IoT Platform:
Tutorial 1: Linux Platform
(Modified for CS111)

Table of Contents

Revision history		
Version	Date	Comment
1.0	21/9/2015	Initial release
1.1	3/9/2016	Updated for CS111

Introduction

In this tutorial, you will:

1. Be introduced to the Linux image running the Intel Edison,

2. Learn to connect to the Edison via serial connection,

3. Be introduced to the Linux command line, and

4. Learn about the software development tools on the Linux image.

Things Needed

• An Intel Edison with Arduino-compatible breakout,

• Two micro USB cables, and

• a PC or Mac

Yocto Embedded Linux

Figure 1 Yocto From www.yoctoproject.org

Your Edison runs the latest official Yocto Embedded Linux image, which is a light-weight yet fully functional Linux image that is packed with tools for IoT development. This custom Linux image is created with Yocto project, which is an open source project that provides templates, tools, metadata, and documentation to assist development of custom Linux-based systems for any embedded systems.

PLEASE DO NOT UPDATE THE FIRMWARE ON YOUR EDISON DURING THIS COURSE

Serial Connection to the Intel Edison

Let's explore the Yocto Embedded Linux. First, we need to connect to the Linux side of the Edison. This can be achieved with a Universal Asynchronous Receiver/Transmitter (UART) serial connection. A UART is a piece of hardware that is usually used for serial communications over serial ports. The Edison with Arduino breakout board comes with a UART serial USB port. Now, let's make a serial connection to the Edison by following the steps below.

1. Toggle the switch to enable "device mode" (lower position) and connect a micro USB cable to the multi-gadget USB port and to your computer.

2. Connect another micro USB cable to the UART serial USB port (the bottom micro USB port) and to your computer.

3. Follow the steps below for your computer's OS.

Windows

4. Open a SSH client such as PuTTY (Install if you haven't already). Download PuTTY at http://www.putty.org.

5. Select "**Session**" from the category on the left.

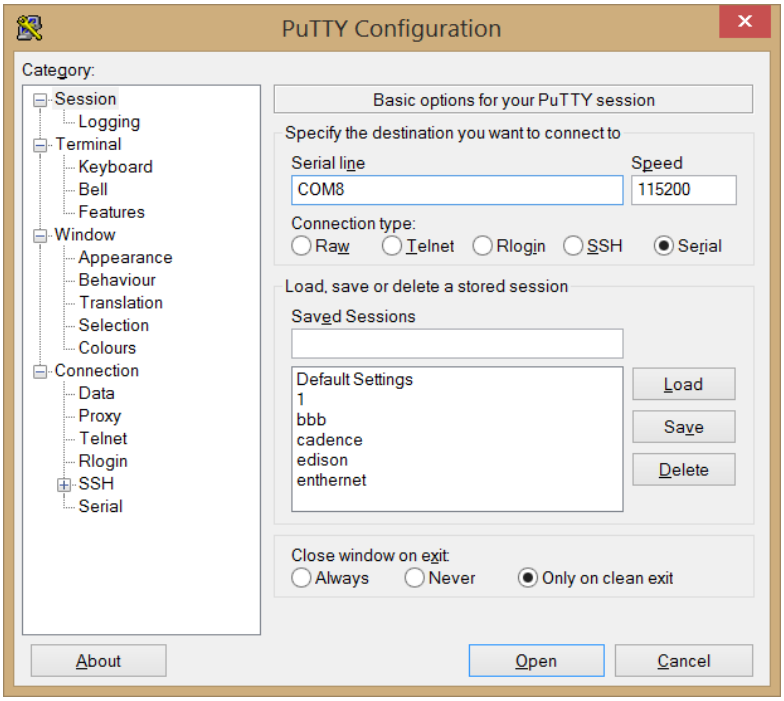

Figure 2 PuTTY Configuration

6. Enter COM# in the Serial line field. You can find the COM# from Windows Device Manager (In this example, COM8). The Edison should be listed as USB Serial Port.

