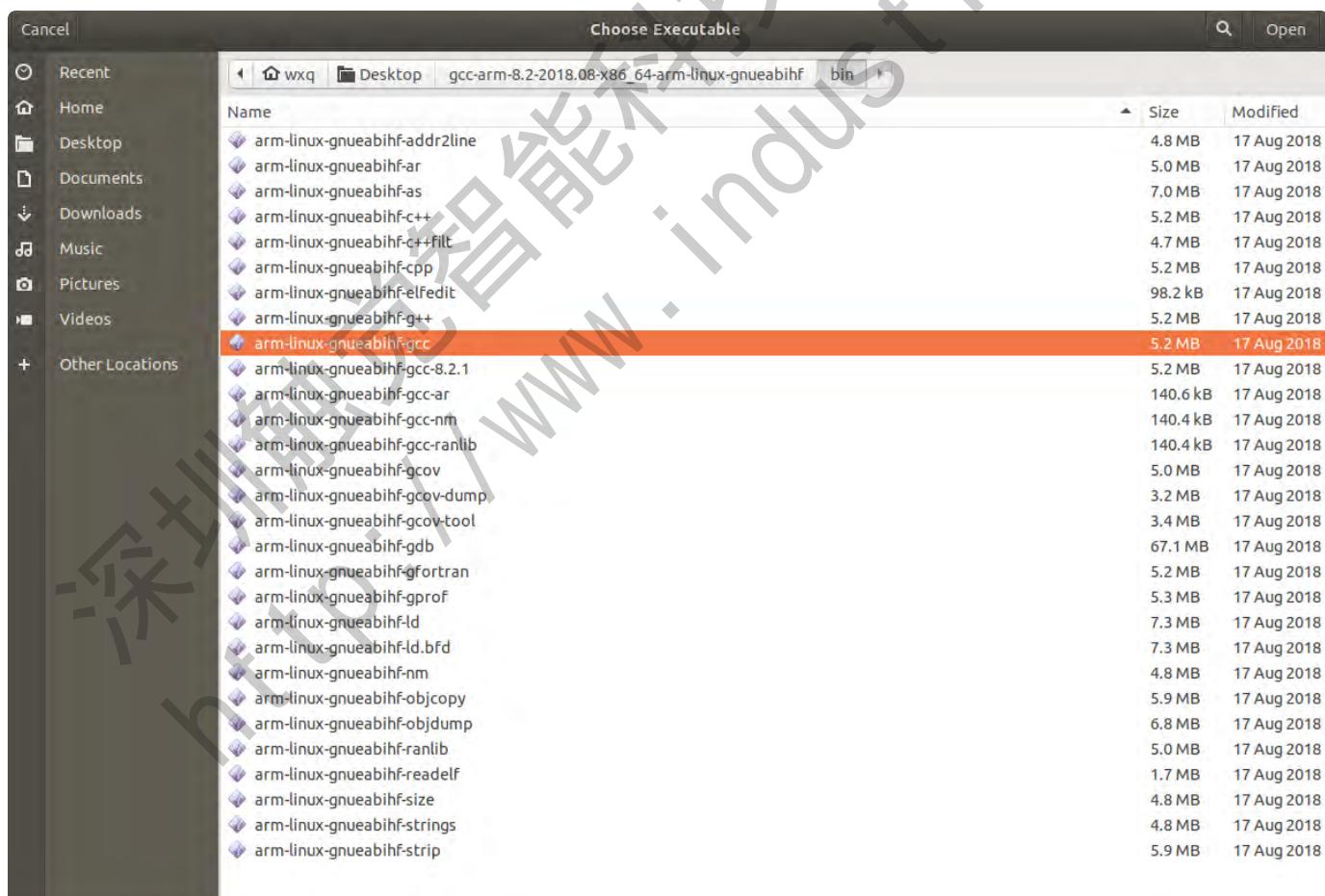
添加gcc在界面的右侧点击Add→GCC→C，添加一个GCC编译器。



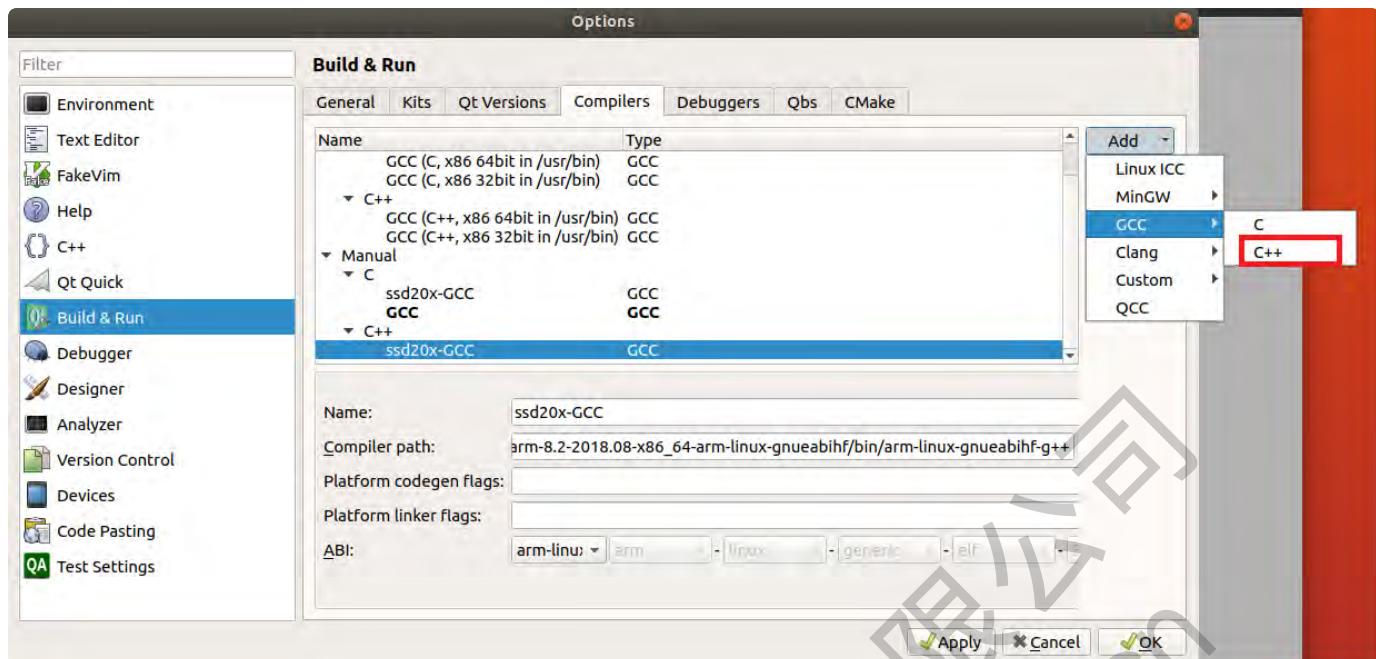
选中新添加的GCC编译器，然后点击下方的“Browse”按键开启文件资源浏览器；



