Physics 4AL/BL
Lab 1B

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Take a screenshot of your Python notebook

```
[ ]  # Define k
     k = 2

     # Define t
     t = 1.5

     # Define a
     a = 3
```

Exercise 1.2: Using numpy functions

Material for this exercise is covered in Tutorial 1 and Youtube video 2

Start by importing numpy below

```
[ ]  # import module:
     import numpy as num
```

Now use the `np.sin` function to calculate

$sin\_value = \sin(k * t)$

Remember that you defined your variables above

```
[ ]  # Create sin_value
     sin_value = num.sin(k * t)
```

Now use the `np.exp` function to find the exponential value of (-a*t)

$exponential\_value = e^{-at}$

```
[ ]  # Define exponential_value
     exponential_value = num.exp(-a * t)
```

Multiply the numbers to create

$exponential\_sin = \sin(kt)e^{-at}$

```
[ ]  exponential_sin = sin_value * exponential_value
```

```
[→]  0.0015677016810137913
```

Take a photo of you measuring:

1. The resistance of a 100 ohm resistor
2. The voltage across the resistor when it is powered by 5 V by the Arduino
3. The current through the resistor in the about case (Be careful. The multimeter must be in **series** and you should <u>adjust the settings only when the circuit is **not powered**</u>.)
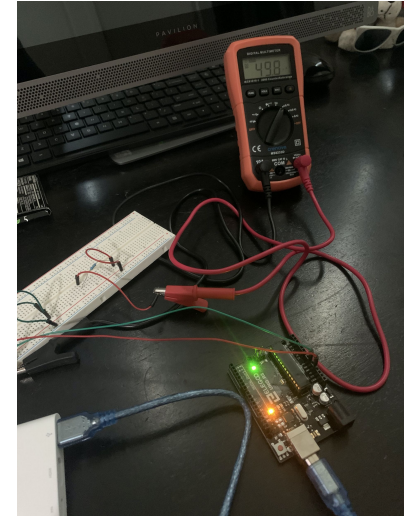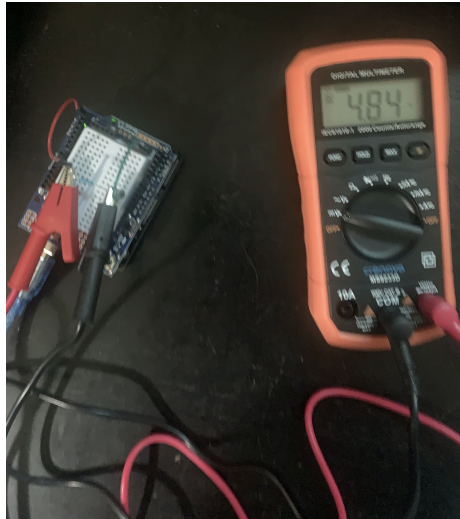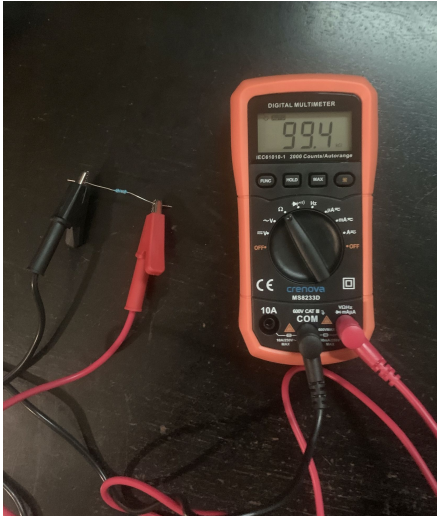
Take a photo of you next to the Arduino with its light flashing