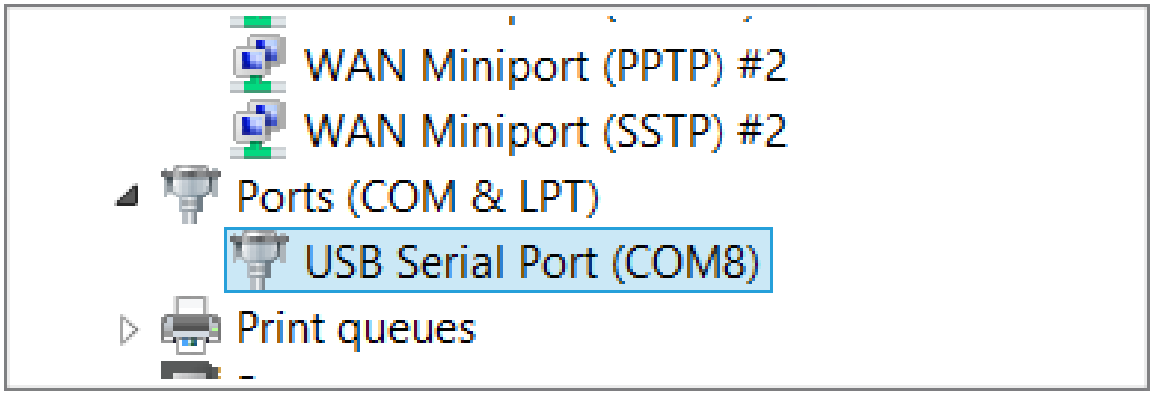

Figure 3 COM Port

7. Enter 115200 in the Speed field.

8. Make sure Serial is selected in the Connection type field.

9. Click Open then a blank screen will appear.

10. Proceed to step 11 below.

Mac

4. Open Terminal.

5. Enter “ls /dev/cu.usbserial-*” to list connected devices.

```
Chriss-MacBook-Pro:Volumes chris$ ls /dev/cu.usbserial-*
/dev/cu.usbserial-A502OP7S
```

Figure 4 Command Line

6. Then, unplug the micro USB cable from the UART serial USB port and re-enter “ls /dev/ cu.usbserial-*”. The disappeared device in the list is the Edison.

7. Replug the micro USB cable.

8. Enter “screen /dev/cu.usbserial-XXXXXXXX 115200 -L”. Replace XXXXXXXX with what you found in the previous steps (in this example, A502OP7S).

9. A blank screen will appear.

10. Proceed to step 11 below.



Linux

Refer to https://software.intel.com/en-us/setting-up-serial-terminal-on-system-with-linux.

11. At the blank screen, press the Enter key.
12. The login screen is displayed. If not, press the Enter key again. If you are having a problem with this, unplug the USB cables and repeat the steps above.

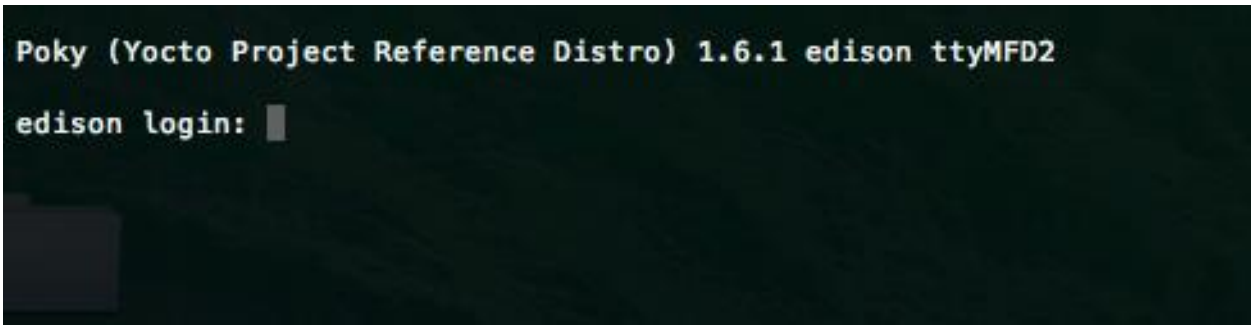

Figure 5 Login

13. Type "root" and press the Enter key.
14. It will ask for the password, which is not set up at default. Just press the Enter key.

Figure 6 User Name and Password

15. You are now logged into the your Edison board
16. The GNU compiler collection is available on your system
17. For this course, you must not update your Edison's firmware