Intel® Edison Starter kit Plus Sample

Description

This C++ project provides example of using multiple sensors from the Grove* starter Kit Plus. Through the use of button sensor, you can switch from one sensor to another and see how the sensor behaves with respect to a particular input. The output of each senor is displayed on the LCD display included in the kit.

The source code for this sample is located here:
https://github.com/intel-iot-devkit/iot-devkit-samples/tree/master/kits/starter

Prerequisites

Complete the Getting Started section on the Intel Developer Zone:
https://software.intel.com/en-us/iot/library/edison-getting-started

Hardware Setup

You will need:

- Intel® Edison kit with Arduino* breakout board
- Grove* – Base Shield
- Grove* – Button Sensor
- Grove* – Temperature sensor
- Grove* – Rotary Angle Sensor
- Grove* – LCD RGB Backlight (811004001)
- Grove* – Light Sensor
- Grove*- Touch Sensor
- Grove* - 3-Axis Digital Accelerometer
- Grove* – Universal 4 Pin Buckled 20cm Cable (7 PCs pack) (ACC90453O)
- 2 USB to micro USB cable (HOK05173P)

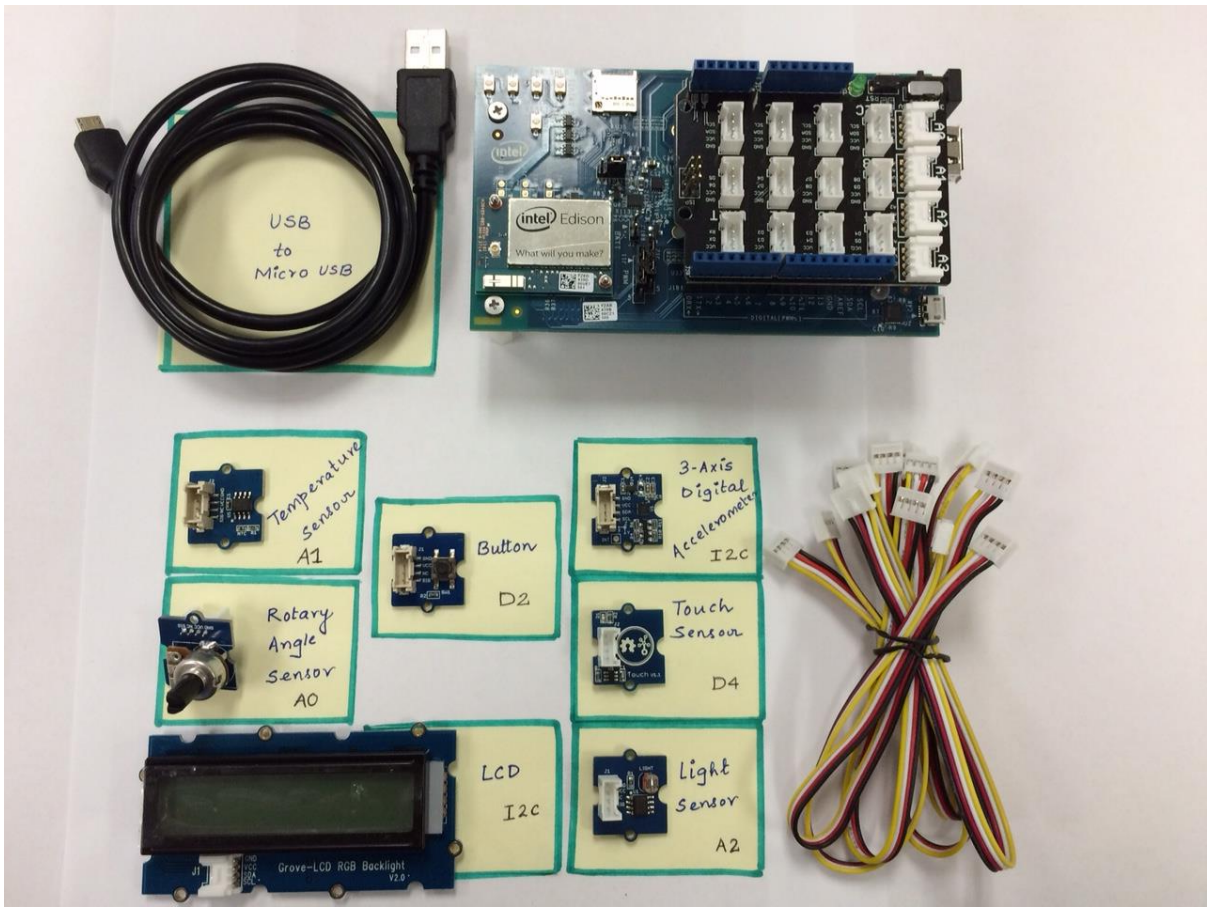


Figure 1: Sensors and materials needed for Starter sample project

The Grove* sensors are all included in the Grove* starter kit Plus. Connect each sensor to the base shield using the 4 pin cables. Be sure to connect each sensor to the appropriate socket on the base shield:

- **Grove – Temperature:** A1
- **Grove – Button:** D2
- **Grove – Light:** A2
- **Grove – Touch:** D4
- **Grove - Rotatory Angle:** A0
- **Grove - 3-Axis Digital Accelerometer:** I2C
- **Grove - LCD RGB Backlight:** I2C

Connect the USB side of the USB cable to the computer and the micro-USB side to the middle port on the Intel Edison board.