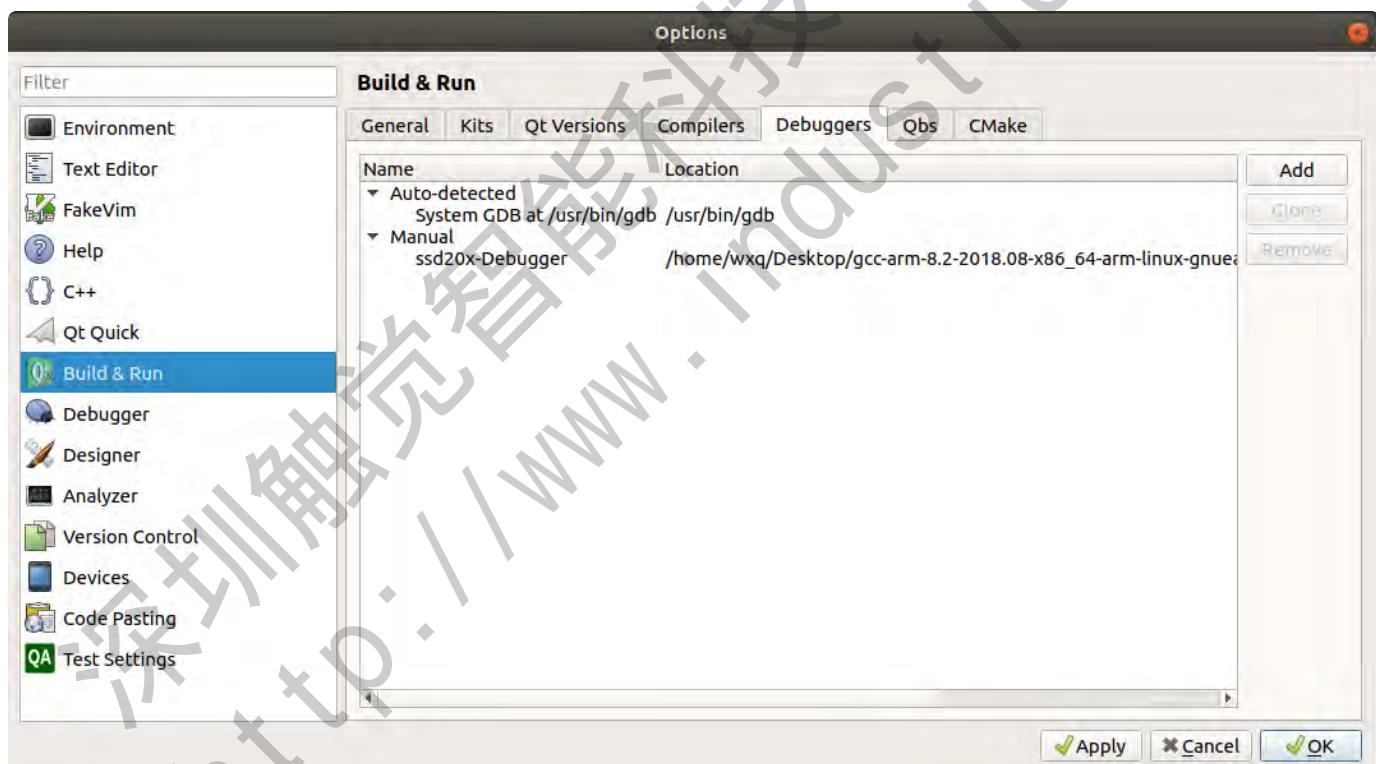
选中gcc编译工具“arm-linux-gnueabihf-gcc”，添加完成点击“Apply”生效设置



按照GCC的添加方法，添加g++



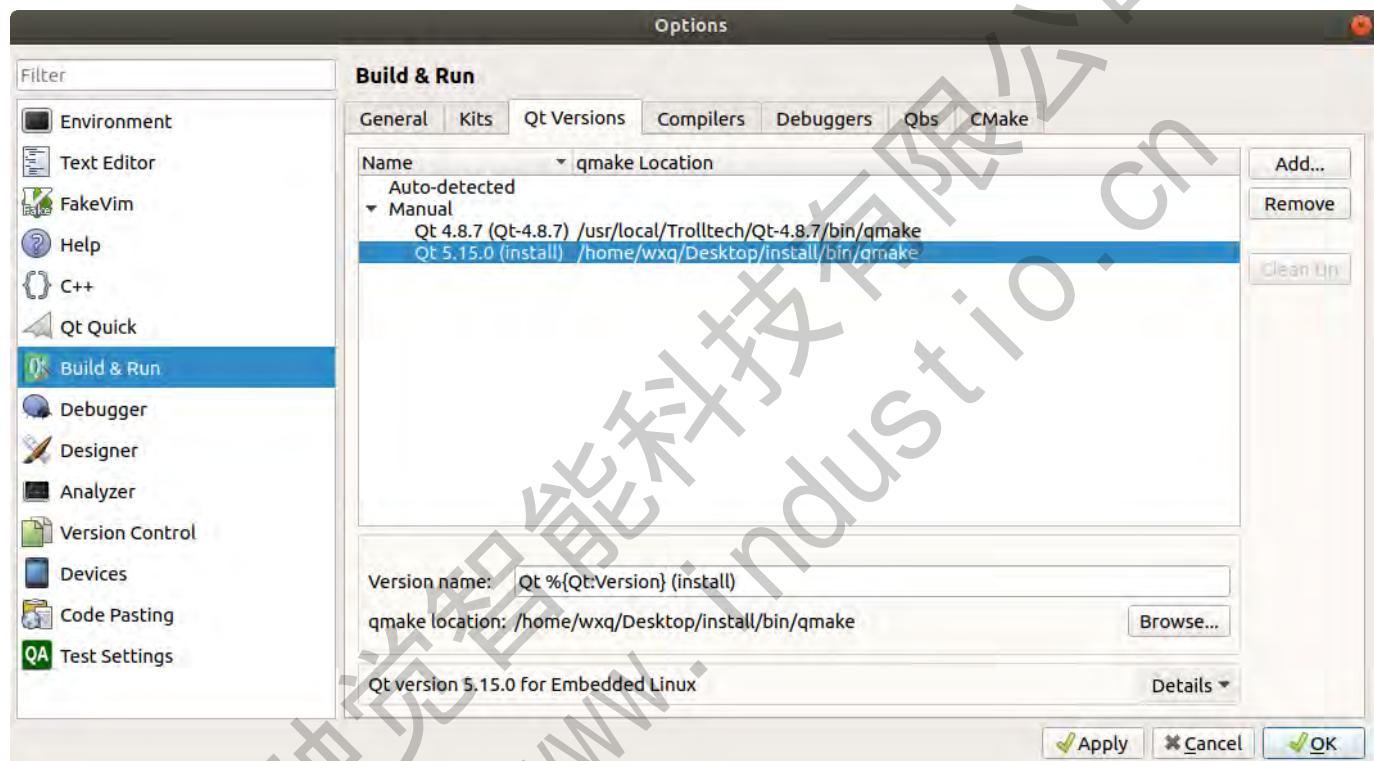
在Debuggers栏点击“Add”按键新增一个Debugger，选择“arm-linux-gnueabihf-gdb”并修改名字为“ssd20x-Debugger”，点击“Apply”按键生效设置。



