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# Logging Data to Text Files in LabVIEW

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# Datalogging

- When acquiring data from a DAQ device or an I/O Module you typically want to store the data to either a File, a Database or an OPC Server
- Here we will use the “Write To Measurement File” in LabVIEW as an example
- If you don’t have a DAQ device or an I/O Module you can create a simple Simulator as exemplified later in this tutorial

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1. Using DAQ or I/O Module in LabVIEW
2. Write To Measurement File
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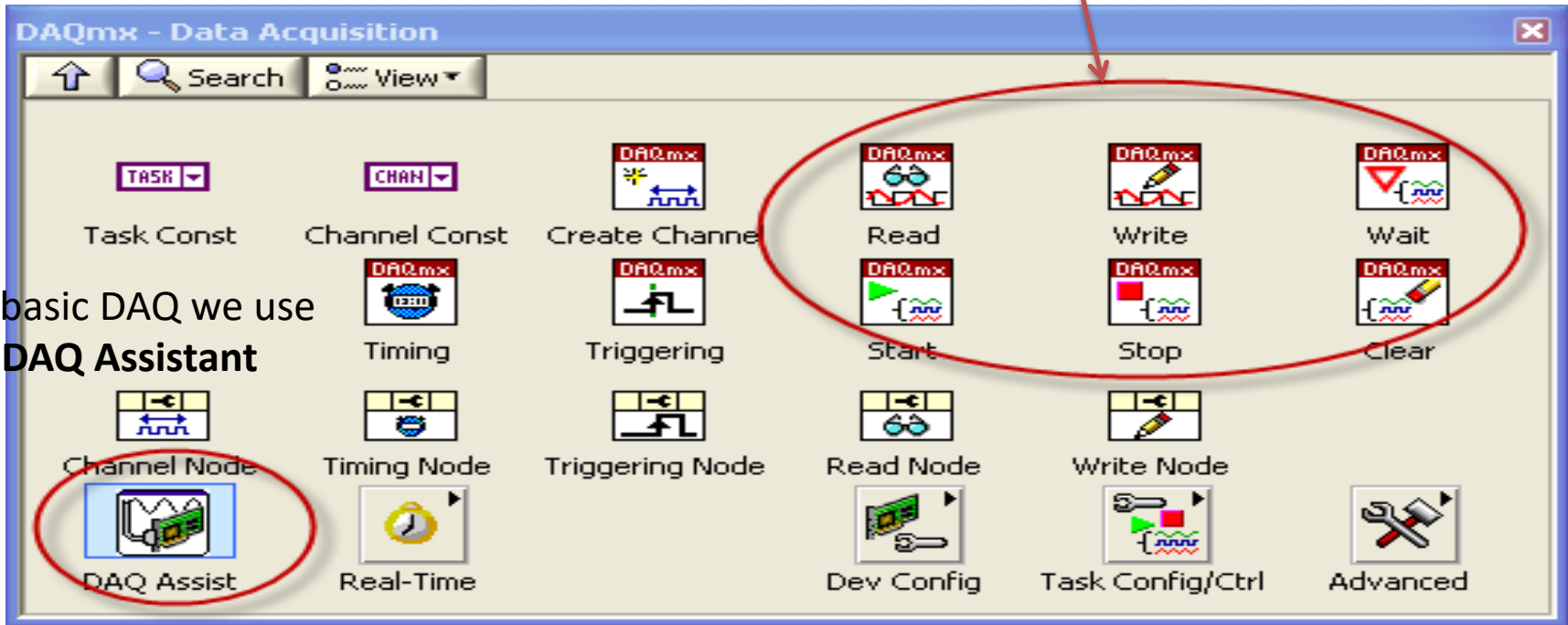
# Using DAQ or I/O Module in LabVIEW

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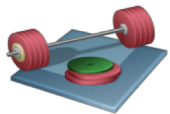
# Data Acquisition Palette in LabVIEW