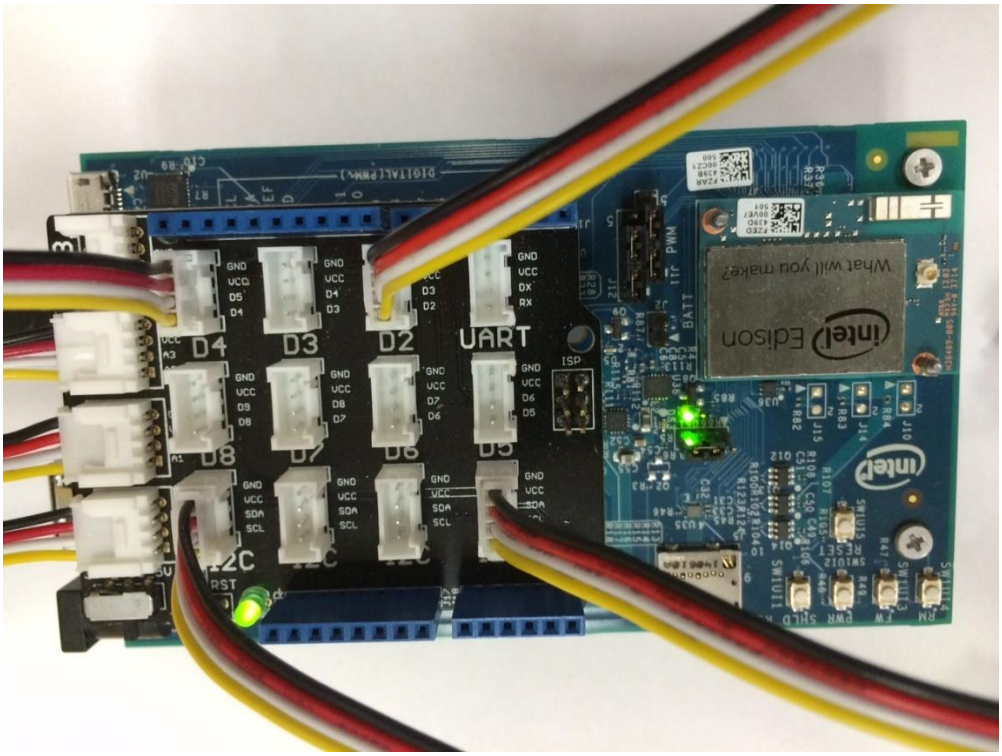


Figure 2: shows a close up of the connections to specific pins.

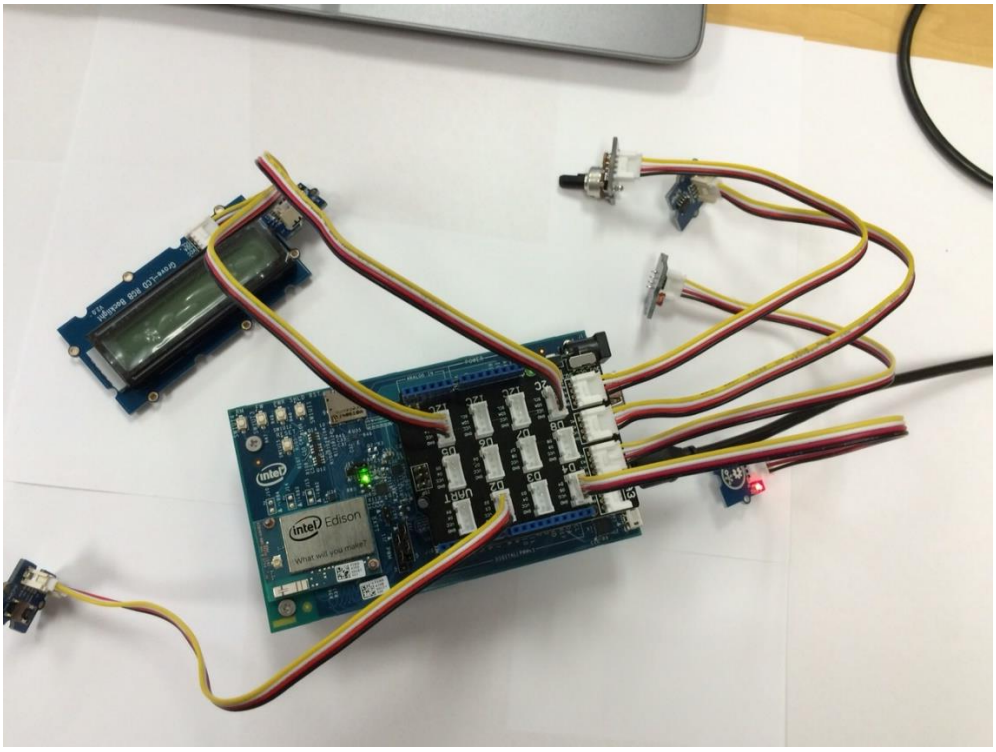


Figure 3: shows how the multiple sensors are connected to the Intel Edison.

