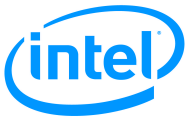
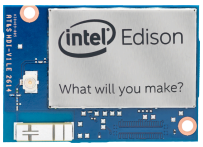
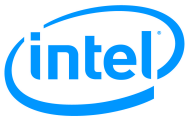




Intel® Edison Tutorial 1: Introduction



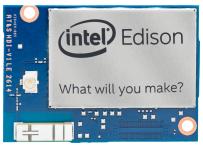
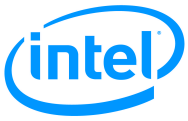
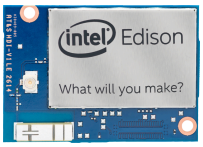


Table of Contents

Revision history		
Version	**Date**	**Comment**
1.0	9/16/2015	First Draft
1.1	9/23/2015	Initial Release





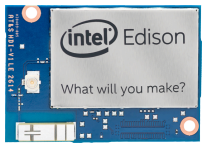
Introduction

In this tutorial, you will:

1. Go over a brief overview of the Intel Edison,
2. Assemble your Edison board with the Arduino breakout board,
3. Learn to update the firmware for the Intel Edison, and
4. Learn to upload Arduino sketches to the Intel Edison.

Things Needed

1. An Intel Edison with Arduino-compatible breakout,
2. Two micro USB cables
3. A computer
    - Windows, Mac, or Linux
    - At least two USB ports or a USB hub



Edison Overview

Figure 1. The Intel Edison

Key Features

• High performance, dual-core CPU and single core micro-controller supports complex data collection in a low power package

• Integrated Wi-Fi, Bluetooth Low-Energy* (LE), memory, and storage simplifies configuration and increases scalability

• 40 multiplexed GPIO interfaces with expansion board options for total project design and flexibility

• Managed online community for project ideas and engagement with other product users

• Intel® product expert support and open source community software tools

• Access to device-to-device and device-to-cloud connectivity framework to enable cross device communication and a cloud based, multi-tenant, time-series analytics service

Information taken from https://www-ssl.intel.com/content/www/us/en/do-it-yourself/edison.html.

- You may find inspiring Intel IoT projects at http://www.instructables.com/id/intel/.

Assembling the Edison board with the Arduino Breakout Board

1. Inside the box, you should have 1 Edison board, 1 Arduino Breakout board, 4 screws, 4 corner spacers, and 2 nuts.

2. Place your Edison board on the bottom left corner.

3. Press on the Edison board just below where it says “What will you make?” until you feel a snap. The board must firmly sit on the Arduino breakout.

