

# Physics 3108

## LabView #1



### LabView

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

### Purpose:

To learn about sub vi's, error handling and interfacing to equipment.

### Assignment

Write LabVIEW code that connects to the NI USB-6008 and controls the A/D (analogue to digital) and D/A (digital to analogue) functions. Create a real-time multimeter using the timeout event with the even case in a while loop. Add timing control to select the timeout rate and therefore speed of data acquisition.

Note that this program can be used to help characterise your circuits, since you can use a D/A output channel to set the input voltage of your current source, and the A/D input channels to read voltage across any resistor of choice.

### Requirements:

- Ability to set the number of data points per second that will be displayed.
- Read and display the voltage from the A/D differential input channels
- Add ability to set the output voltage from one or both D/A outputs
- Program keyboard (and / or mouse) shortcuts to activate buttons etc. in your code.
  - Make sure to tell me what shortcuts are available.
- Ensure that you have error handling, so that the program will stop (and display the error) if the NI unit is unplugged.
- Ensure that the program operates correctly with event case and while loop, so that it can be ended with a single press of a stop button.

### Advanced:

See if you can add the following:

- Add functionality to select the number of input channels to be displayed.
- Add functionality for averaging data.
- (more advanced) Ability to save specific data points to create a graph?

Note: For the next assignment, you will be graphing a voltage measurement as a function of the voltage output that you control.

Be creative and add something extra that you think is interesting or entertaining.

### 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.

Due to the limited number of computers, you are permitted to make one submission for each lab group. But, in this case make certain that the names of both lab partners are visible in a text field. You are also encouraged to make a submission per person, where you can be as creative as you like.

**Extra Notes:** If any of the key requirements is not covered in the tutorial, the requirements will be altered.

**Due Sunday October 1, 2017**

**Note: I recommend submitting before the weekend**