Functions Palette: "Measurement I/O" -> "NI DAQmx"

For more "advanced" DAQ we use these functions

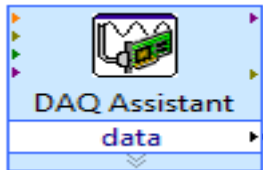


For basic DAQ we use the **DAQ Assistant**

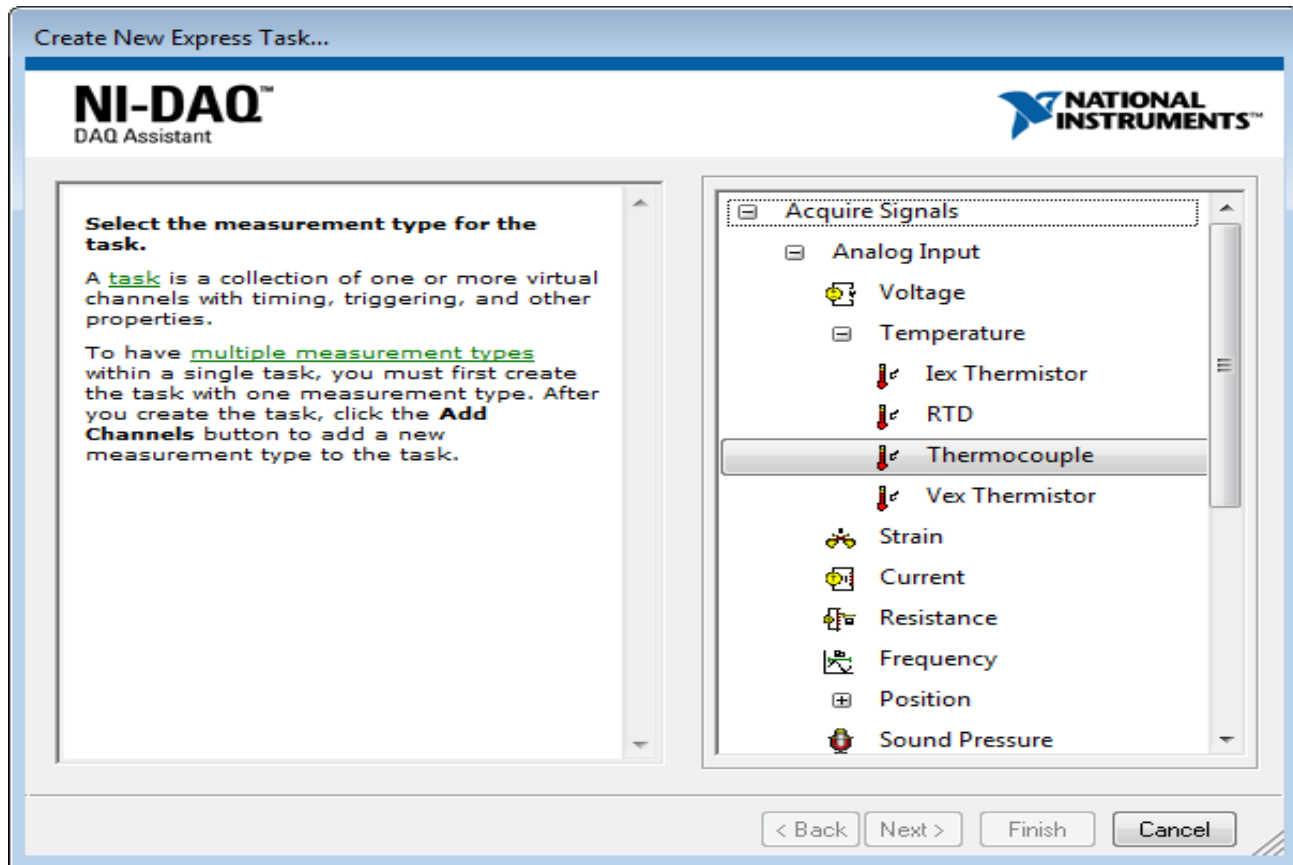


Students: Make sure that you have this palette installed. If not, install the latest DAQmx driver!

