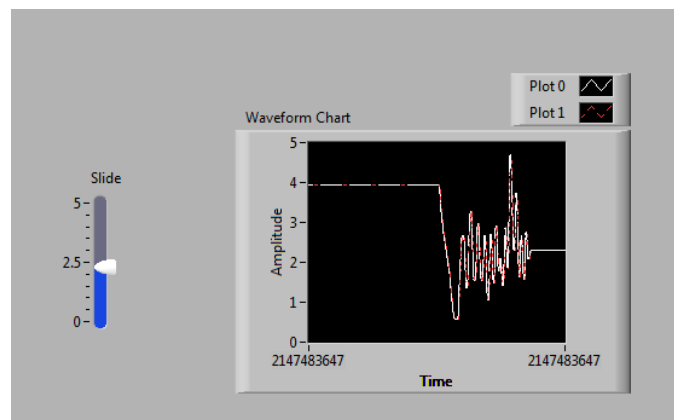
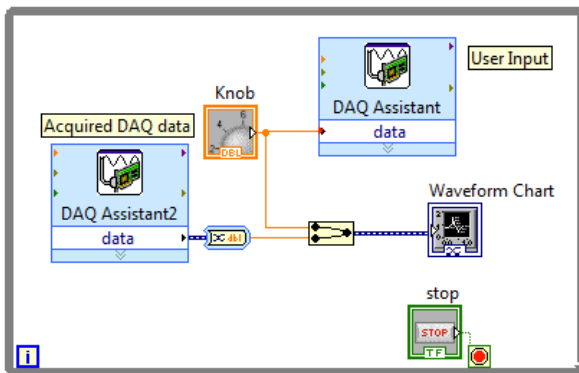


Lecture Notes #4 - 26/January/2012

What we covered in class:

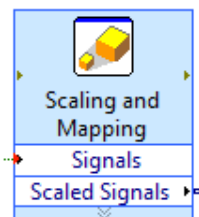
- Went over homework assigned on lecture #3.
- Describe what a DAQ is.
- Introduced the DAQ document available (website) and performed the loopback DAQ test.
- Introduced the design example, DAQtest.vi, shown in the document and below.
- Class activity: Performed the DAQ loopback example.



- Quiz: With the red and green LEDs that were given to you. Create a virtual instrument that access the analog outputs on your DAQ with a button and a knob. When the knob turns, it will brighten the red LED. When the button is pressed, it will turn ON/OFF the yellow LED.

Hints:

- #1- Make sure the knob is set to a 0 to 5 range.
- #2- Since a button will give you a True or False, you need to scale the signal from 0 to 5 volts. I recommend you use the **Scaling and Mapping** function block with the interpolation setting!



Homework due next class:

- Read pages 111-141 in text.
- Do exercise P2.8 (page 105) and D2.2 (page 106). For each question submit your virtual instrument (vi) files to manhattan. Homework submitted after 8am on Jan. 31th will not be graded.

P2.8 - Create a vi that will calculate your age in a future year. The vi should have three numeric controls labeled **Current Year**, **Current Age** and **Future Year**, and one numeric indicator labeled **Age in Future Year**. Use the vi to solve the following: if the year is 2010 and you are 24 years, how old will you be in 2052?

D2.2 - Create a vi that will simulate a vending machine. The vending machine sells 3 items:

- a) candy bars for \$0.80 each
- b) chips for \$0.60 a bag
- c) gum for \$0.40

The vending machine accepts only \$5 bills, \$1 bills, quarters, dimes and nickels. Inputs on the front panel should include a numeric control for the user to enter the amount of money inserted into the vending machine and three more integer numeric controls that designate how many of each item the user wishes to purchase from the machine.

Your vi should:

- a) check to see if the amount of money is greater than or equal to the total cost of the selected purchase. If there is not enough money, display a message notifying the customer that more money is needed to meet the total, using the **Display Message to User Express VI**. Then light an LED indicator on the front panel and display the amount needed on a numeric indicator.
- b) If enough money is inserted into the vending machine based on the user selection, output the change the user will receive showing the quantity of dollar bills, quarters, dimes and nickels to be dispensed by the vending machine.