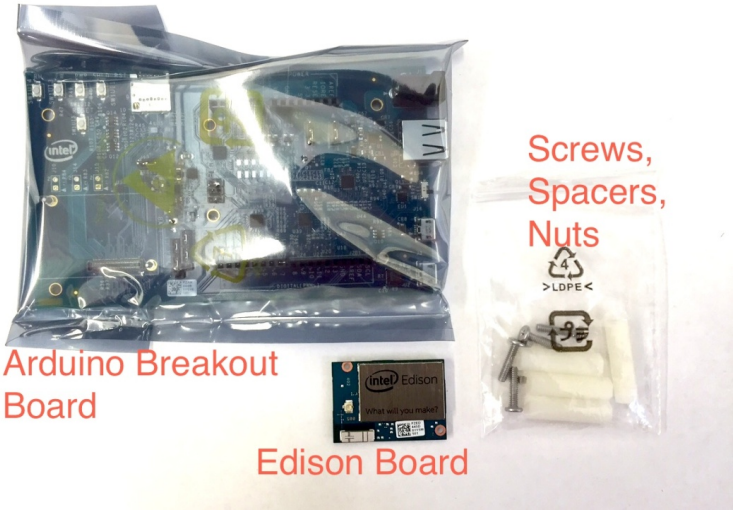


Figure 2. Contents in the box

4. Use the nuts to secure the Edison board.

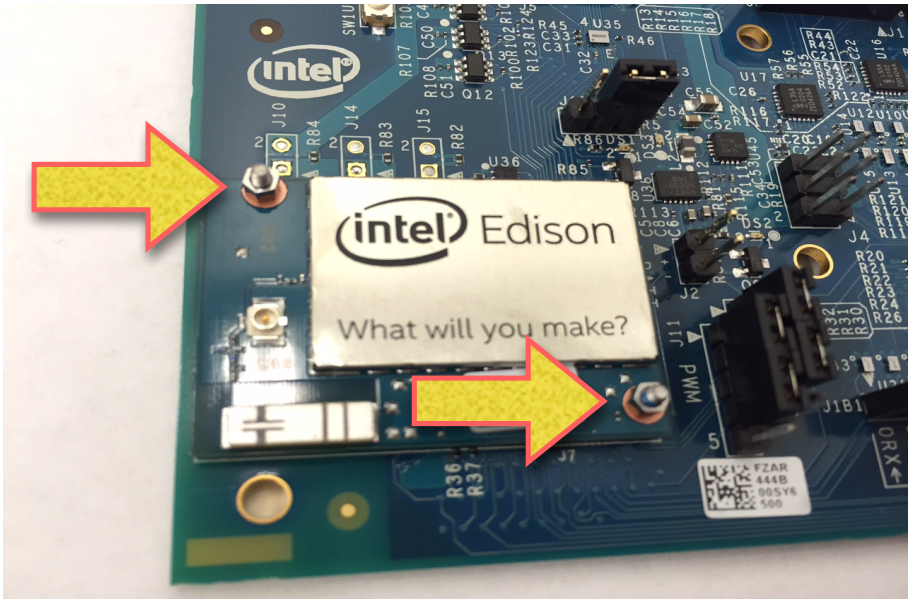


Figure 3. Close-up View of Edison Board

5. Attach the corner placers with the screws on the four corners of the Arduino Breakout.

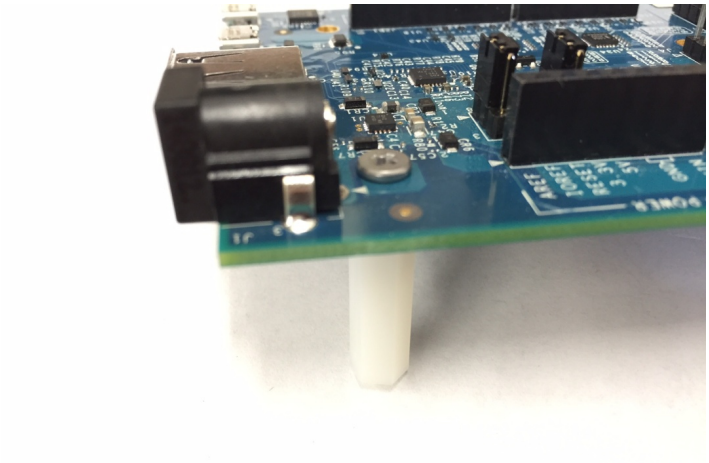


Figure 4. Close-up View of Corner Placer