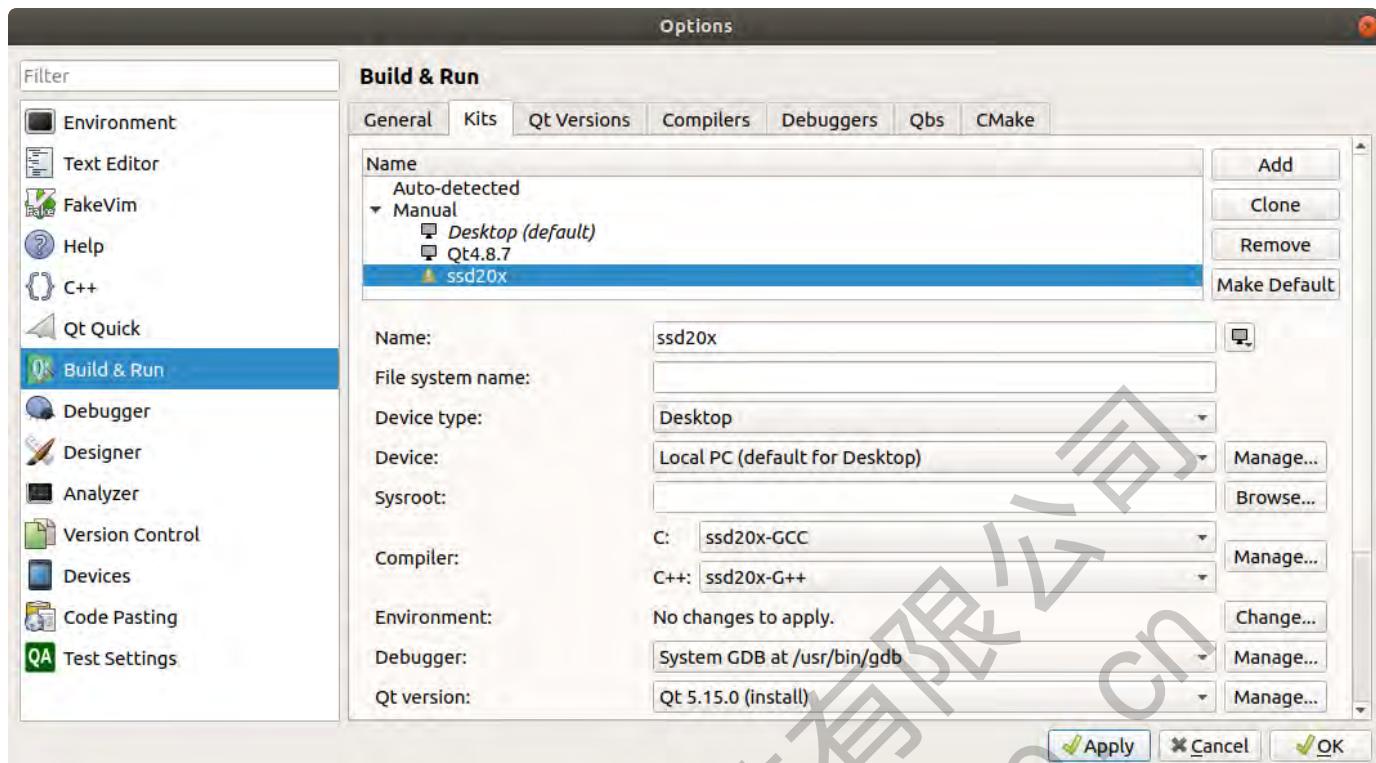
在配置Qt Versions时把网盘中的Qt5.15解压到Ubuntu中

文件名	大小	修改日期
readme.txt	571B	2021-04-26 11:51
qt_share_env.sh	290B	2021-04-26 11:51
qt_install_share_5.15.0.tar.bz2	104.4M	2021-04-26 11:51
qmake.conf	808B	2021-04-26 11:51
make_share.sh	576B	2021-04-26 11:51

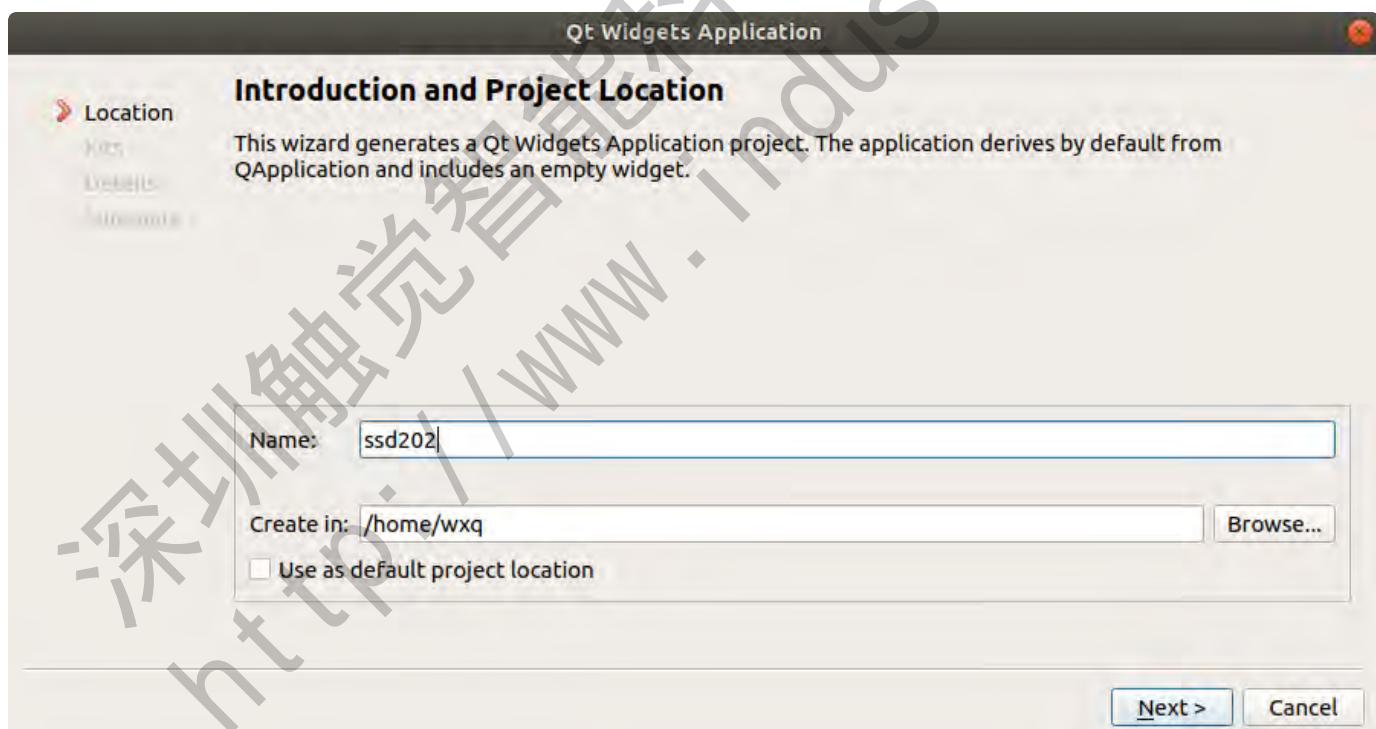
在Qt Versions栏点击“add”打开文件资源浏览器，选择“/install/bin/qmake”，点击“Apply”按键生效设置。