Download the Starter Sample Project from GitHub

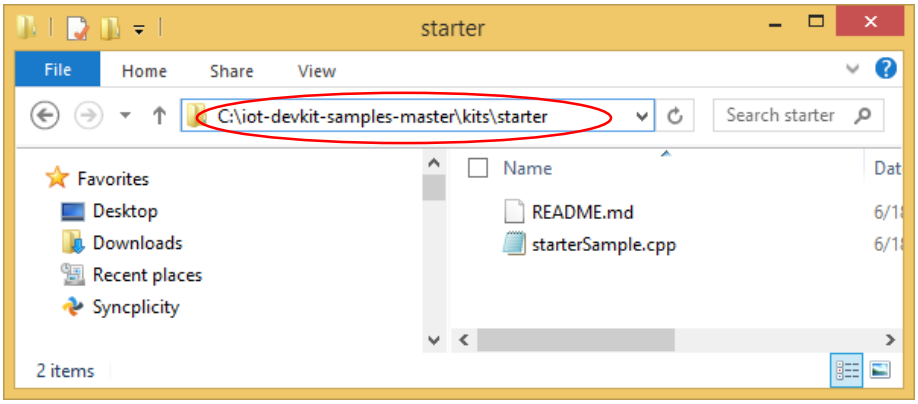
Go to the main iot-devkit-samples repository on GitHub:

https://github.com/intel-iot-devkit/iot-devkit-samples/

Download the zip file from the repository by clicking the **Download Zip** button

or use the direct link in your browser: https://github.com/intel-iot-devkit/iot-devkit-samples/archive/master.zip.

Extract the zip file and find the starter folder, making note of the path.
<Unzip directory> \iot-devkit-samples-master\kits\starter



Connecting the Intel Edison board. (You can use either of them) for this project. Any one connection is sufficient.

- **Wi-Fi**

https://software.intel.com/en-us/connecting-your-intel-edison-board-using-wifi

Or

- **Serial Connection**

https://software.intel.com/en-us/articles/getting-started-with-intel-edison-serial-connections

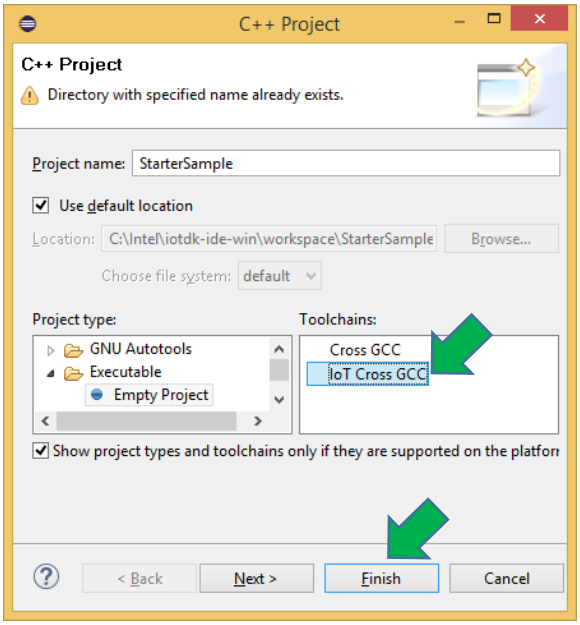
Installing the Eclipse IDE

https://software.intel.com/en-us/installing-the-eclipse-ide-intel-edison-board

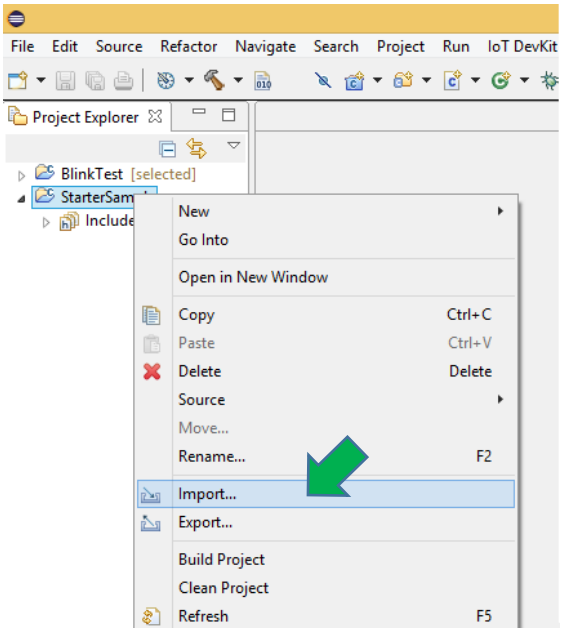
Set up a New Project in Eclipse with the Starter Source Code

Create a new C++ Project in Eclipse by choosing **File > New > C++ Project**.

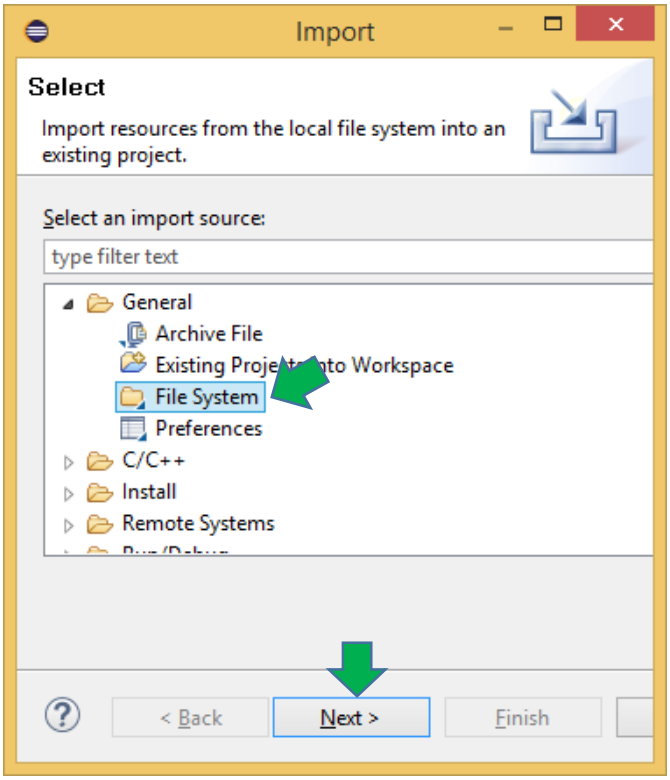
Type starter-sample in the **project name** field. In the Project type list, select **Executable > Empty Project**. In the Toolchains list, select **IoT Cross GCC**. Click **Finish**.