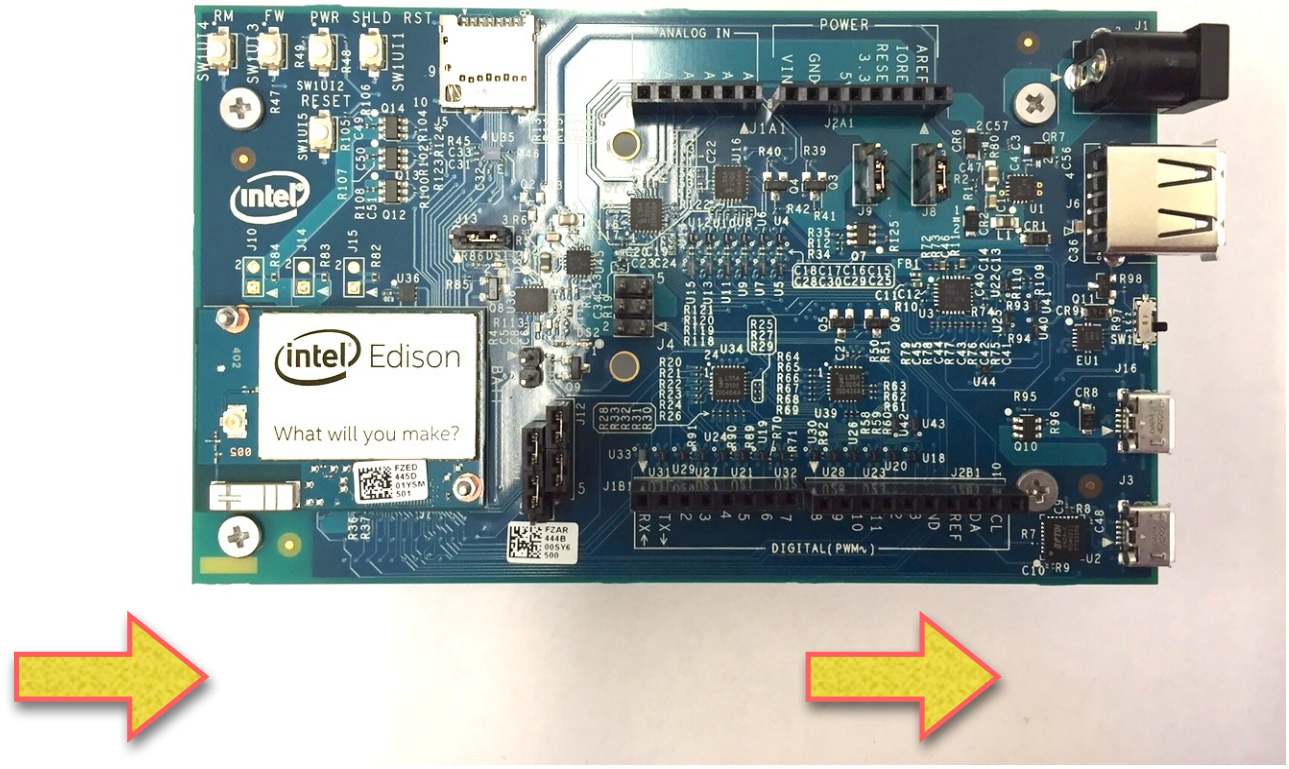


Figure 5. Screws Placement

6. Now, the board is assembled! Let's look at some of ports and switch on the right side of the breakout board.

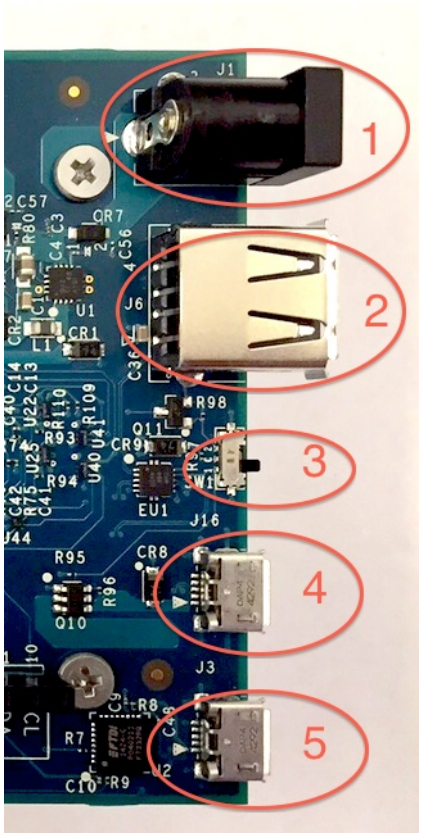


Figure 6. Ports

1) **Barrel Connector for Power**

2) **USB 2.0 Host Port**

- Accepts peripherals such as a mouse, a keyboard, and a webcam.