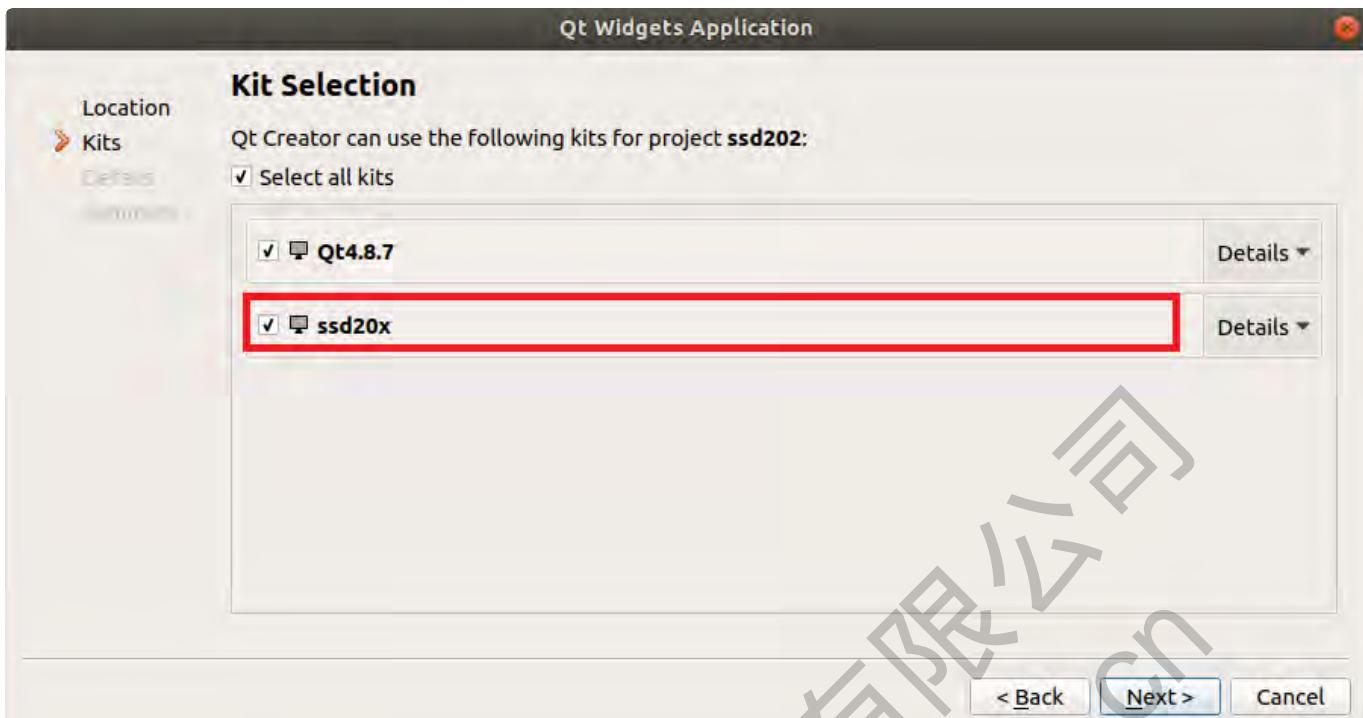
在Kits栏，点击“Add”按键添加一个kit，并修改名字为“ssd20x”，选择Compiler C: ssd20x-GCC；Compiler C++: ssd20x-G++；Qt Version：“Qt5.15.0 (install)”，最后点击“Apply”生效配置。



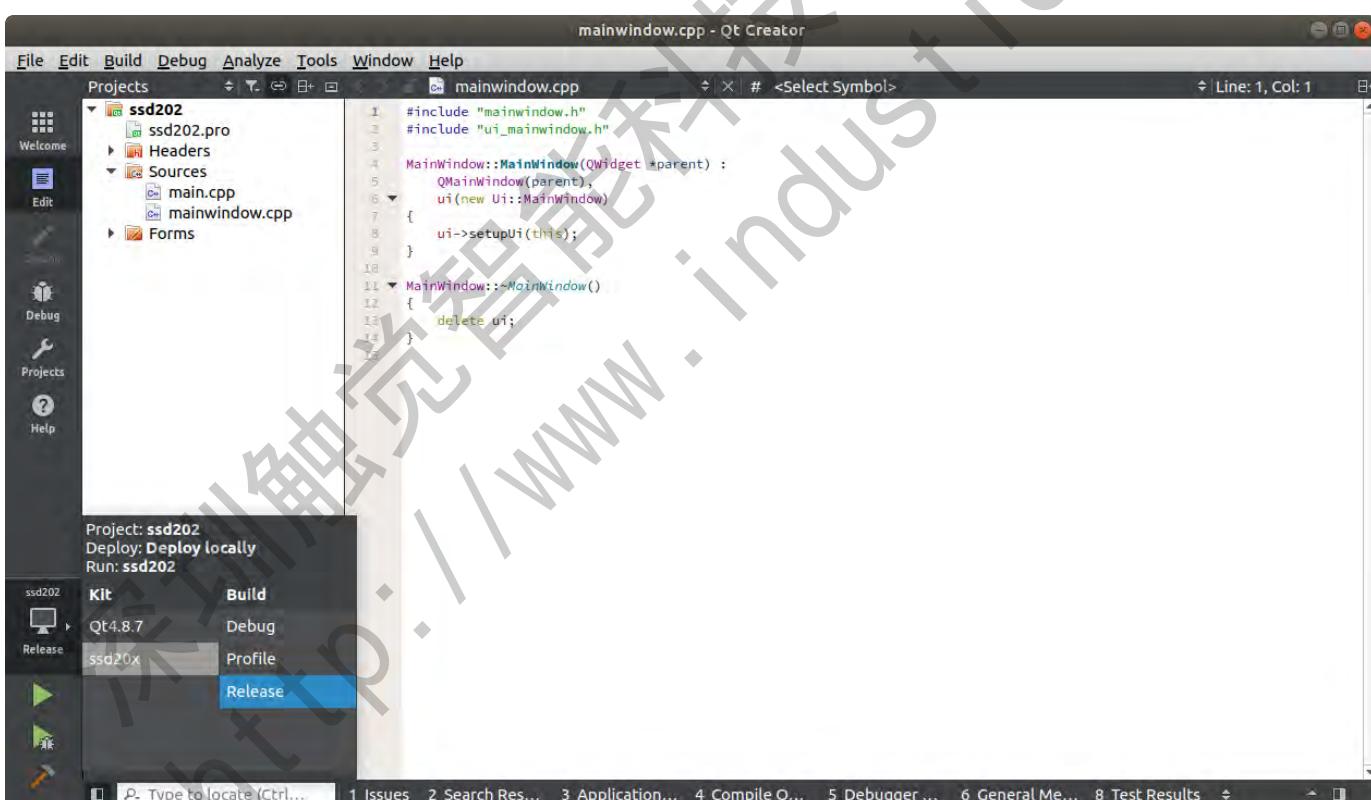
验证Qt Creator交叉编译配置，点击Qt Creator软件的“File->New File or Project”，新建一个“Qt widget Application”工程。



在“Kit Selection”界面，选择添加的“ssd202x”



在Qt Creator左侧选择“ssd20x->Release”

