

## Project 5 Logging Data

### Requirements

- Micro:bit
- Sparkfun Open logger (<https://www.sparkfun.com/tutorials/393> £18 from <https://shop.pimoroni.com>)
- MicroSD to log to
- Some wire or crocodile clips

### Aim of Project

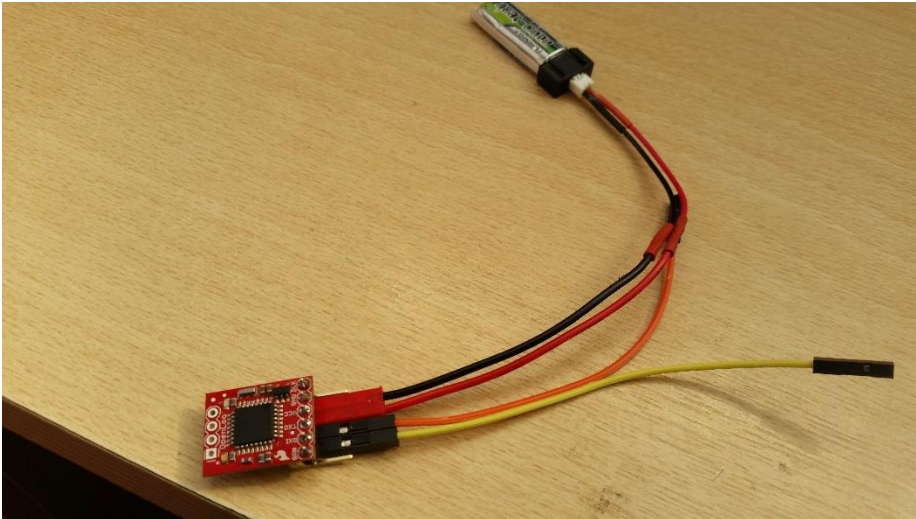
Demonstrate the ability to output live data to a second device

### SparkFun and Micro:bit serial setup

This device can be configured in numerous ways, if you want to know more read the tutorial and datasheet. I used its default configuration on 9600baud and then configured the Micro:bit as 9600baud, 8 bi, No Parity, 1 Stop Bit to match

### Wiring

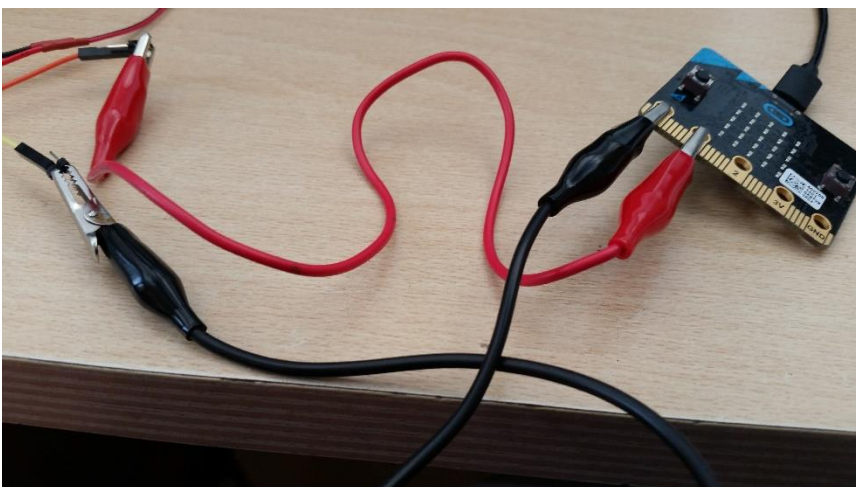
The Sparkfun Open Log requires a minimum or 3.4V but can take up to 12v. This is a shame as the Micro:Bit has a 3v output. I was able to power and log using the battery pack but only with fresh batteries and not for very long. Running from the USB port did work but this is not recommended. I powered mine from a Turnighy Nano-Tech 3.7v 1S Lipo similar to ([http://www.hobbyking.co.uk/hobbyking/store/\\_54938\\_Turnigy\\_nano\\_tech\\_60mAh\\_1S\\_45\\_90C\\_Lipo\\_Pack\\_for\\_Mini\\_Vapor.html](http://www.hobbyking.co.uk/hobbyking/store/_54938_Turnigy_nano_tech_60mAh_1S_45_90C_Lipo_Pack_for_Mini_Vapor.html)) which are about £2 but any battery 3.7v to 12v is fine (I did test using a standard PP3 and all was good



### TX and RX

Ensure you take the TX from the logger and connect it to the RX from the Micro:bit and the TX from the Micro:bit to the RX on the Logger.