3) **Switch**

- Upper position: USB Host mode – USB 2.0 Host Port is enabled.
- Lower position: Device mode – Multi-gadget Micro USB port and UART serial USB port are enabled.

4) **Multi-gadget Micro USB Port** lets you

- Supply 5V power via USB, but if you are using more power intensive features, you need to use the barrel connector to supply more power,
- Interact with Arduino IDE,
- Use ethernet over USB, and
- Write to the on-board flash memory.

5) **UART Serial USB port**

Updating Firmware

1. Toggle the switch to enable “device mode”.
2. Connect a micro USB cable to the multi-gadget micro USB port and your computer.
3. The board will power on. Wait for it to finish booting. The following images show when the board turns on and when it finishes booting

Board turned on **Board finished booting**

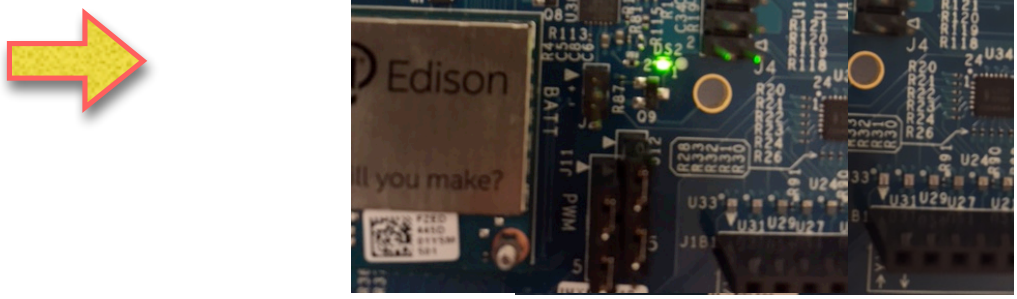


Figure 7. Close-up View of Board

4. Connect a micro USB cable to the UART serial USB port and your computer.
5. Then, follow the steps below for your computer’s OS.

Windows

1. Download Windows 64-bit Integrated Installer from https://software.intel.com/iot/hardware/edison/downloads (If you use 32-bit Windows, refer to https://software.intel.com/node/283f36b9-621b-49ce-ba52-d6c27f2af743).
2. This installer includes required drivers, firmware, and IDEs. For now, let’s install the drivers and the firmware only (Do not install Development environment software at this moment).
3. You are now ready to build some systems on this platform!

Mac

1. Open a terminal window.
2. Enter "cd /Volumes" to navigate to the mounted devices.
3. Enter "**rm -rf Edison/**" to remove old files. You may ignore "**Resource busy**" message
4. Enter "**rm -rf Edison/\.**" to remove hidden files and directories. You may ignore "**rm: "." And ".." may not be removed**" message.
5. Enter "**ls -lag Edison**" to verify the files are removed.
6. Download the Latest Yocto complete image and Flash Tool Lite from https://software.intel.com/iot/hardware/edison/downloads.
7. Install and run the Flash Tool Lite.
8. Browse for FlashEdison and open.