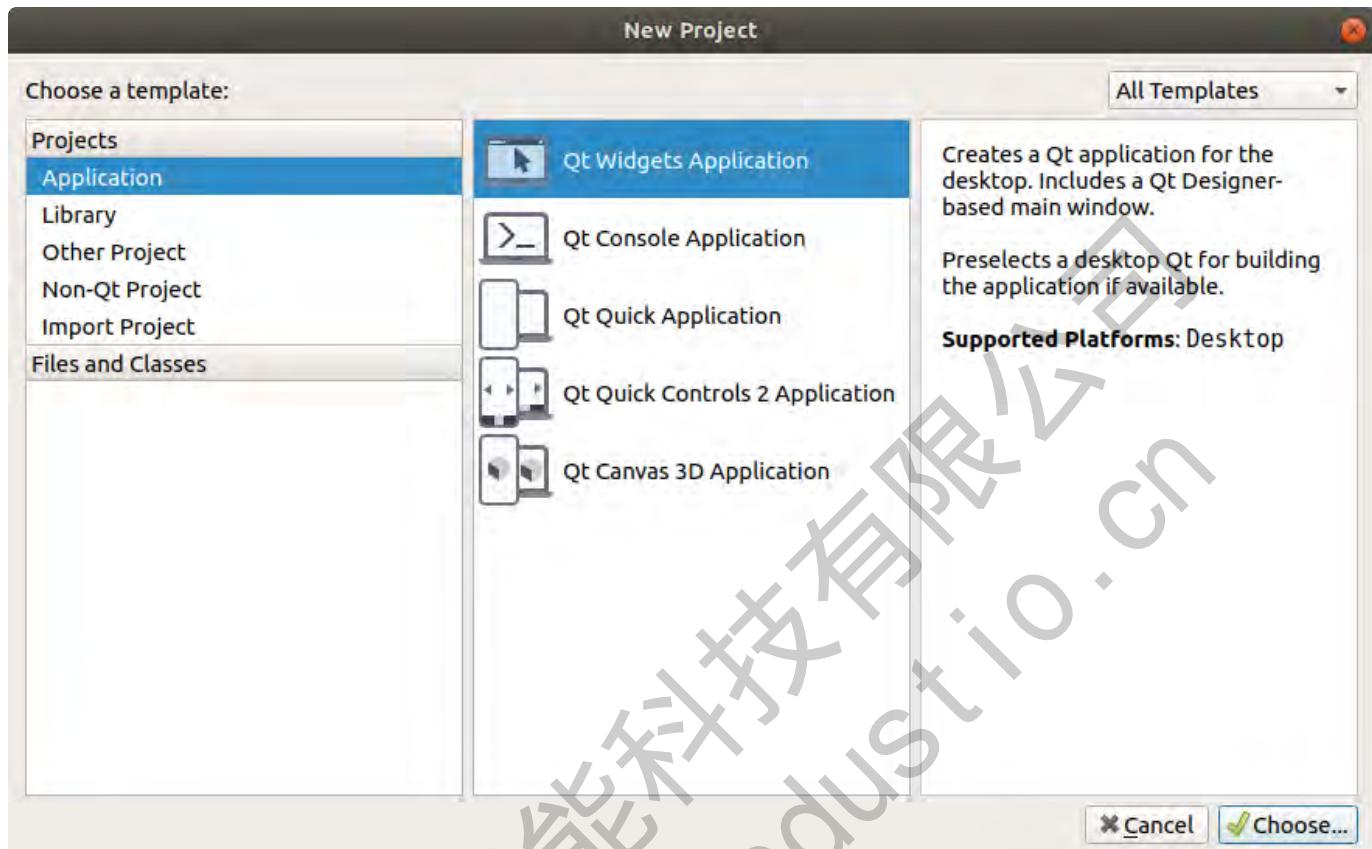


点击“Build”按键编译；正常编译完，在新建工程的“/home/wxq”目录下，产生一个“build-ssd202-ssd20x-Release”文件夹，文件夹中包含编译的中间文件和开发板上运行的可执行文件“ssd202”。

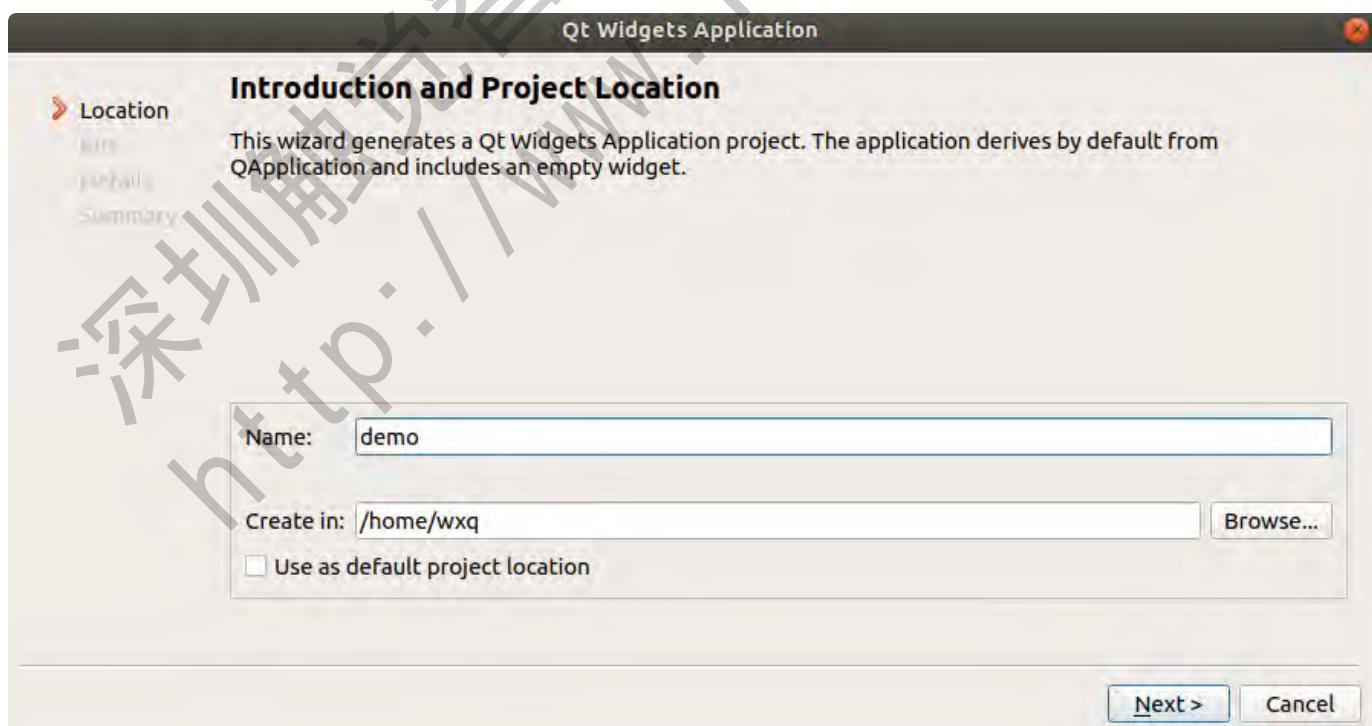
```
wxq@ubuntu:~/build-ssd202-ssd20x-Release$ ls
main.o          Makefile          moc_mainwindow.o  ssd202
mainwindow.o   moc_mainwindow.cpp  moc_prelude.h   ui_mainwindow.h
wxq@ubuntu:~/build-ssd202-ssd20x-Release$
```

编写Qt 程序在开发板中运行

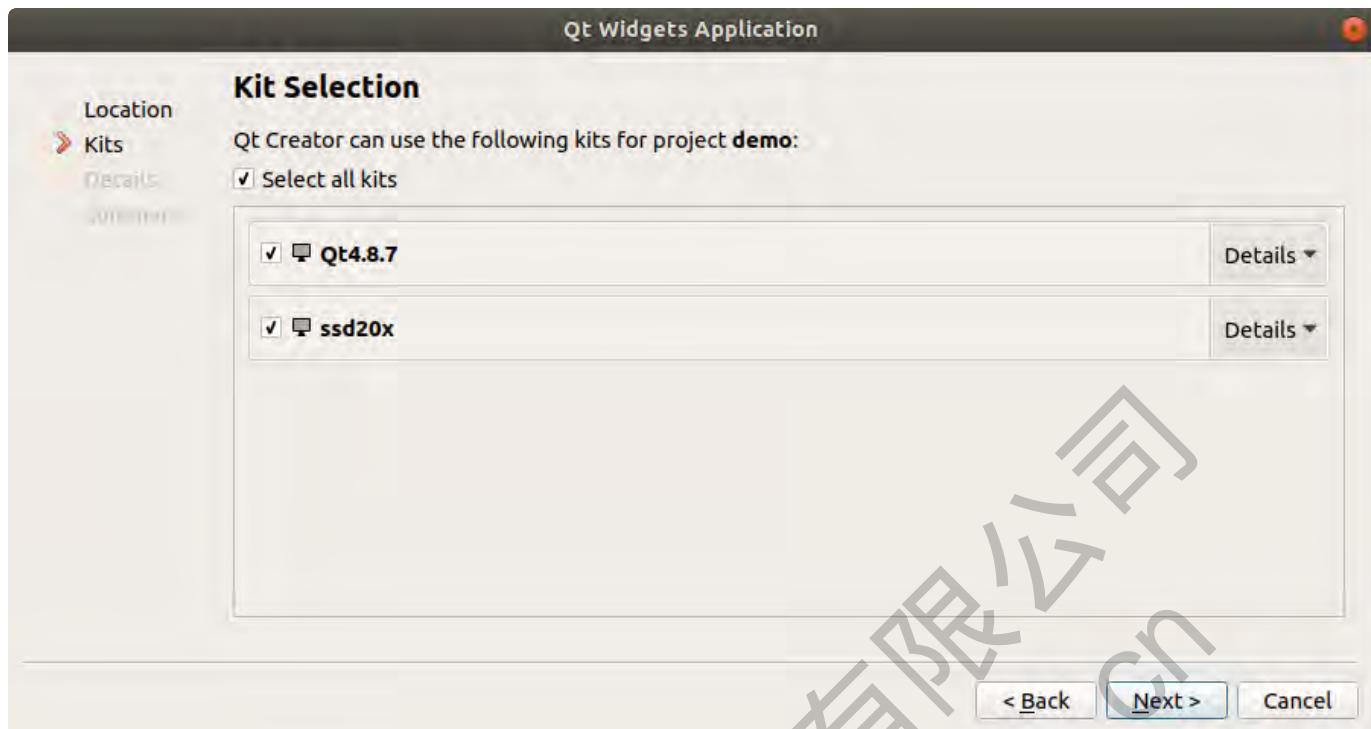
这里以编写hello world为例，点击新建工程，选择“Qt Widgets Application”，之后点击“choose”