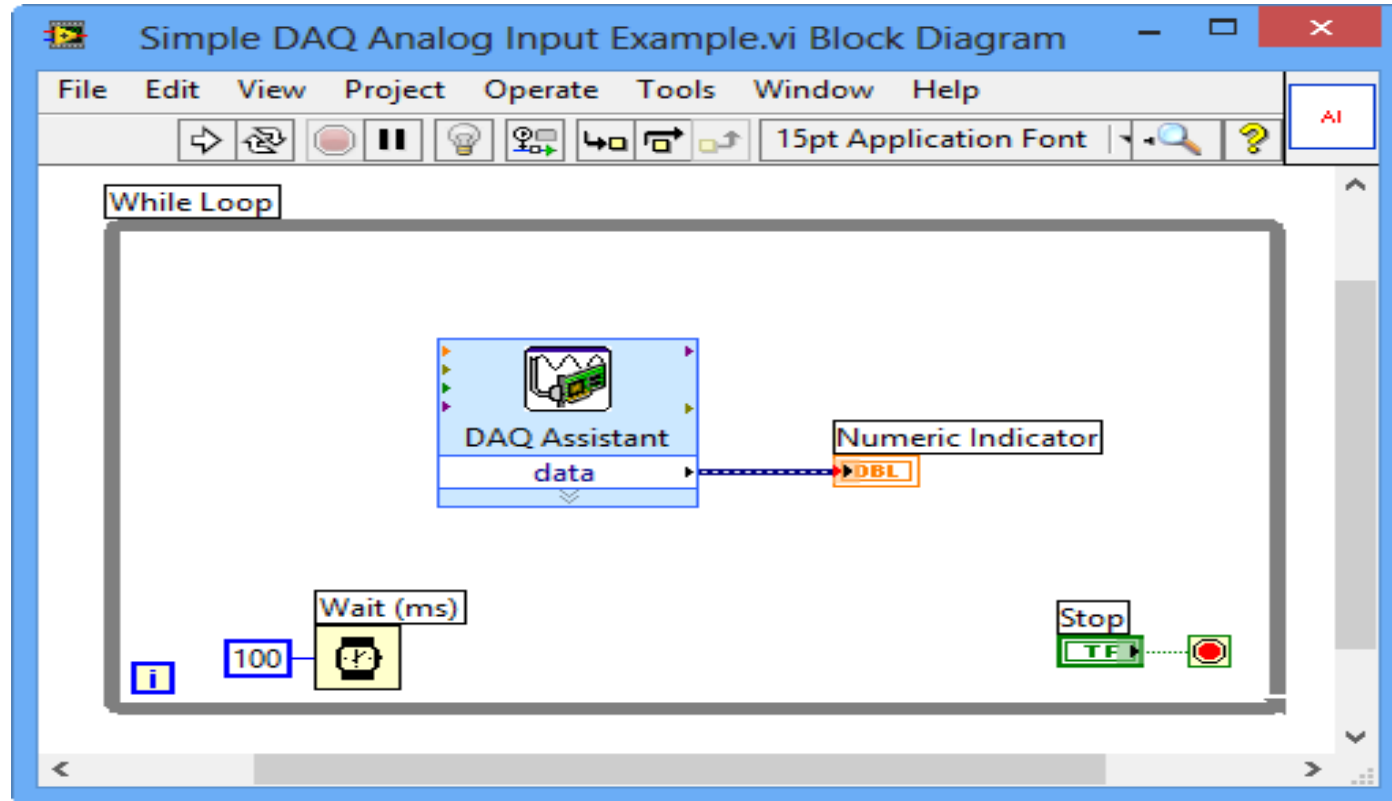
# LabVIEW DAQ Assistant



When you place the DAQ Assistant on the Block Diagram, a Wizard automatically pops up where you configure what you want to do, i.e., if you want to Read or Write Data, Analog or Digital signals, which channel you want to use, etc.



