

TEACHER NOTES

UPLOADING TOUCHDEVELOP SCRIPT TO ENGDUINO (THROUGH SERIAL PORT)

The following instructions enable you to upload the TouchDevelop scripts onto the Engduino for Windows device. In order to upload the scripts, make sure your Engduino is connected to your device via USB.

1. INSTALL PYTHON 2.7.9 -

[HTTPS://WWW.PYTHON.ORG/DOWNLOADS/RELEASE/PYTHON-279/](https://www.python.org/downloads/release/python-279/)

Make sure you download the 2.7.9 version, as this is the specific version required for the TouchDevelop to upload the scripts. Run the installer after the file has downloaded.

Version	Operating System	Description	MD5 Sum	File Size	GPB
Gzipped source tarball	Source release		5eebcaa0030dc4061156d3429657fb83	16657930	SIG
XZ compressed source tarball	Source release		38d530f7efc373d64a8fb1637e3baaa7	12164712	SIG
Mac OS X 32-bit i386/PPC installer	Mac OS X	for Mac OS X 10.5 and later	8d8a26fed767302ff38bc5056612c73a	23759976	SIG
Mac OS X 64-bit/32-bit installer	Mac OS X	for Mac OS X 10.6 and later	307c2b99a212204e7a1182a354328e94	22006891	SIG
Windows debug information files	Windows		c5838ec1cdd529a7065902c7573d1607	25969730	
Windows debug information files for 64-bit binaries	Windows		544e1137e8ecdce4f4cd2954ea520fa7	23979074	
Windows help file	Windows		dd438e999824c48001e54a2138c4f455	6120616	
Windows x86-64 MSI installer	Windows	for AMD64/EM64T/x64, not Itanium processors	21ee51a9f44b7160cb6fc68e29a1ddd0	18833408	
Windows x86 MSI installer	Windows		3ed20d8b06dcd339f814b38861f88fc9	18309120	

2. INSTALL NODE.JS [HTTPS://NODEJS.ORG/DOWNLOAD/](https://nodejs.org/download/)

Download the appropriate installer and run the installer for node.js



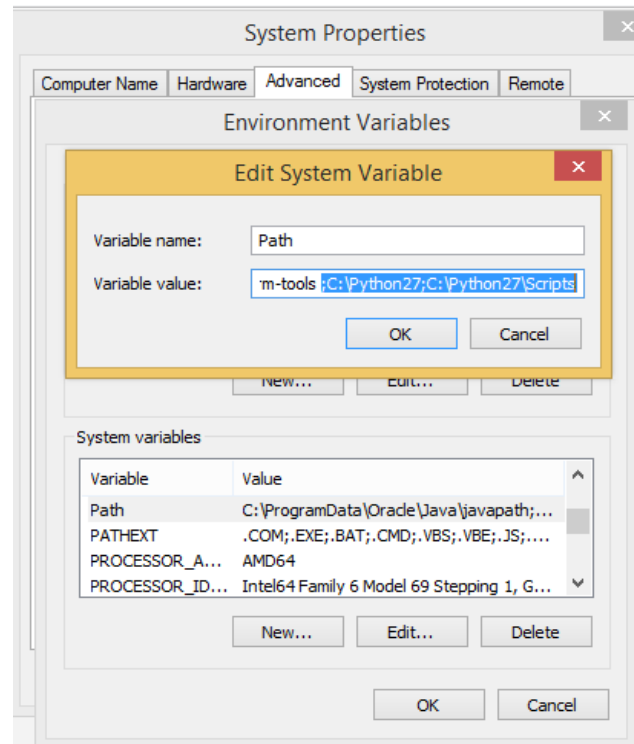
Windows Installer (.msi)	32-bit	64-bit
Windows Binary (.exe)	32-bit	64-bit
Mac OS X Installer (.pkg)	Universal	
Mac OS X Binaries (.tar.gz)	32-bit	64-bit
Linux Binaries (.tar.gz)	32-bit	64-bit
SunOS Binaries (.tar.gz)	32-bit	64-bit
Source Code	node-v0.12.1.tar.gz	