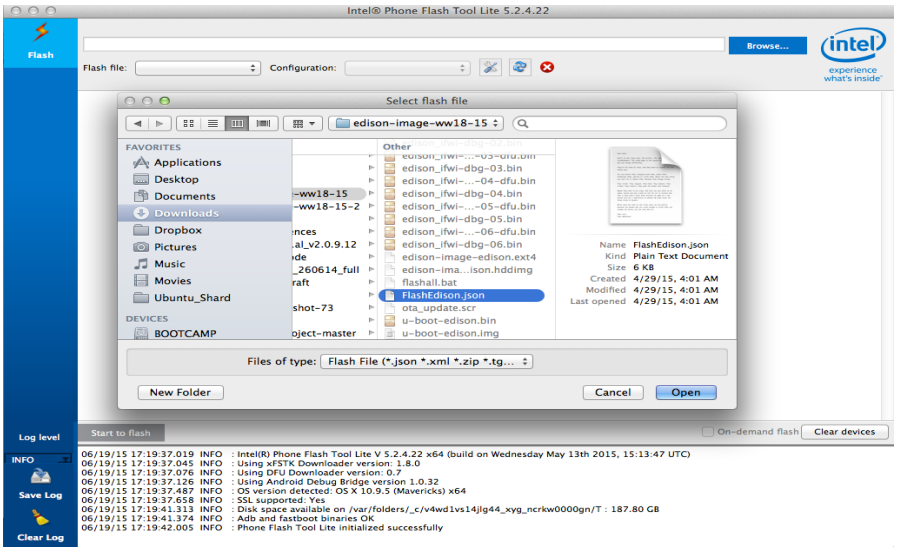


Figure 8. Select Flash File

9. Click on "**Start to Flash**".
10. Flash tool will start flashing the firmware on your Edison and provide instructions. Follow the instructions to finish the flashing process.
11. You are now ready to build some systems on this platform!

Linux
Please refer to https://software.intel.com/en-us/installing-firmware-with-flash-tool-linux.

Running a Sample Arduino Sketch

Installing Arduino IDE

Windows and Linux users should follow the steps below. Linux users may refer to https://software.intel.com/en-us/articles/install-arduino-ide-on-intel-iot-platforms and proceed to "Running Blink Example"

1. Download Arduino software from http://www.arduino.cc/en/main/software (*Windows users*: Download "Windows ZIP file for non admin install).

2. (*Windows users only*) If you don't have 7zip already, download from http://www.7zip.org/ and install 7zip.

3. Unzip the downloaded file. (*Windows users*: right-click and choose 7-zip -> extract to "arduino-…")

4. Open the Arduino software.

5. Choose **Tools -> Board -> Boards Manager.**

6. In the list of boards, choose "**Intel i686 Boards**" and install.

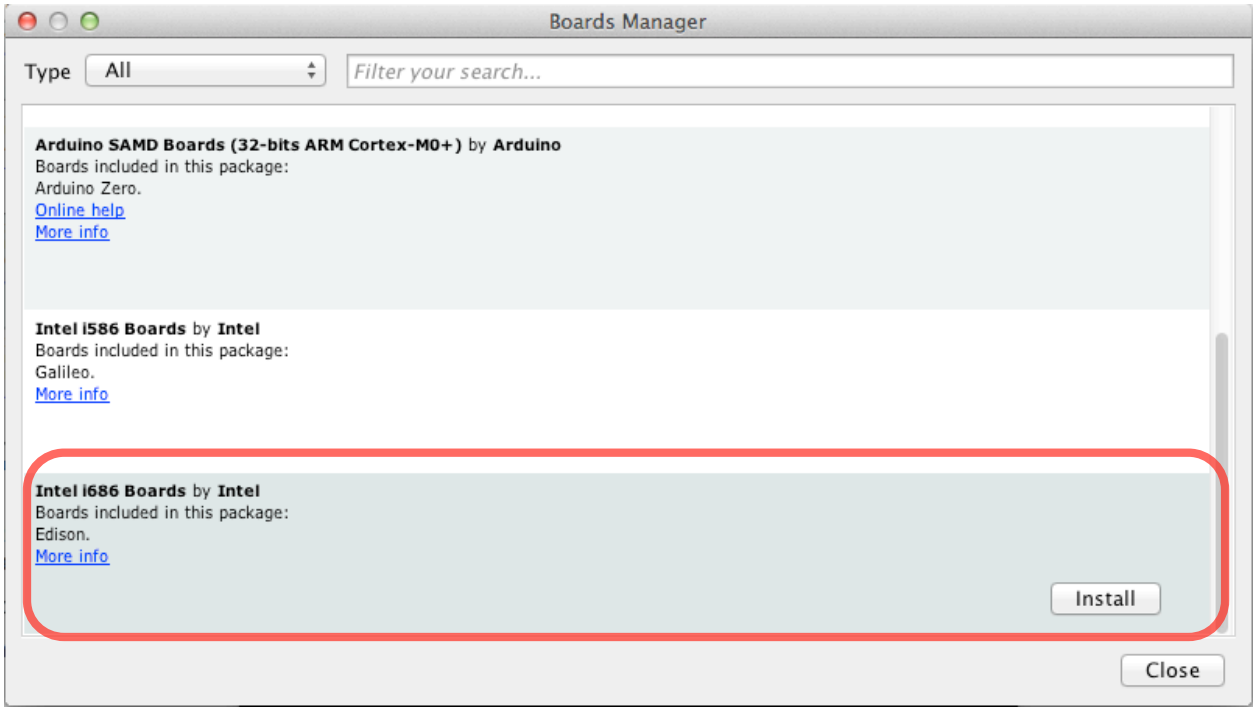
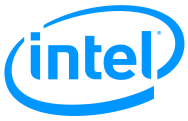
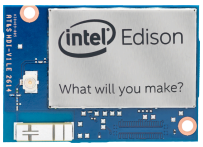