# Basic DAQ Example



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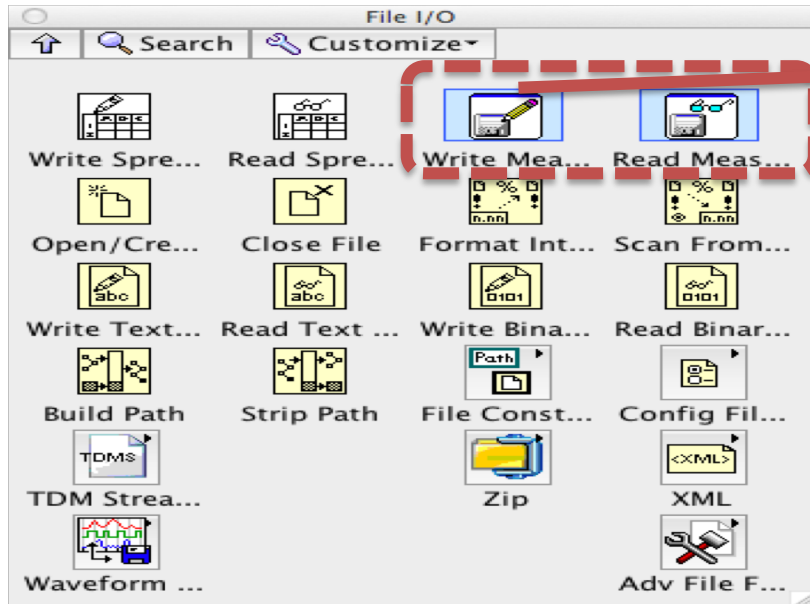


# Write To Measurement File

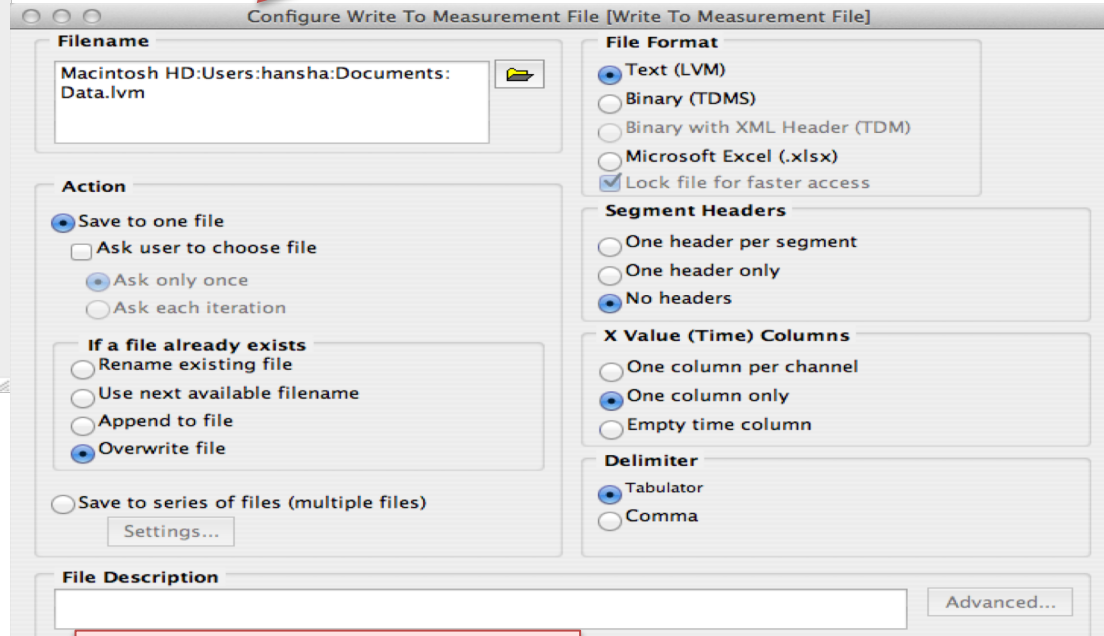
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# Save Data to File (Data logging)

