Physics 3108 LabView #3

LabView

The purpose of these LabView assignments is to work through the basics of lab view.

Purpose:

To create a computer controlled experiment to characterise resistors and diodes.

Assignment

Create LabView code capable of completing the requirements of Lab3. This code will be used to characterise a silicon diode and various resistors using 2-point and 4-point probing techniques. The data should be saved to a file (so that is can be graphed and put into your lab report).

Feel free to base your code on the code that you developed in assignment #2 to calibrate your current source. Using the calibration factor (in mA/V or V/mA {the inverse}), create a computer controlled current source using the NI USB-6001. This means that your code will be custom designed for your particular voltage controlled current source.

Display the voltage across an *unknown* load as a function of the current through the *unknown* load. ***Note that the current through the unknown load is extracted from the voltage measured across the sense resistor.*** Plot the result on one XY Graph showing Voltage (y-axis) as a function of Current (x-axis). Add timing control to select the speed of data acquisition. Use shift registers so that the data can be seen as it is being acquired.

Rather than having the code operate as a multimeter, write your code using controls for initial current, final current and current increment. Note, that for a given current you will need your calibration factor to estimate the appropriate input voltage. This input voltage should be invisible to the user.

Add the ability to perform a linear fit to the data over a user selected range of currents. This is important for analysing a diode, for example.

Advanced:

See what you can come up with that will make the code more interesting, more powerful, or more entertaining. Add text column headings when writing to the file.

Requirements:

Hand in this code via e-mail.

(When you save the file it will be saved as "*.vi")

Ensure that your name appears in a text field somewhere clearly visible in the code.
You are welcome to make one submission for each lab group.
In this case make certain that the names of both lab partners are visible in a text field.

Due Tuesday October 17, 2017