Figure 9. Choose Board

7. Your Arduino IDE is ready!





Running Blink Example

1. Power on the board, toggle the switch to choose "device mode", and connect a micro USB cable to the multi-gadget USB port and your computer.
2. Open Arduino IDE.
3. Go to **Tools -> Board** and select Intel Edison at the bottom of the list.
4. Find out what port the Edison board is using, then go to **Tools -> Port** and select the port.
   - *Windows*: The port is likely to be **COM3** or higher and named "**Intel Edison Virtual COM Port**".

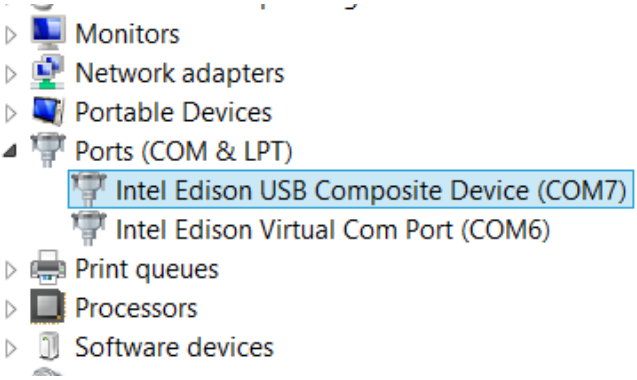


Figure 10. Select COM Port on Windows

   - *Mac*: The port is likely to be **/dev/cu.usbmodemxxxx**.

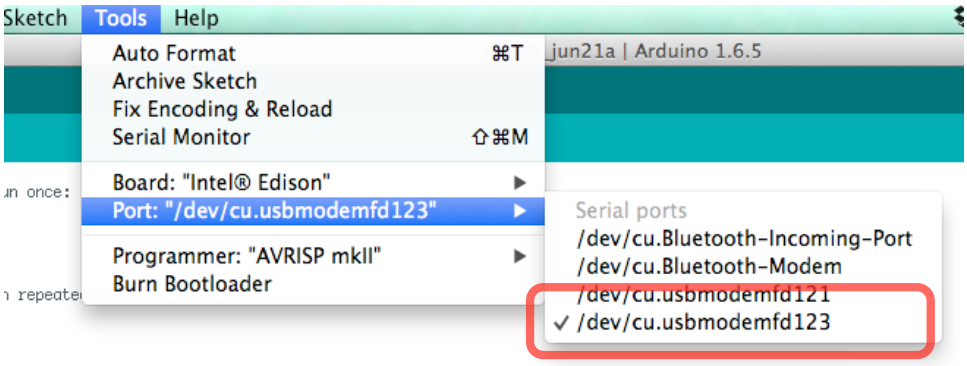


Figure 11. Select COM Port on Mac

   - Linux: The port is likely to be /dev/ttyACM0. If it is not available, refer to https://software.intel.com/en-us/articles/intel-iot-platforms-blink-led-arduino-ide.

