Week 4: NI myDAQ week

Week 4 Prelab

1. **NI ELVISmx Installation:** This lab requires you to use NI myDAQ. To make good use of lab hours, please download and install the required NI ELVISmx software on a Windows machine before the lab. The latest software version as of this lab manual revision can be found online at:

http://www.ni.com/download/ni-elvismx-15.0/5424/en/

If you don't have a Windows laptop, either install Windows in a Virtual Machine or using Boot Camp on a Mac (instructions can be easily found online) or borrow one from the library:

http://www.library.ucla.edu/clicc-laptop-lending-sel-boelter

They contain an older version of the NI ELVISmx that will work just as well.

Using the Elvis program, the NI myDAQ can be launched into modes in which it emulates various laboratory devices. Details on how to do this can be found at the website:

www.ni.com/white-paper/11420/en

2. **LabVIEW and DAQmx Drivers:** For future work, you will likely need to install LabVIEW and DAQmx Drivers, which allow you to write LabVIEW programs that interface with the myDAQ.

NOTE for Mac Users: While LabVIEW and DAQmx drivers can be installed natively on Mac OS, the latest Mac driver only supports LabVIEW 2011 through 2014. Since only LabVIEW 2015 is available through student purchasing links, it is recommended you install LabVIEW on a Windows machine. We make no guarantees on proper operation of LabVIEW 2015 with the latest Mac OS DAQmx Drivers.

The directions for installing and activating LabVIEW will be included in your purchase of LabVIEW either off Studica or UCLA onthehub.

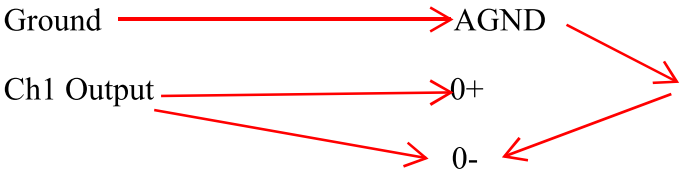
The latest DAQmx drivers as of this revision are listed at the links below. These must be installed *after* LabVIEW has already been installed. See note above for Mac OS.

Windows Drivers (ver 15.1): http://www.ni.com/download/ni-daqmx-15.1/5617/en/

Mac Drivers (ver 14.0): http://www.ni.com/download/ni-daqmx-base-14.0/5060/en/

3. If the myDAQ AI0 is used as an oscilloscope to measure the Ch1 output (non-inverting) of a function generator, how would you connect these two devices? Draw lines to connect them.

F.G. Ch1 myDAQ Analog Input Channel 0



4. For a square wave and a sinusoidal wave generated at the same frequency, which waveform requires a higher frequency response from the measuring system? Briefly explain why.

The square wave requires a higher response frequency from the measuring system, because of the manner in which that wave is composed. It is essentially a sine wave, with the same period as the sine wave, but it has all the harmonics of the fundamental frequency, which is what gives it the distinct flat plateau at the top and the sharp top to the flat trough at the bottom. However, if the measuring system reaches its frequency limit, the wave will not be accurately displayed, because those distinct sharp rises and falls will not be displayed well.

Week 4 Prelab End