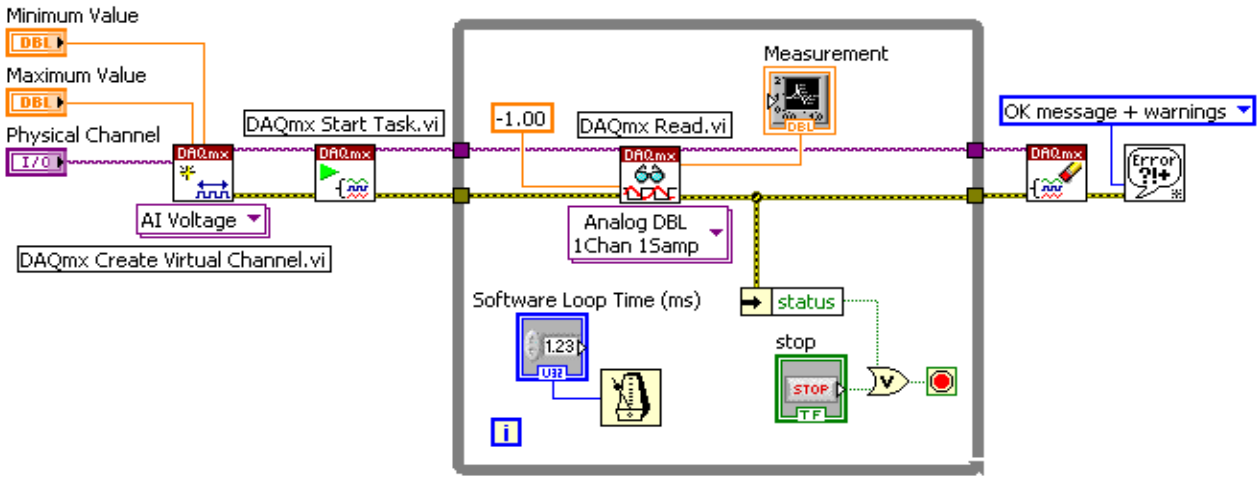
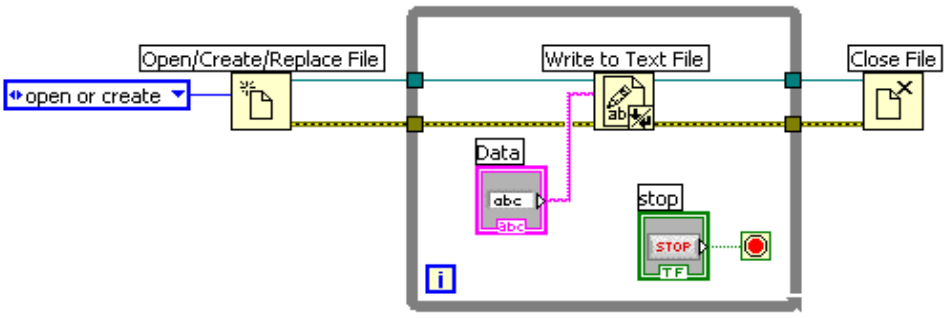
In-Class Exercise: DAQmx Modifications

Consider the code for the DAQmx hardware example *Cont Acq&Chart Samples-SW Timed.vi*, as shown below:



Note that slight modifications have been made to the original example code, including a change from waveform output data to plain double precision at *DAQmx Read.vi*, restriction to a single input channel in the same, and removal of comments. You are asked to further modify the code to include the elements that follow.

- Add the capability to save data to a simple text-formatted data file within each loop. To do so, use the low-level functions shown below from the *<<File I/O>>* palette. The image shows the three functions in a typical arrangement, where the write function is the only one which is used within a loop. Consider this when adapting to the example code. Note that you will need to add other inputs/constants at various points to gain the proper functionality. Also note that the *Write to Text File* function accepts only string data for saving—you will need to convert the numeric data from *DAQmx Read.vi* to string before connecting (format the data as a *fractional string*).



- Configure the "save" feature above such that data are saved only when the user selects the appropriate button on the front panel.

- Adapt the *DAQmx Create Virtual Channel.vi* to use a custom scale that you will create in Measurement & Automation Explorer (MAX). The scale should allow a conversion for the model SML-10 load cell from Interface, which is fictitiously configured such that the input force range -10 lbf to +10 lbf corresponds to 0V to +5V at the DAQ device. Name the scale "Interface Force." Note that in return, the input minimum and maximum values, as well the measured values returned from *DAQmx Read.vi*, will be in the new scaled units.

- Add a control to the front panel where the user can input a force limit for the load cell, which the magnitude of the measured force should exceed only temporarily. Then, add appropriate functionality to the code to re-color the plot on the waveform chart to red if the magnitude of the measured force exceeds the limit. If not in excess, the plot should be colored green. Property nodes for the plot are used for this feature, as shown. Use a value of 8 lbf to test.