

## Homework #7

LabVIEW

Dr. Pogo

Assignment is due on Thursday, October 23, 2008

Assigned October 9, 2008

**Warning! Abstracts for your final project are due on Thursday, October 18!**

### Assignment #7: GPIB

**Inputs:** A “next resistor” (start) button and a stop button

**Outputs:** A graph (voltage vs. current)

A numeric indicator (resistance)

Two run status indicators (e.g., resistor number and current voltage)

**Operation:** All SubVI's should have filenames in the form **abc12-something.vi**

Requires one HP 34401A multimeter, one HP E3631A power supply, and one variable resistor

The VI should cause the power supply to apply a series of voltages to a resistor and read each resulting current from the multimeter. For each resistor examined, the power supply must apply 11 voltages (ranging from 0V to +10V), and measure the resulting current through the resistor. The resistance should be calculated from the slope of a best fit to the graph (see the nodes available in the “Mathematics→ Fitting” palette). The graph should display both the original measurements (using only points), and the best fit line (i.e., a line without points).

Your VI should automatically determine the GPIB address of each instrument, and use it appropriately. If both devices attempt to claim the same address, or if one of the devices is missing, the VI should warn the user (with a two-button dialog box) to manually change the settings. The buttons on the dialog box should be “problem fixed” and “cancel”. Using “cancel” should have the same effect as using the “stop” button; “problem fixed” should restart the initialization process. Also, your VI should automatically ensure that the power supply is in the “logical on” state when used, even if it starts out in a “logical off” state. You should not reinitialize any device after voltage measurements have begun.

Although there are several other ways to measure the resistance (some of them much easier to implement), you must use the method described above.

