Lab 2 Worksheet

What is the resistance of a lightbulb?

(Oscope and Function Generator)

DA:

DA1: Create a table which shows a **sample** of raw data for Part 3 of the experiment. Make sure it shows at least **three** examples of each measurement and calculation with proper units displayed.

DA2: To prepare your part 3 graph for the worksheet, please add the appropriate title, axis labels, series labels, Units, etc. to this graph so that it will be a useful tool in explaining the lightbulb's behavior.

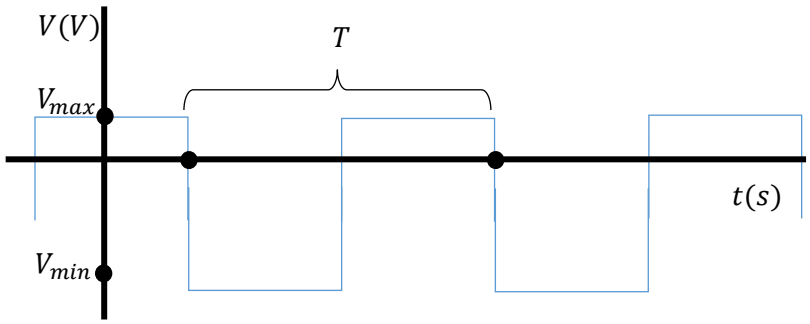
DA3: Create a caption for your graph which explains in words what the image means about your experiment. Make sure you reference the response to PI1 & PI2 in explaining the difference between the blue and orange dots.

Researcher:

R1: Review steps 1), 22) and 28) and discuss the proper way to connect the wires from the Oscope to a circuit so that you can measure the voltage of a circuit element.

R2: Refer to the sample data provided by DA1 and identify each of the columns which depend upon the Law of Conservation of Current, Kirchhoff's Voltage Law, and/or Ohm's Law.

R3: Since the function generator has the ⎍ (square wave) button pressed, it is supposed to make voltage which looks like



i) Record the effect of the Frequency knob on $V_{max}, V_{min}, and\ T$.

ii) Record the effect of the Amplitude knob on $V_{max}, V_{min}, and\ T$.

iii) Record the effect of the Offset knob on $V_{max}, V_{min}, and\ T$.

PI:

PI1: Use the DA2 plot to evaluate the idea the current is the main reason that the resistance of the lightbulb changes.

PI2: Use the DA2 plot to evaluate the idea that the main reason that the resistance of the lightbulb changes is NOT Current or Voltage but some other quantity of the lightbulb which we have not measured. Identify this quantity and explain why you suspect this is the real reason the lightbulb changes resistance.

PI3: Summarize: What is the resistance of the lightbulb? (Please answer in the form: $R = \bar{R} \pm \delta R$) Why is δR so large?