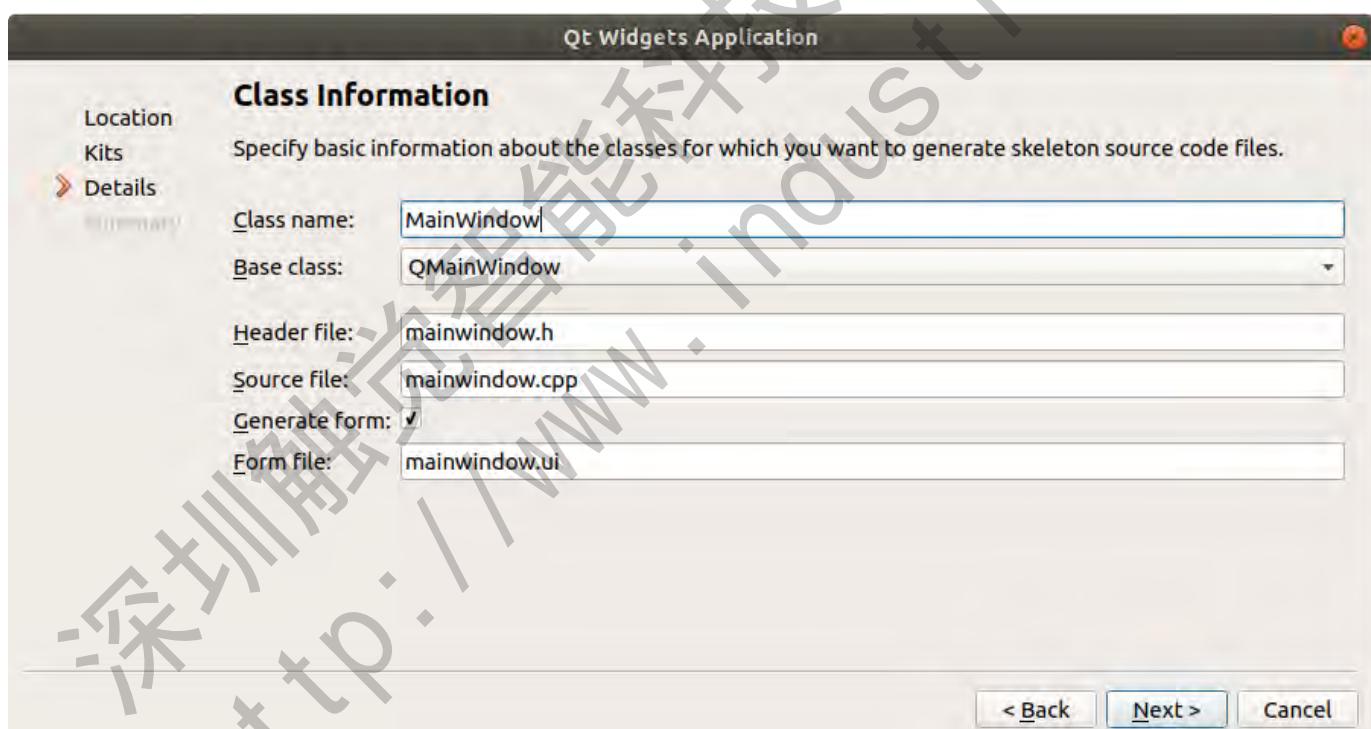
名字可以随便一个



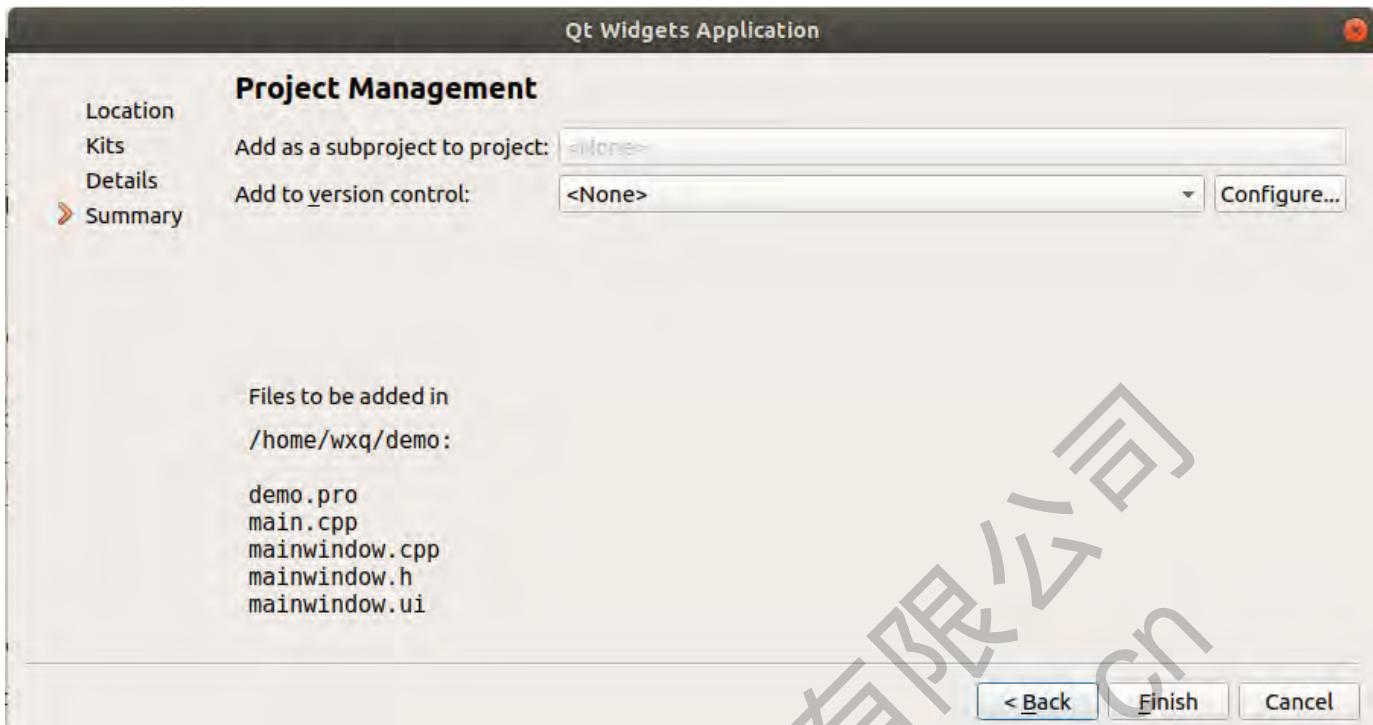
添加ssd20x