By default – assuming you make no changes the Micro:bit uses Pin 0 for TX and Pin 1 for RX



### Code

- I'm sure this can be done in blocks to but my aim here was to extend the use of Micro:bit so this really needs to be done in Python (IMOP)

- I've uploaded a copy of the code I wrote to my drop box account below
- <http://microbitsandbobs.co.uk/downloads/MicroPi-Logger.py>
- I've tried to comment the process and I'm sure it could be made much more efficient (this wasn't really my aim I was just having fun)

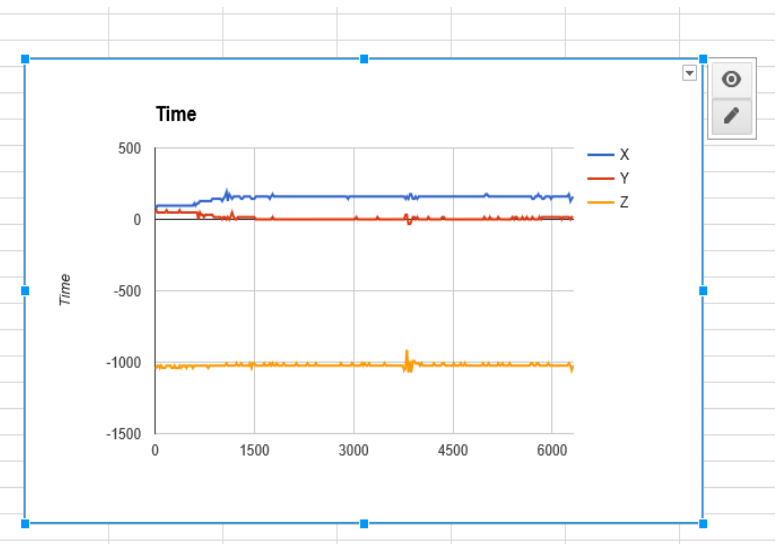
### The Output

```
LOG00197.TXT - Notepad
File Edit Format View Help
12<Time,X,Y,Z,0,96,48,-104018,80,64,-104036,96,48,-1024
54,96,48,-102472,96,48,-104090,96,48,-1024114,96,48,-
1040132,96,48,-1040150,96,48,-1040174,96,64,-1024
192,96,48,-1024210,96,48,-1024234,96,48,-1024
252,96,48,-1040276,96,48,-1040294,96,48,-1024
312,96,48,-1040330,96,48,-1040354,96,48,-1040
372,96,64,-1024390,96,48,-1040414,96,48,-1024
432,96,48,-1024450,96,48,-1024474,96,48,-1040
492,96,48,-1024510,96,48,-1024534,96,48,-1024
552,96,48,-1024570,96,48,-1040594,112,48,-1024
612,96,48,-1024636,112,48,-1024654,112,0,-1024
678,128,48,-1024696,128,32,-1024720,128,32,-1024
738,128,16,-1024762,128,32,-1024780,128,32,-1024
804,128,32,-1040822,128,32,-1024846,128,32,-1024
864,144,32,-1024888,144,16,-1024906,144,16,-1024
930,144,16,-1024948,144,16,-1024972,144,16,-1024
990,144,16,-10241014,128,0,-10241032,144,16,-1024
1056,160,16,-10241080,192,0,-10081098,128,16,-1024
1122,176,0,-10241140,160,16,-10241164,144,48,-1024
1188,160,16,-10241212,160,0,-10241230,160,0,-1008
1254,160,16,-10241278,160,16,-10241302,144,16,-1008
1320,144,16,-10241344,160,16,-10241368,160,16,-1024
1386,160,16,-10241410,160,16,-10241434,160,16,-1008
1458,144,16,-10401476,144,16,-10081500,144,16,-1008
1524,160,0,-10241542,160,0,-10241566,160,0,-1024
```

The Data logger writes a 12< before it starts – This is some configuration check from SparkFun and is documented in the datasheet for the device. I'm sure you could turn it off if you looked at the configuration (I never bothered).

To avoid any problems in the CSV file I created I've written a NL character so it imports the data onto a new line first.

Time	X	Y	Z
0	96	48	-1040
18	80	64	-1040
36	96	48	-1024
54	96	48	-1024
72	96	48	-1040
90	96	48	-1024
114	96	48	-1040
132	96	48	-1040



### Extension

Why not build your new logging device into a rocket car, model rocket or drone and log some flight data?

Why not log the compass for direction as well as temperature?

Have a look at Dashware <http://www.dashware.net/> you can take your data and overlay it over a video so how about recording a car drive or rocket flight and the overlay the sensor data on top of the video!!