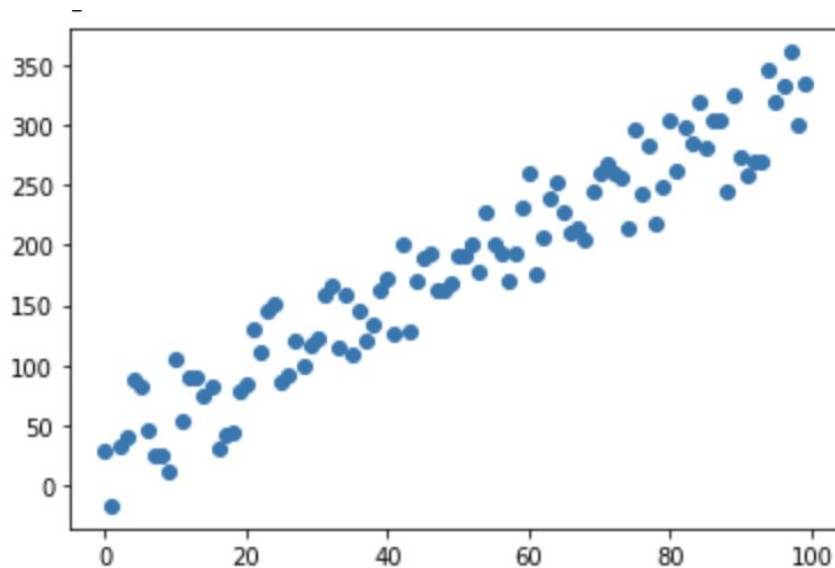


Lab 1D Pre-Lab

Charles Zhang

Watch the [2D arrays](#) and the [data read-in videos](#)

- Read in the mock [2-dimensional dataset](#) and make a scatter plot with the first column as the x axis and the second column as the y axis. Plot this dataset below:



Watch the experiment video and describe how we are using the Arduino to measure current

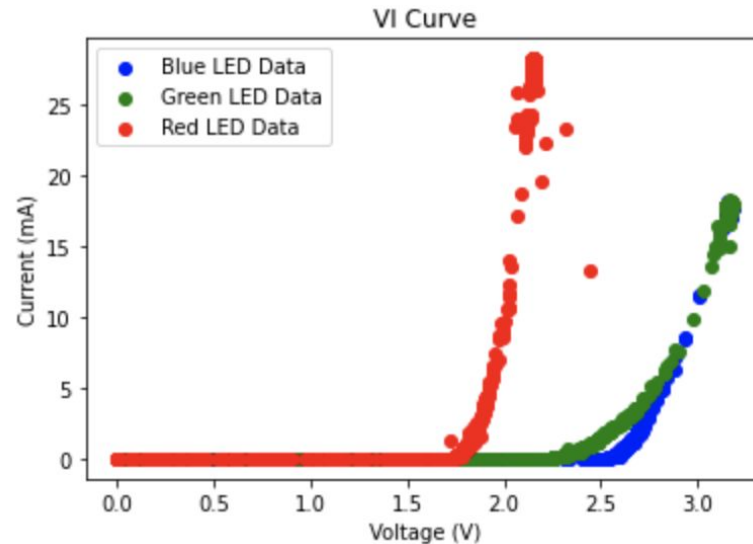
We can use the Arduino to read voltages at 2 separate points in the circuit, separated by a 100 kilohm resistor, and then use Ohm's law to calculate the current flow based on the voltage drop recorded.

Lab 1D assignment

Charles Zhang

Voltage vs Current (VI) Plot for LEDs

Include data for all 3 LEDs on the same plot. Make sure you label your plot and include a legend.

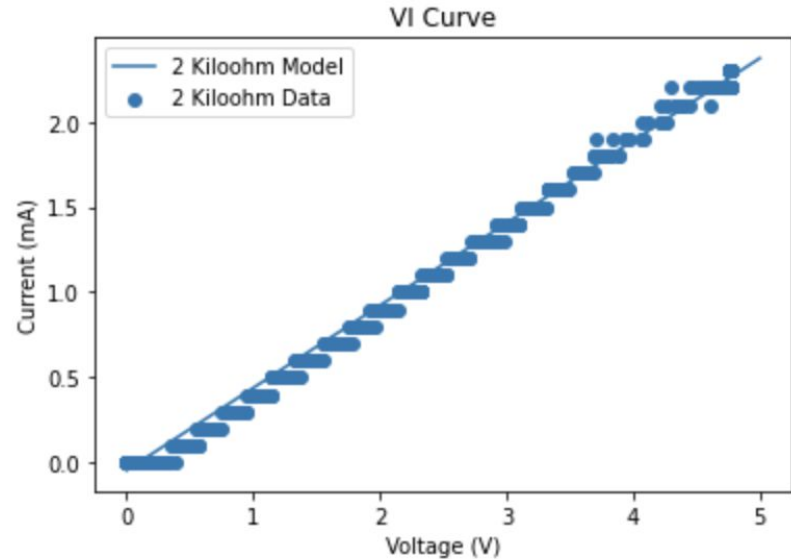


Voltage vs Current (VI) Plot for 2k Ohm Resistor

Include a linear fit and make sure to write what the fit equation is. Make sure you label your plot and include a legend.

Equation:

$$0.4836767301239507 \text{ (V)} - 0.045253094306536686$$



Discussion

Comment on the following:

- 1) How the color of the LED affects your data - Generally, the red LED caused current readings to begin at a lower voltage, then green, then blue. As the voltage got higher, the current increased much more rapidly in the red LED, and at very similar paces for the green and blue.
- 2) How well your fit equation matches Ohm's law - My fit equation is pretty accurate, with a y-intercept of nearly 0 and a slope that implies the resistance is approximately $2.06 \text{ k}\Omega$, and linear as predicted