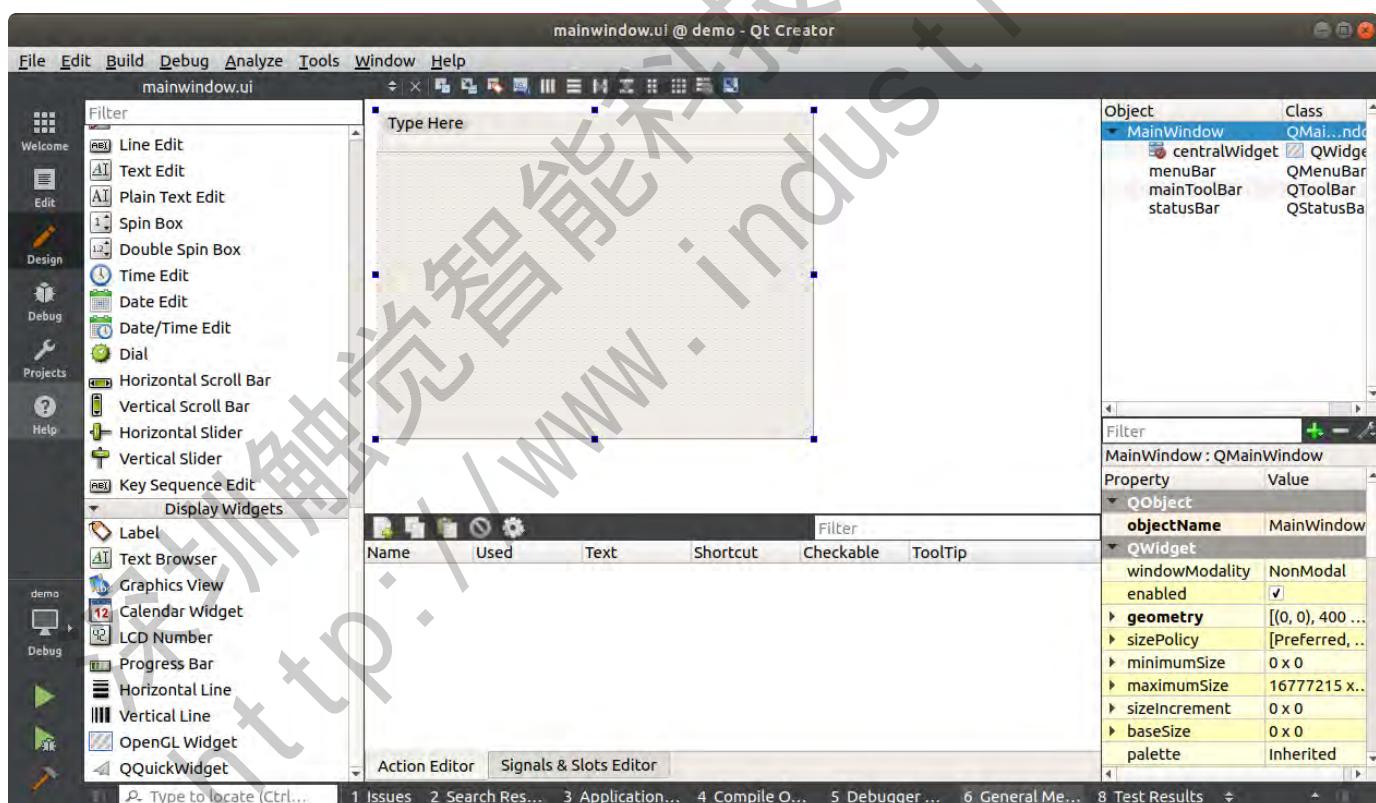
默认即可



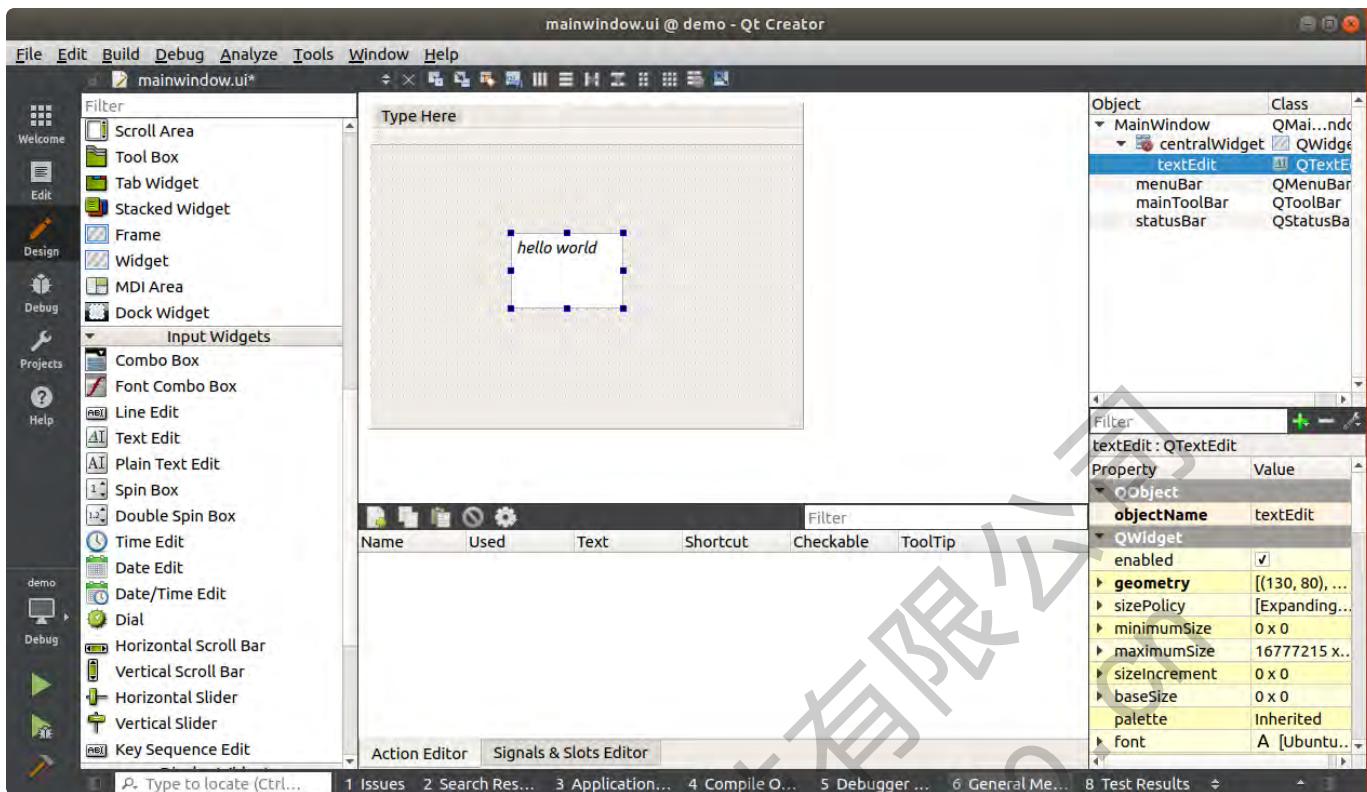
点击“Finish”