3. ADD PYTHON TO THE PATH VARIABLE

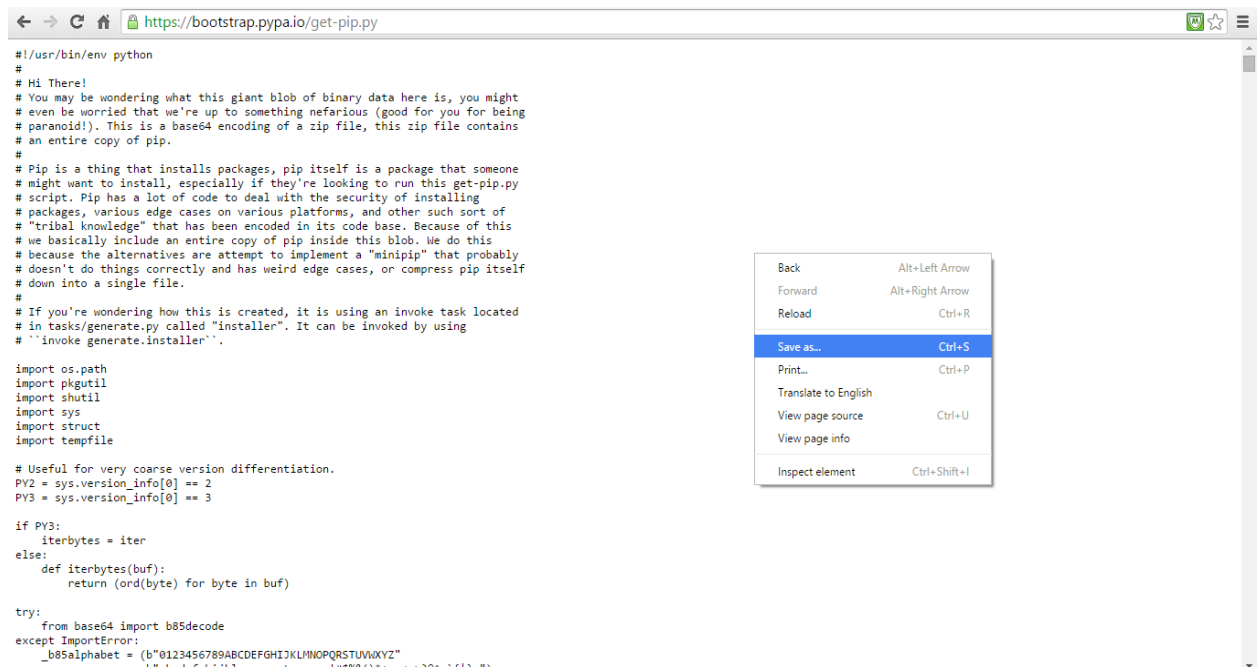
- Go to **Control Panel > All Control Panel Items > System > Advances System Settings**
- In the **Advanced** tab, click on **Environment Variables**
- Select the **PATH variable > Edit**

Add `;C:\Python27;C:\Python27\Scripts;` to the existing **Variable value**.

Click **OK** to save the changes.



4. DOWNLOAD GET-PIP.PY [HTTPS://BOOTSTRAP.PYPA.IO/GET-PIP.PY](https://bootstrap.pypa.io/get-pip.py)

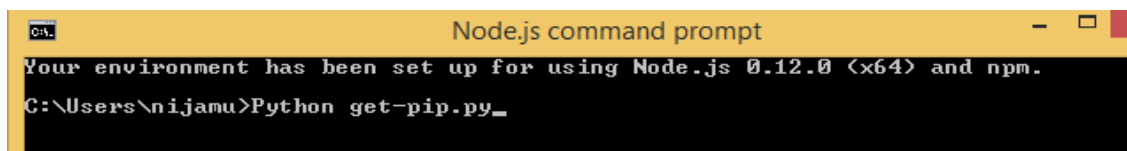


Save the file in a folder that you can easily find.

5. PYTHON GET-PIP.PY

Open node.js command prompt and go to the directory where you saved the file in step 4.

Type ***Python get-pip.py*** and press enter to run.



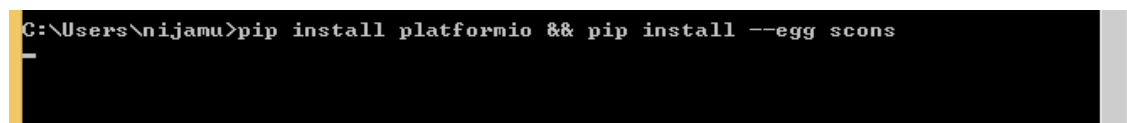
6. INSTALL PLATFORMIO

In the command prompt type:

platformio - pip install platformio && pip install --egg scons

or just:

pip install platformio



7. INSTALL TOUCHDEVELOP LOCAL

Create a folder to save the files for TouchDevelop.