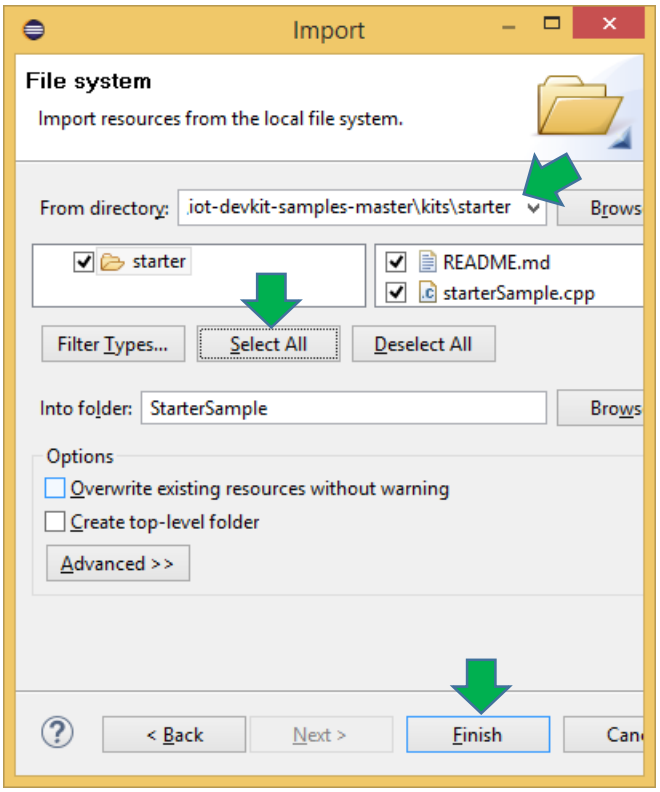
Right-click the **StarterSample** project in the Project Explorer and select **Import.**



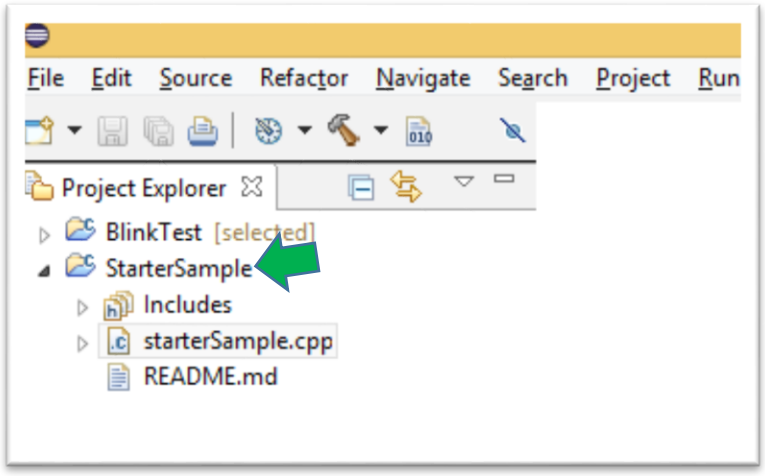
In the Import dialog box, select **General > File System** and click **Next**.



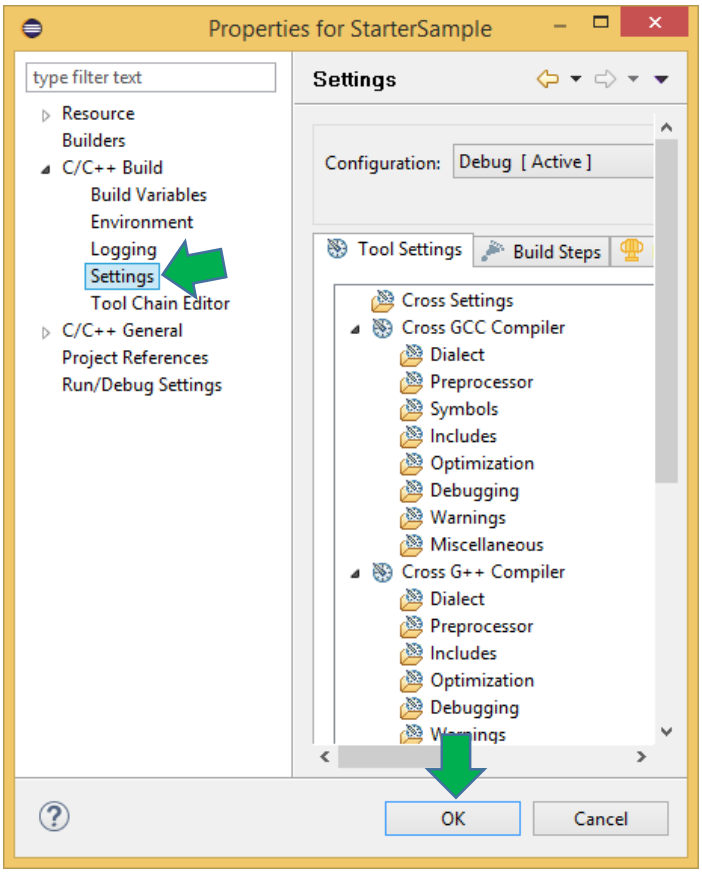
Browse to the **StarterSample** folder you extracted from the zip file. Click **Select All**, then click **Finish**.



