

AE698: Introduction to Virtual Instrumentation

Tutorial – 5

Date: Feb 5, 2009

Save your work in your own directory

1. Signal generation for file I/O (Demo)

This VI generates signal consisting of sine wave, square wave, and uniform white noise. The output of the VI is a 2D array. Note that the first row of the 2D array is the data for sine wave. Write a similar VI or reproduce this one and convert it to a sub-VI. This sub-VI may be named as “Signal” and will be used for the next few file I/O problems.

2. Write to file (Demo)

Generate 400 data points using the Signal VI created in problem 1 and write to the following files. Make sure you save data in your working space.

- a) Write to a spreadsheet file
- b) Write to a text file
- c) Write to a binary file
- d) Write to a datalog file

3. Read from file (Demo)

Read the data from the files generated in problem 2 and display the sine wave, Uniform white noise, and square wave data in separate graphs.

- a) Read from spreadsheet file
- b) Read from text file
- c) Read from binary file
- d) Read from datalog file

4. Data streaming to file (Demo)

Write a VI using a while loop, for the following cases, that will save a block of 400 signal data to a file every 200ms. The VI is stopped after saving 25 blocks of data in the file. Make sure you save data in your working space.

- a) Write to a spreadsheet file
- b) Write to a text file
- c) Write to a binary file
- d) Write to a datalog file

5. Read from file (Demo)

Read the data from the files generated in problem 4 and display the sine wave, Uniform white noise, and square wave data in separate graphs.

- a) Read from spreadsheet file
- b) Read from text file
- c) Read from binary file
- d) Read from datalog file

6. Data streaming to file with header(Demo)

Write a VI using a while loop, for the following cases, to save a block of 400 signal data to a file every 200 ms along with a header. In this VI, first header information is written into the file. Next, the data is written followed by header named "Record #" where the # is the iteration number of the loop. The VI is stopped after saving 25 blocks of data in the file. Make sure you save data in your working space.

- a) Write to a text file
- b) Write to a binary file
- c) Write to a datalog file

7. Read from file (Demo)

Read the data from the files generated in problem 6 and display the sine wave, Uniform white noise, and square wave data in separate graphs.

- a) Read from text file
- b) Read from binary file
- c) Read from datalog file

8. Convert data file (Exercise)

- a) Convert the binary file created in problem 2c to a text file.
- b) Convert the datalog file created in problem 4d to a text file.
- c) Convert the data files created in problems 6b & 6c to text files.