5. Go to **File -> Examples -> 01.Basics -> Blink** to open Blink sketch. This sketch writes "High" and "Low" to the on-board LED to make it blink.

6. In the upper left corner, click on the icon with the check mark to verify the code and then, click on the icon with right arrow to upload the sketch to the board.

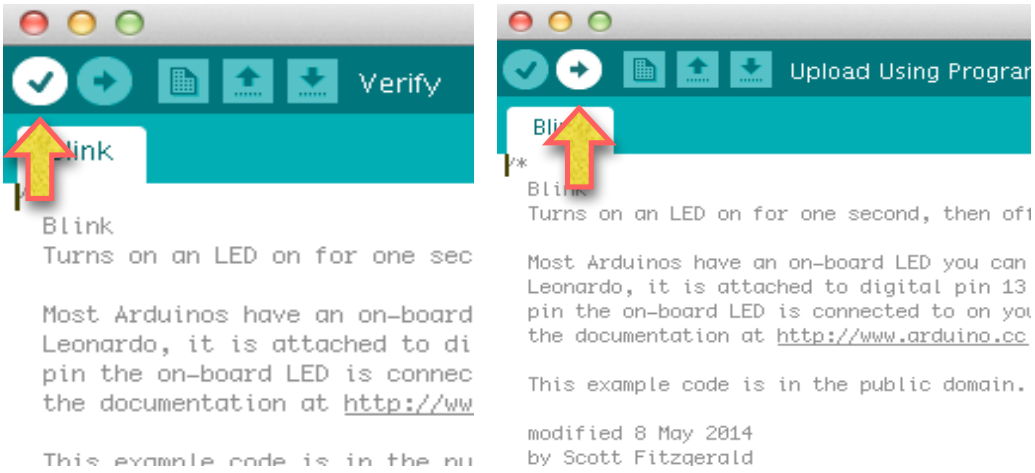


Figure 12. Check and Run

7. You should see "**Transfer complete**" message at the bottom.

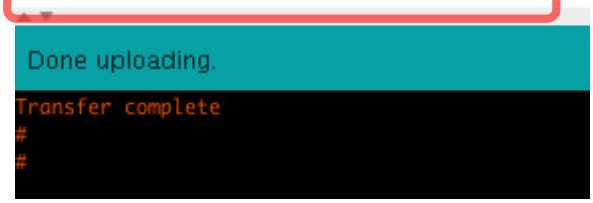


Figure 13. Transfer Complete

8. If not, check the board selection and the port selection (steps 3 and 4).

9. You should see a blinking LED on your board.

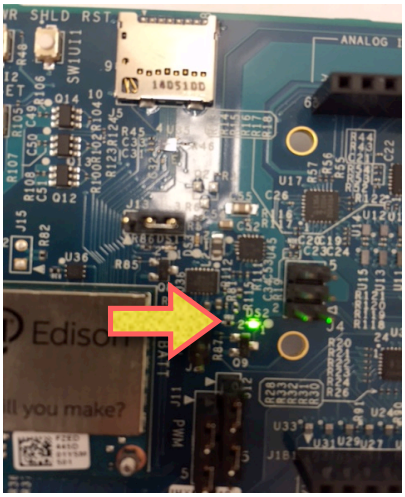


Figure 14. Blinking LED

References

1. https://software.intel.com/en-us/iot/library/edison-getting-started
2. https://software.intel.com/en-us/articles/flash-tool-lite-user-manual
3. https://software.intel.com/en-us/articles/install-arduino-ide-on-intel-iot-platforms
4. https://software.intel.com/en-us/articles/intel-iot-platforms-blink-led-arduino-ide