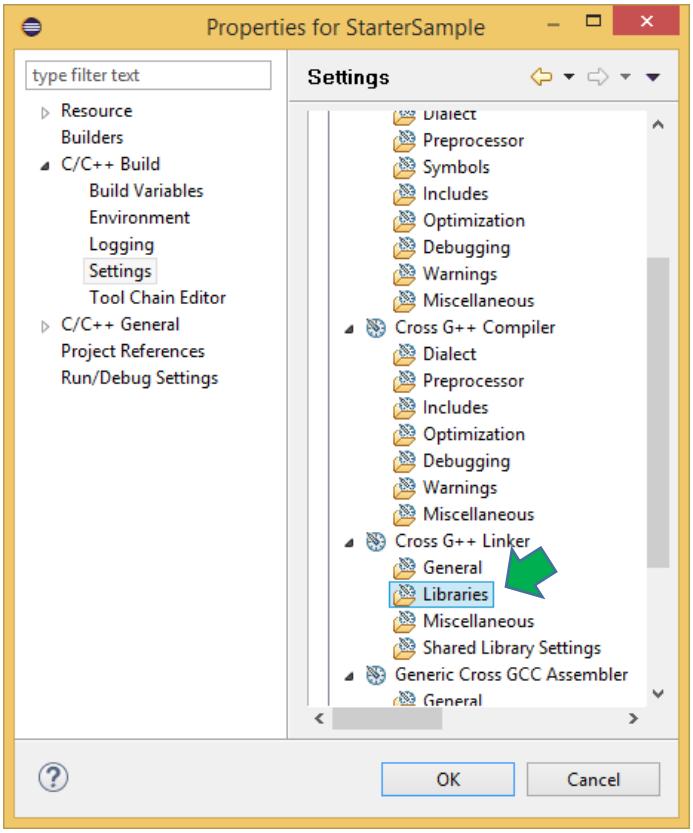
When you have completed these steps, your project should look like this:



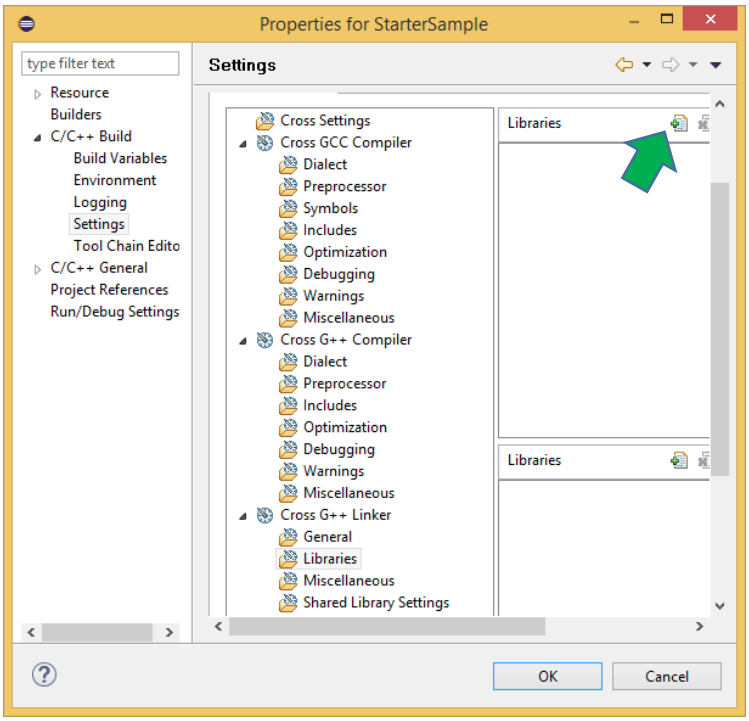
Right-click the **StarterSample** project in the Project Explorer and select **Properties**. Select **C/C++ Build > Settings and** click **Ok.**



From the list on the Tool Settings tab, select **Cross G++ Linker > Libraries.**

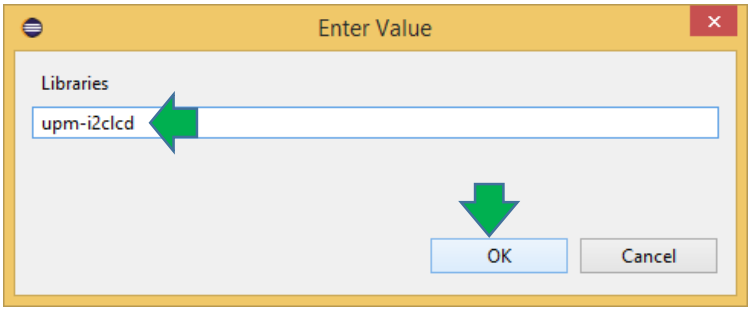


Click on **add** button.

