Pre-Lab Assignment 2

BioE 101 Spring 2016

Spend 45 min watching the following videos:

General LabView Tutorials

- http://www.ni.com/academic/students/learn-labview/

Watch the measurement generating and acquiring DAQ Tutorials:

- http://www.ni.com/academic/students/learn-daq/acquire-generate/

Answer the following questions:

Question 1 (1 point):

- What is the SNR in dB of a measurement that has a signal RMS expressed as -10dB and a noise RMS expressed as -100dB?

Question 2: (1.5 points for A [.5 pt each] .5 points for B = total of 2 points)

- (A) If you have a signal in the range of -10V to 10V that is expressed with 10 bits, what is your quantization error? If the Vpp of the noise of the signal is 1V, how many bits of noise do you have? Is your quantization error problematic?
- (B) Look up the number of bits that the MyDAQ uses to represent analog input signals. Based on this and assuming a voltage range of -10V to 10V, what is the quantization error?

Question 3 (1 point for A, 1 point for B [.5 for each] = total of 2 points]:

- (A) Describe how you would create a LabView GUI where you acquired temperature data from a sensor through the myDAQ, displayed it to the user, and turned on a light only when voltage read was greater than 5 V. (Describe which LabView modules/controls/operators/indicators you would use, and feel free to sketch the front panel and block diagram)
- (B) If your light is not turning on, briefly describe two ways you could go about debugging (through LabView).

Total = 5 points