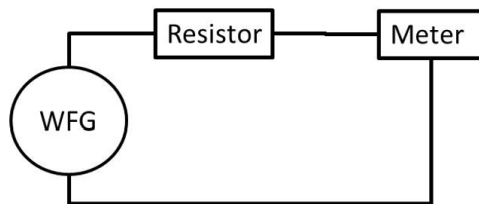# Lab One Memo

Abhishek Adhikari

PART A:

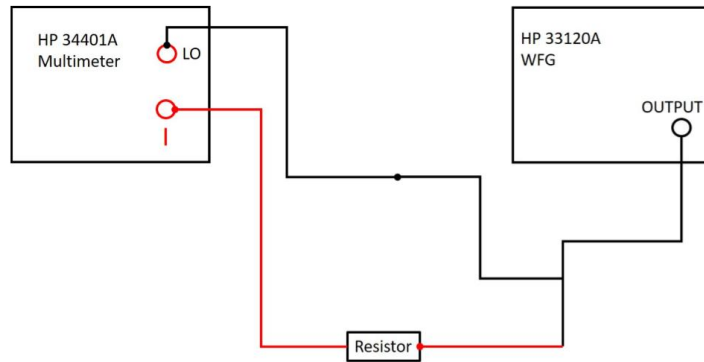Figure 4: Basic layout of experiment

Figure 5: System wiring connection

Our task was to find the current through the attached resistor, dependent on the voltage we applied. Testing 11 voltages from 0-10V, the function we found to best represent the relationship between applied voltage and current was:

CURRENT = (VOLTAGE * 0.5) – 0.13mA

See below for screenshots of our MATLAB output, which validates the above representation:
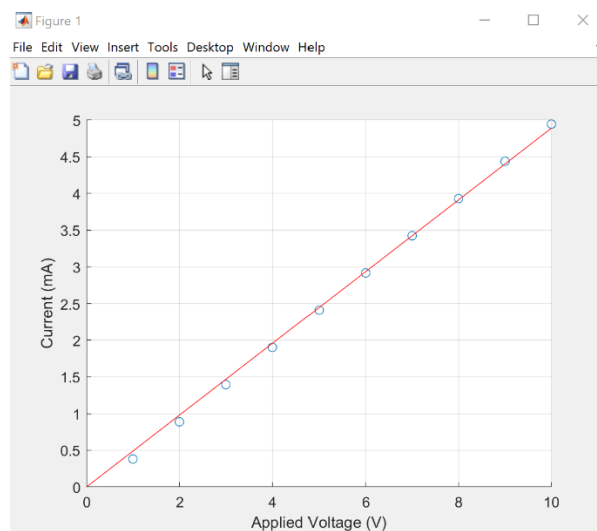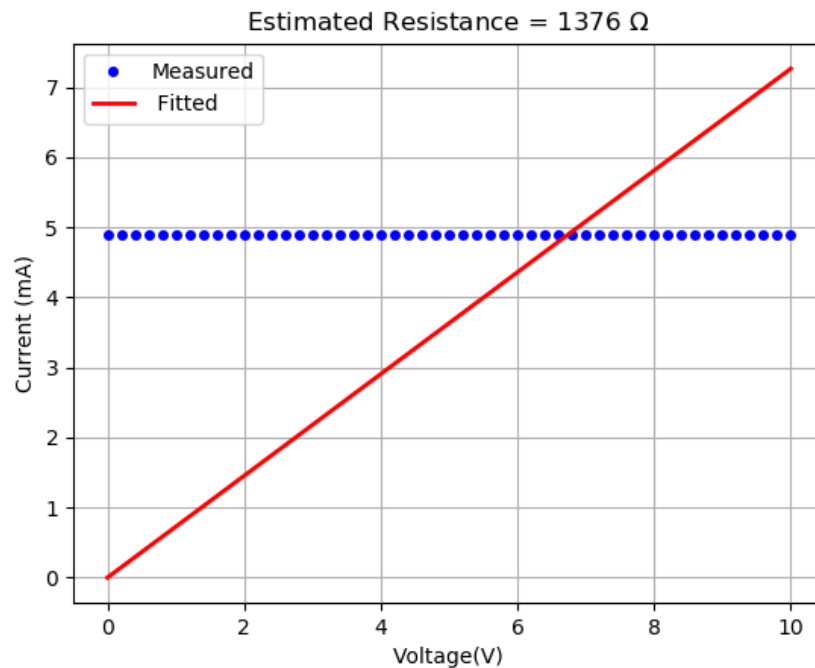


```
a1 =

    0.5073


a0 =

   -0.1271


r2 =

   -3.4933
```

PART B:

In Part B, we were asked to find the value of the attached resistor by automating our applied voltage/current measurements.

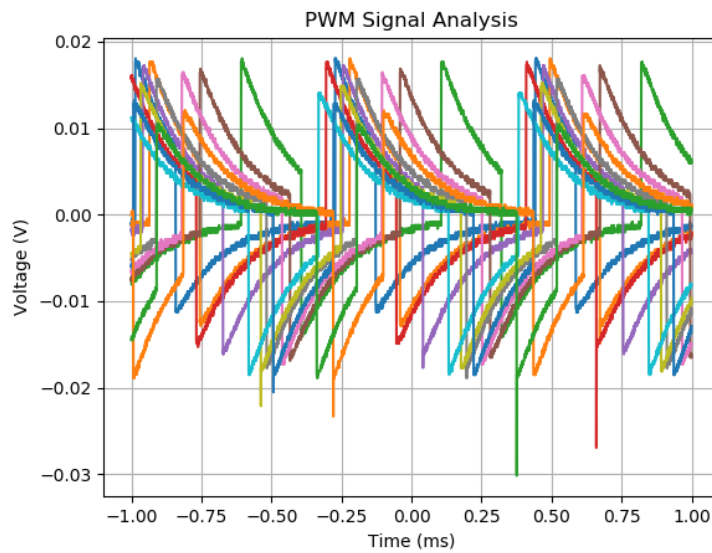Please see below for our findings:

Issues:

1. The most difficult issue we ran into was a Timeout Error with the Digital Multimeter. Our program could not finish running until we added a line of code at the end of our Python file setting *dmm.timeout = None*
2. The original lab packet instructed us to import *Visa* in order to find the address of our Waveform Generator. Adjusting this to *Pyvisa* solved our problem.
3. Line 42 of the Python code we were given had a slight typing error, where the listed *np.savetext* should have been *np.savetxt*

PART C:

Part C asked us to create a visual representation to show the timing of a pulse train with a duty cycle 20% to 80%, and then 80% back down to 20%.

20% to 80%

80% to 20%