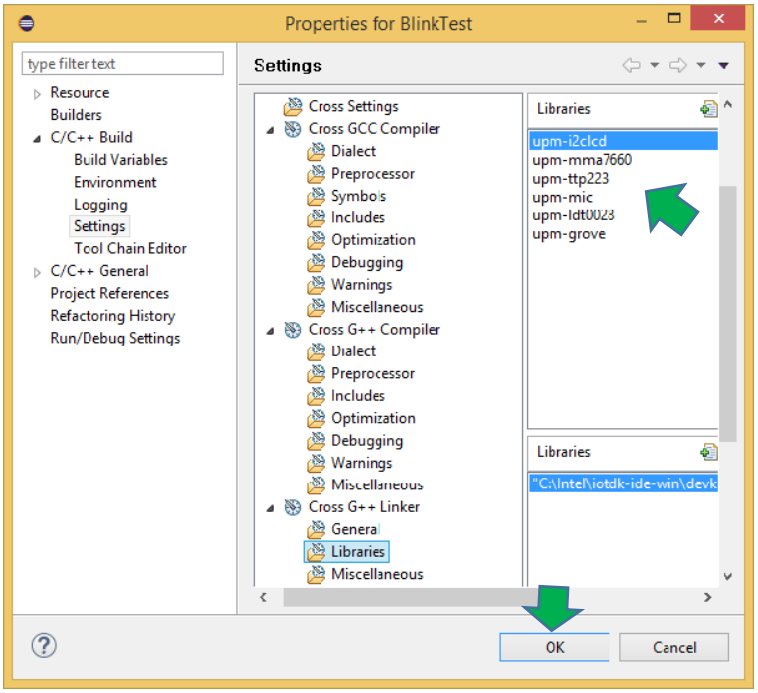


Enter all the sensor libraries one by one as shown below.

upm-grove, upm-i2clcd, upm-mma7660, upm-ttp223

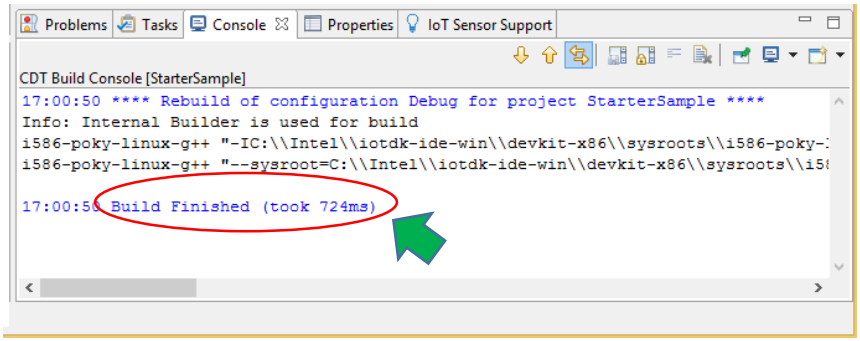


Check for all necessary libraries. Click on **Apply** -> **OK**.

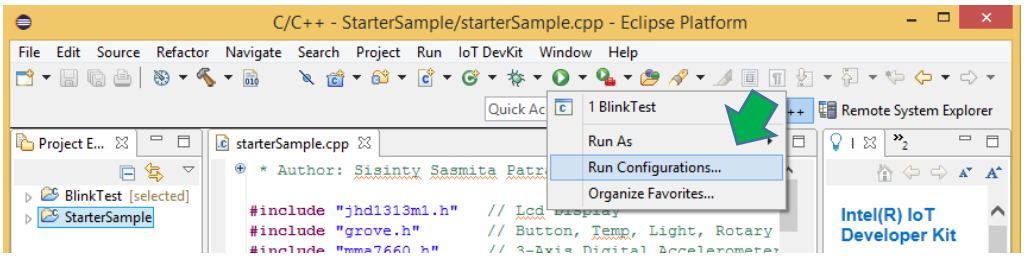


Right-click the **StarterSample** project in the Project Explorer and select **Build Project**.

Your project builds and confirmation message should be displayed, as shown below.



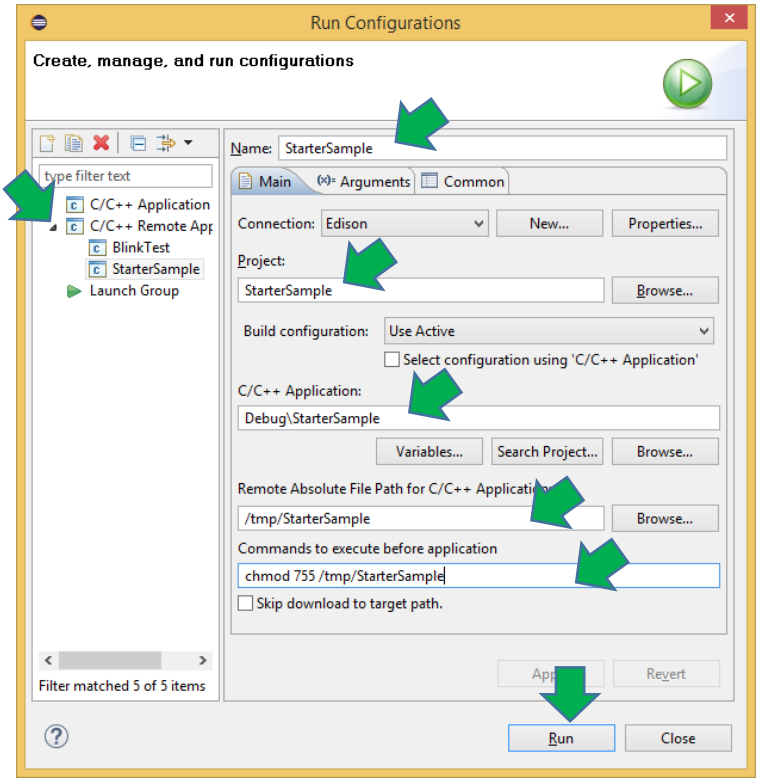
From the **Run** drop-down list  , select **Run Configurations**....