Navigate to the folder in node.js command prompt and type:

```
npm install -g http://aka.ms/touchdevelop.tgz
```

```
C:\Users\nijamu>cd Desktop
C:\Users\nijamu\Desktop>cd TD
C:\Users\nijamu\Desktop\TD>npm install -g http://aka.ms/touchdevelop.tgz
```

8. RUN TOUCHDEVELOP

To run TouchDevelop local, type:

```
touchdevelop
```

```
C:\Users\nijamu>cd Desktop
C:\Users\nijamu\Desktop>cd TD
C:\Users\nijamu\Desktop\TD>touchdevelop
```

BUGS WITH ENGDUINO AND TOUCHDEVELOP

The tutorials that we have included that uses the Engduino are using an Engduino emulator that is included in the TouchDevelop system on the website. This is because there were some bugs when uploading the code onto the Engduino, which meant that all the functions would not work properly.

The problems that came up are listed below:

1. Setting the LED's individually

We found that, although on TouchDevelop, using the emulator, we could set the LED's individually. However, when we uploaded the code onto the Engduino, an error came up regarding 'set_LED'.

```

0000.000> arduino: Oops, the sketch compilation failed. Please review the logs.
0000.001> shell: error: src.ino: In function 'void StepCounter(int)':
src.ino:46:36: error: 'set_LED' was not declared in this scope
scons: *** [.pioenvs\myenv\src\src.o] Error 1
[ ERROR ] Took 1.20 seconds
0000.001> shell: [03/26/15 20:55:59] Processing myenv (platform: atmelavr, board: engduinoV3, framework: arduino)

avr-g++ -o .pioenvs\myenv\src\src.o -c -fno-exceptions -fno-threadsafe-statics -g -Os -Wall -ffunction-sections -fdata-
sections -MMD -mmcu=atmega32u4 -DF_CPU=8000000L -DUSB_VID=0x1B4F -DUSB_PID=0x9208 -
DUSB_PRODUCT="\EngduinoV3" -DARDUINO=10601 -DPLATFORMIO=010200 -I.pioenvs\myenv\Wire\utility -
I.pioenvs\myenv\Wire -I.pioenvs\myenv\EngduinoLEDs -I.pioenvs\myenv\SPI -I.pioenvs\myenv\EngduinoButton -
I.pioenvs\myenv\EngduinoAccelerometer -I.pioenvs\myenv\EngduinoThermistor -I.pioenvs\myenv\EngduinoTD -
I.pioenvs\myenv\FrameworkArduino -I.pioenvs\myenv\FrameworkArduinoVariant .pioenvs\myenv\src\src.cpp
0000.002> shell: shell 1
0000.002> exited with 1
0000.025> [ ERROR ] Took 1.20 seconds
0000.058> scons: *** [.pioenvs\myenv\src\src.o] Error 1
0000.064> src.ino:46:36: error: 'set_LED' was not declared in this scope

```

2. TouchDevelop only uses 'int' values

As our topic was 'acceleration', we wanted to use the accelerometer in our tutorials. These values should be stored as 'double' in C++. However TouchDevelop uploads the value as 'int' onto the Engduino.

```

EngduinoLEDs.begin();
EngduinoAccelerometer.begin();
EngduinoButton.begin();
EngduinoThermistor.begin();
EngduinoTD.begin();

}

void loop()
{
  int totalSteps = 0;
  TD_Vector3 p = TDLIB_Engduino::acceleration();
  int x = p.x();
  int y = p.y();
  int z = p.z();
  int steps = (((x*x)+(y*y))+(z*z));
  steps = sqrt(steps);
  if ((steps>=1.1)) {
    totalSteps = (totalSteps+1);
  }
}

```

3. The emulator that is on the TouchDevelop system is based on the Engduino v2 (green), whereas we use the Engduino v3 (white). There are small differences between the two models, for example the labeling of the LED's and so take note which version of the Engduino is being used.