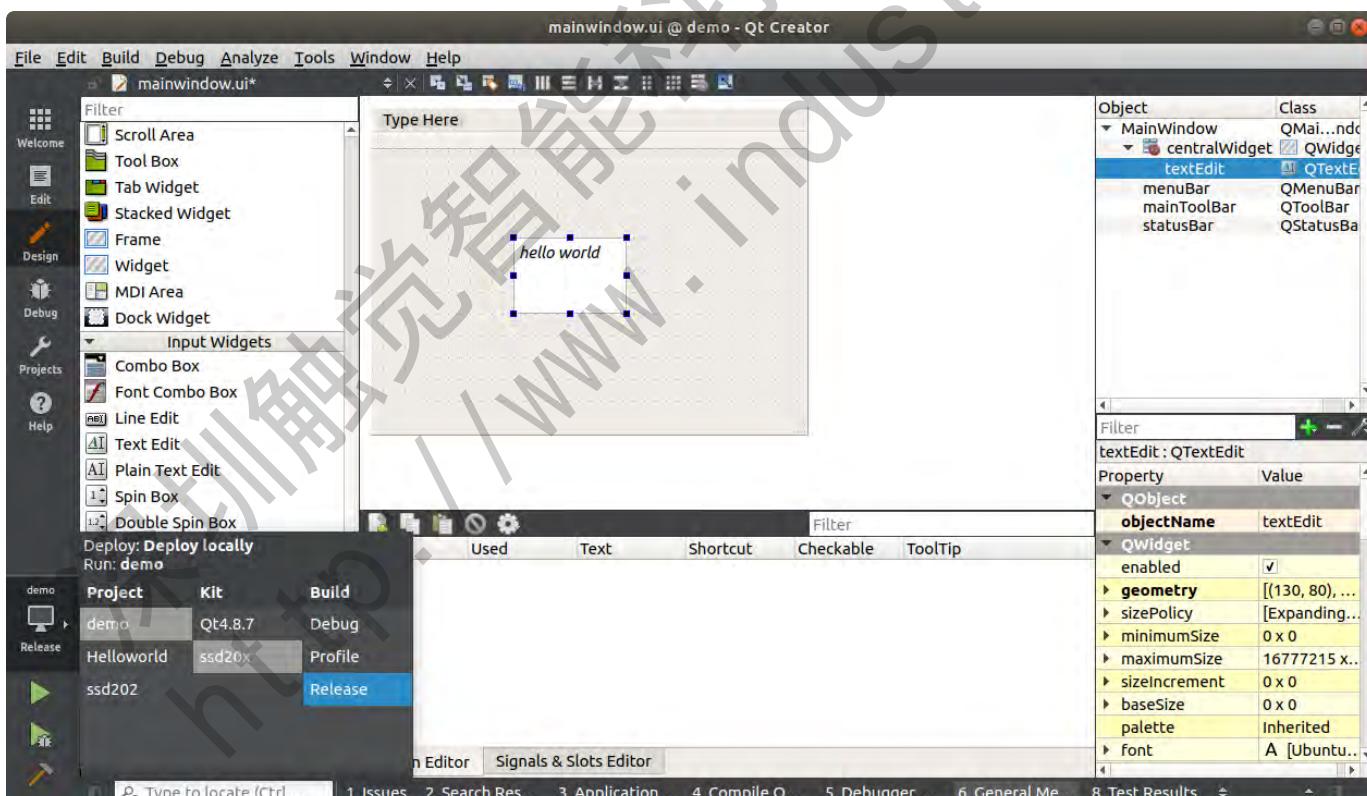
点击“Forms->mainwindow.ui”



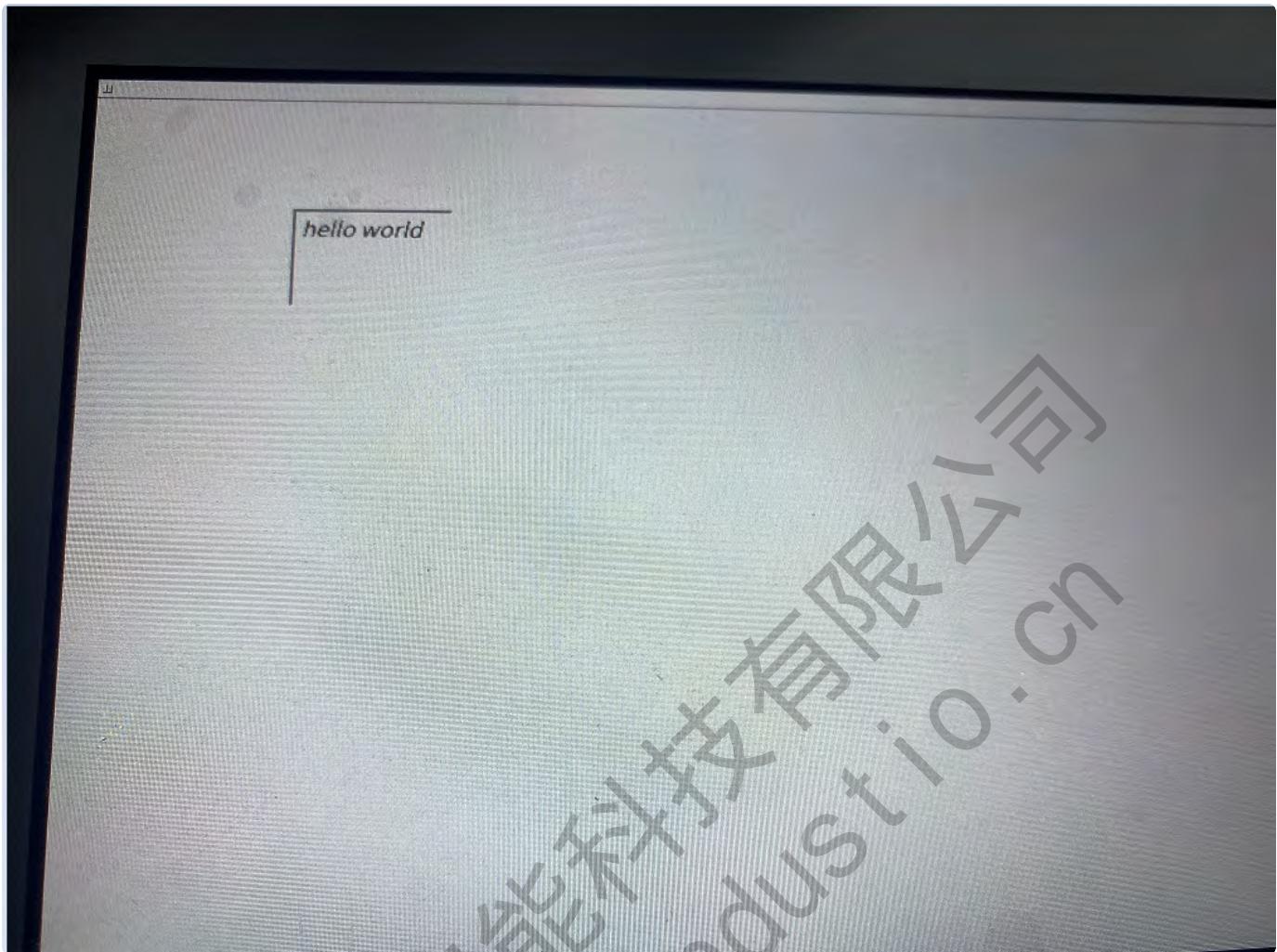
选择“Text Edit”拉到“Type Here”中，写入“hello world”



debug选择“ssd20x->Release”



点击“Build”按键编译；生产可执行文件，把文件拷贝到开发中运行



深圳触觉智能科技有限公司
<http://www.industio.cn>