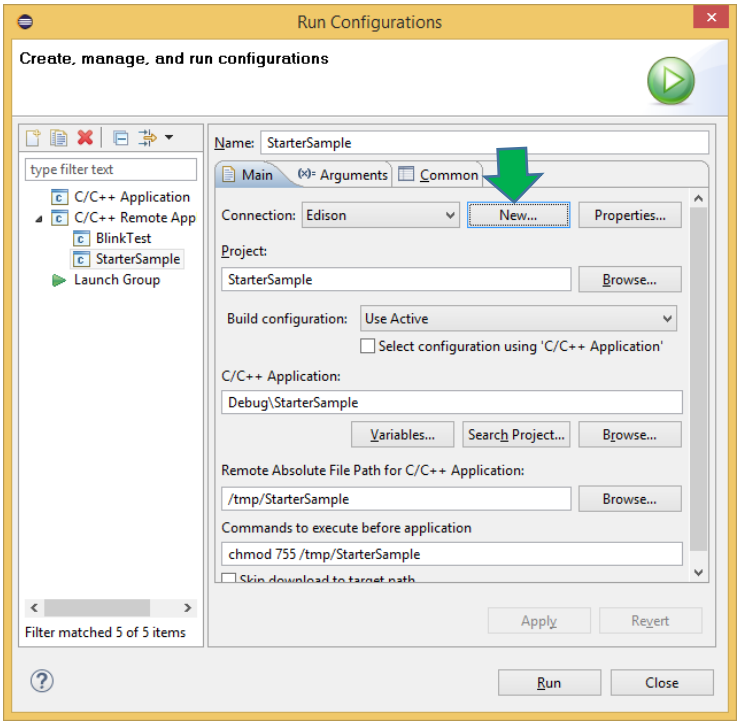
Select **C/C++ Remote Application** and click the **new launch configuration** icon.

In the Run Configurations dialog box, enter the following information:

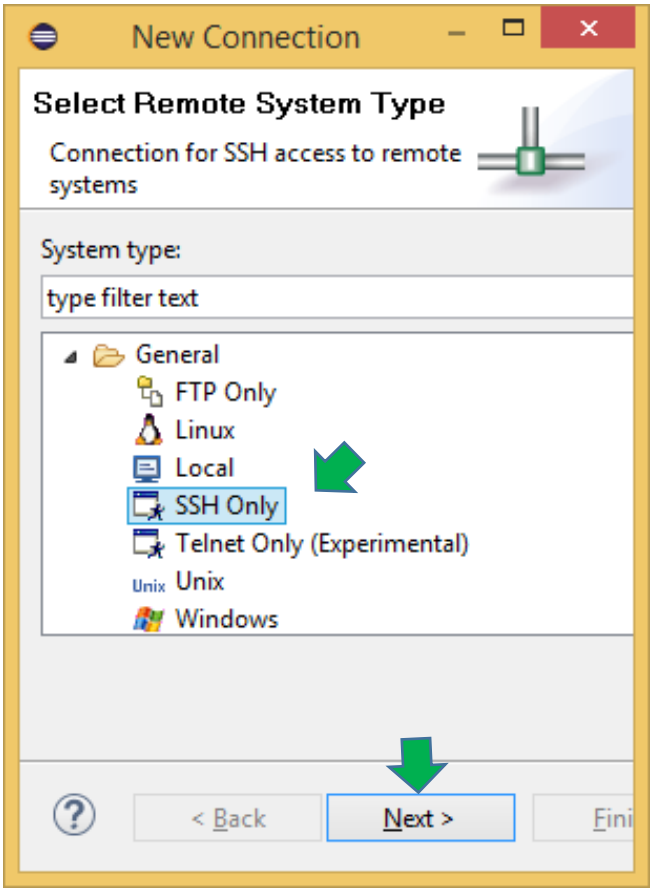
- **Name**: StarterSample
- **Project:** StarterSample
- **Remote Absolute File Path for C/C++ Applications**: /tmp/StarterSample
- **Commands to execute before application**: chmod 755 /tmp/StarterSample



Click **Apply**. Click **New** as shown in the figure below**.**



Select **SSH Only**, then click **Next**.



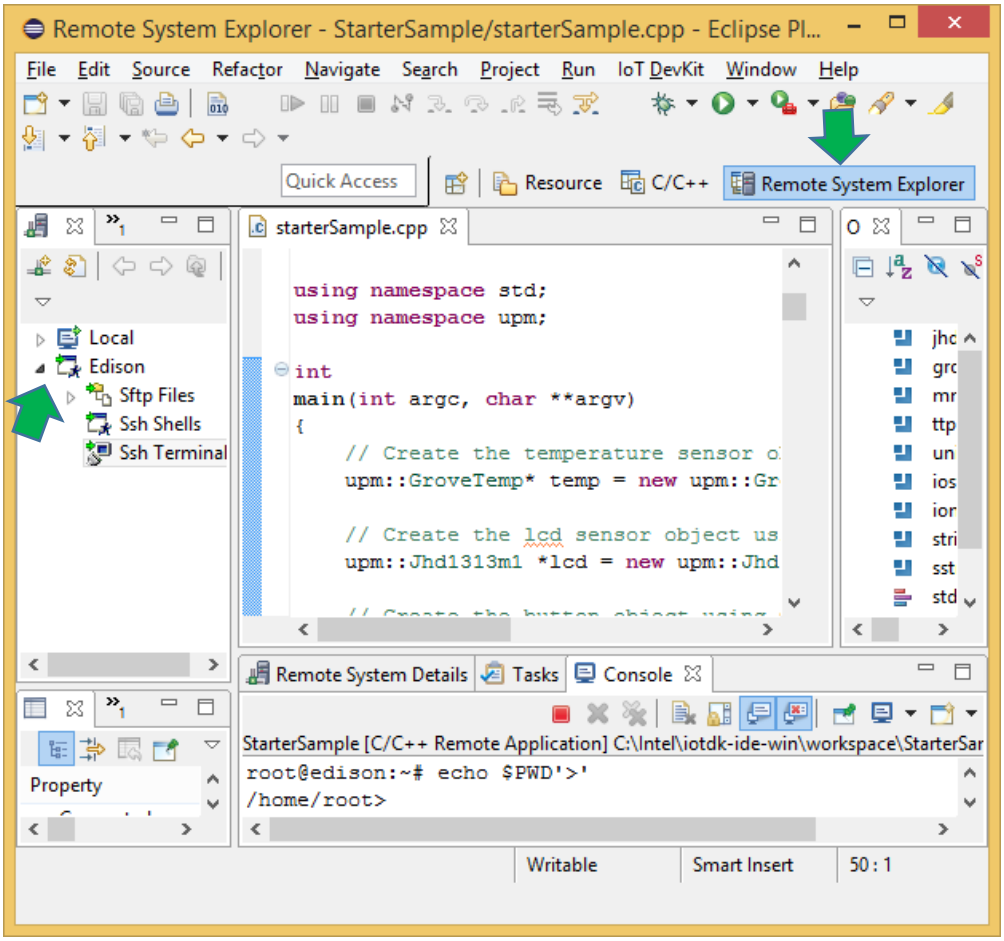
In the New Connection dialog box, enter the following information:

- **Parent Profile**: Keep default
- **Host Name**: 192.168.2.15
- **Connection Name**: Edison

Click **Finish**. Click **Apply**, then click **Close**.

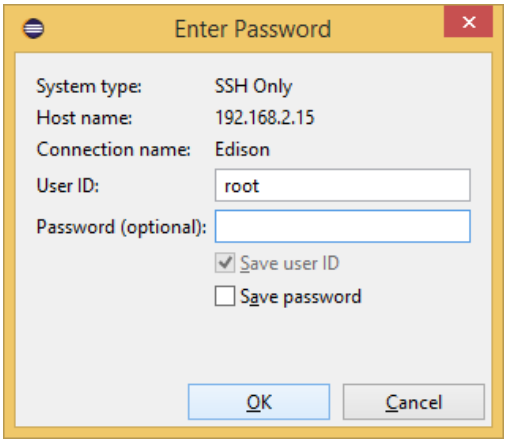
Click on **Window** > **open perspective > other >** select **Remote system Explorer**

Click **Remote Systems Explorer** in the upper right corner.
From the **Remote Systems Explorer** tab, select **Edison**.
In the Properties tab, change the **Default user ID** to root.



Click the **C/C++** perspective button. Run the **StarterSample** Project.

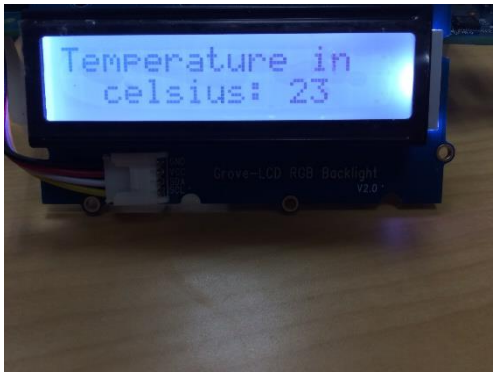
If this is your first time connecting to your Intel Edison board, the Enter Password dialog box opens. Enter the root password for your board, then click **OK**. By default, the password is empty.



The multi-sensor example should now be set up and ready to run. Press the button when LCD displays to “press button“. You can navigate from one sensor to other and play around to see how result varies. Step them through this, one sensor at a time. For instance, you can touch the touch sensor to see its value is change from 0 to 1. Similarly, you can rotate the rotary angle sensor and see its value changing. Similarly you can play with other sensors too.

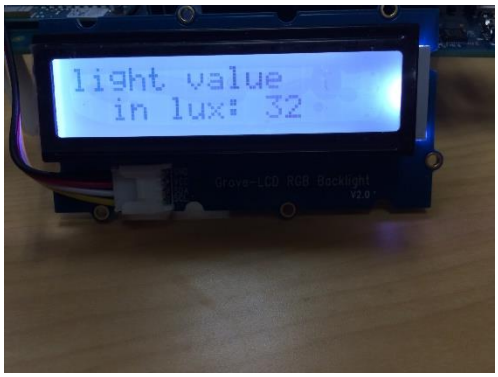
When “Press button” displays in the screen (as shown below), Press the button sensor.

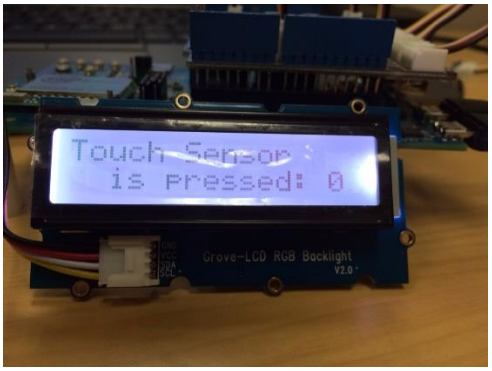
It displays Temperature (surrounding Temperature) in Celsius (as shown below).



After displaying Temperature value for 3 seconds, LCD display switches again to “Press button”. Now, if you press button sensor, it displays rotary angle sensor value in degrees. Similarly, it displays other sensors values.

Few snapshots of the results (in LCD display)





Click the terminate button in eclipse to stop the program.