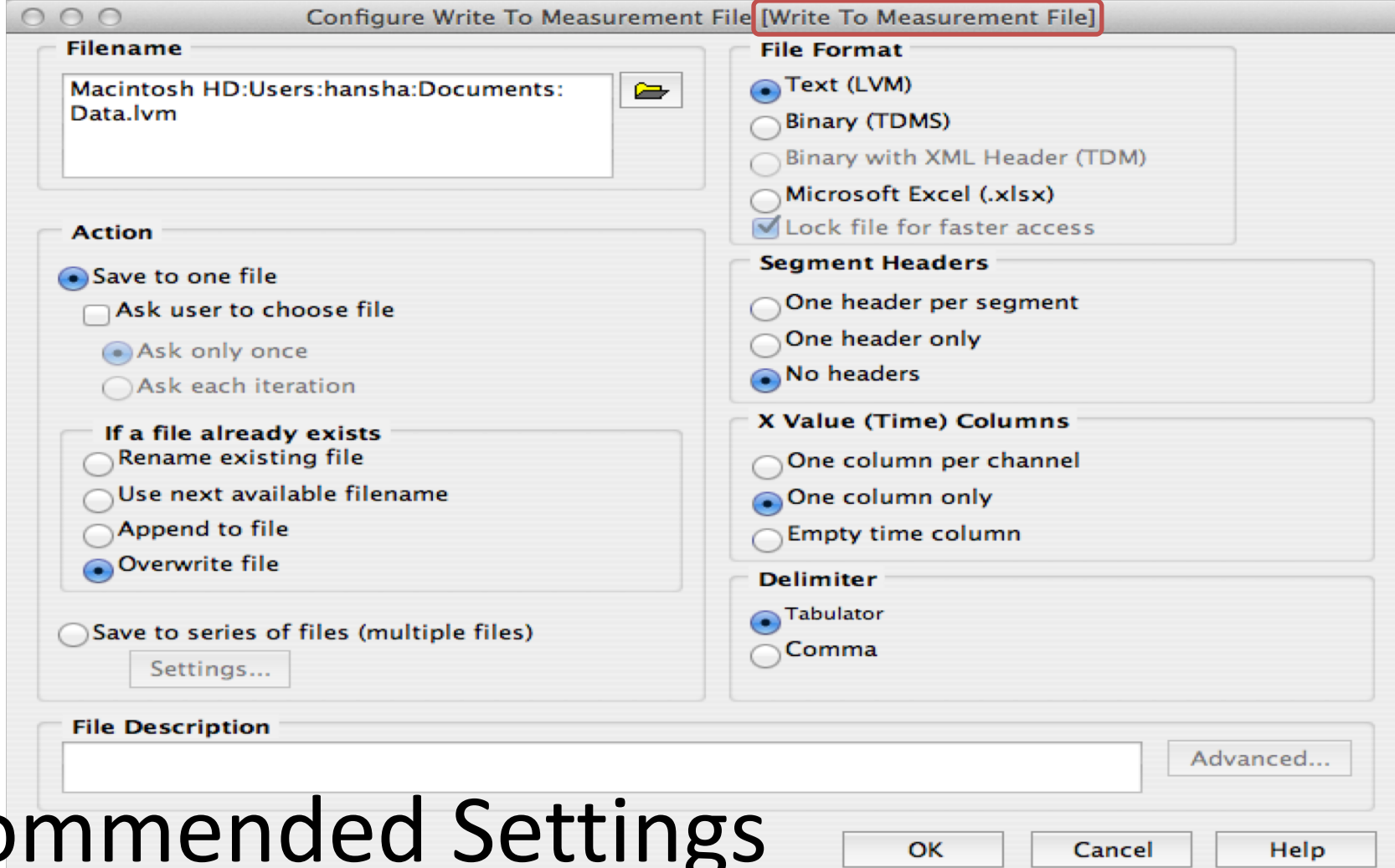


Right-click-Properties



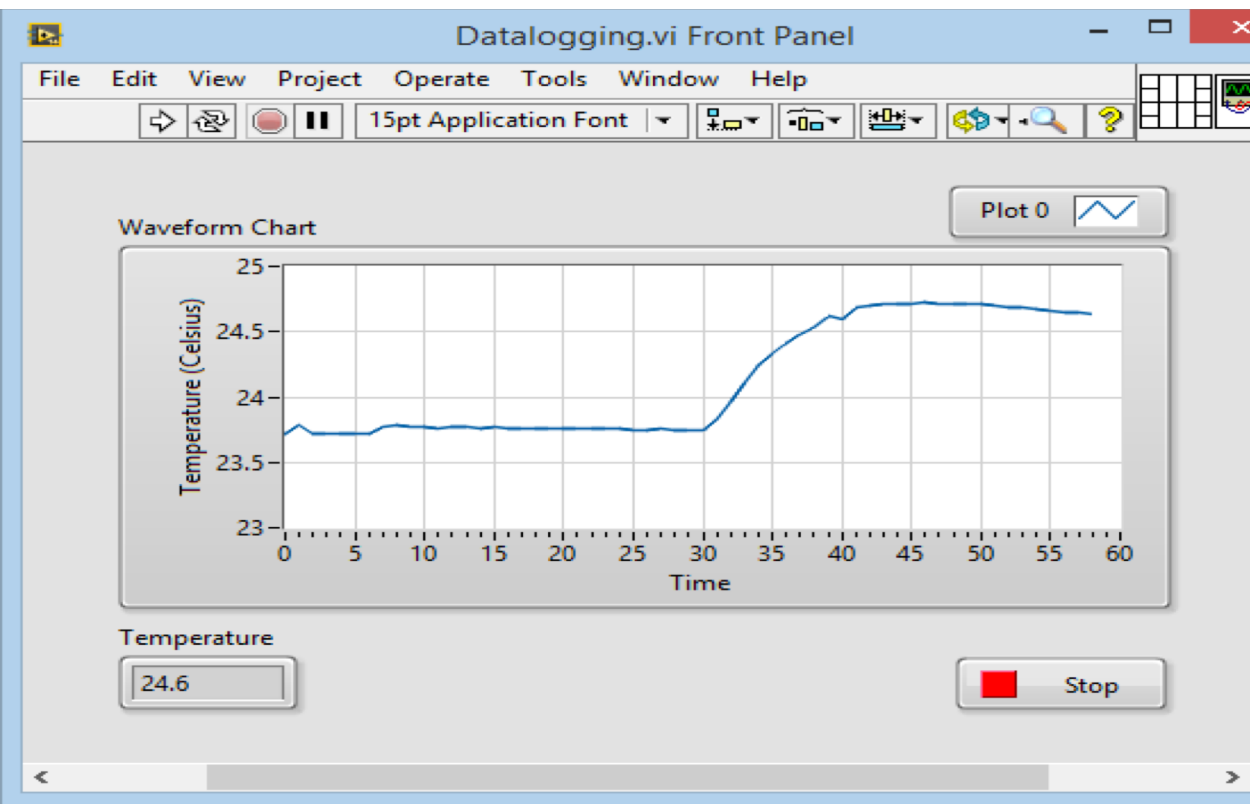
Recommended Settings

OK Cancel Help



Recommended Settings

# Datalogging Example

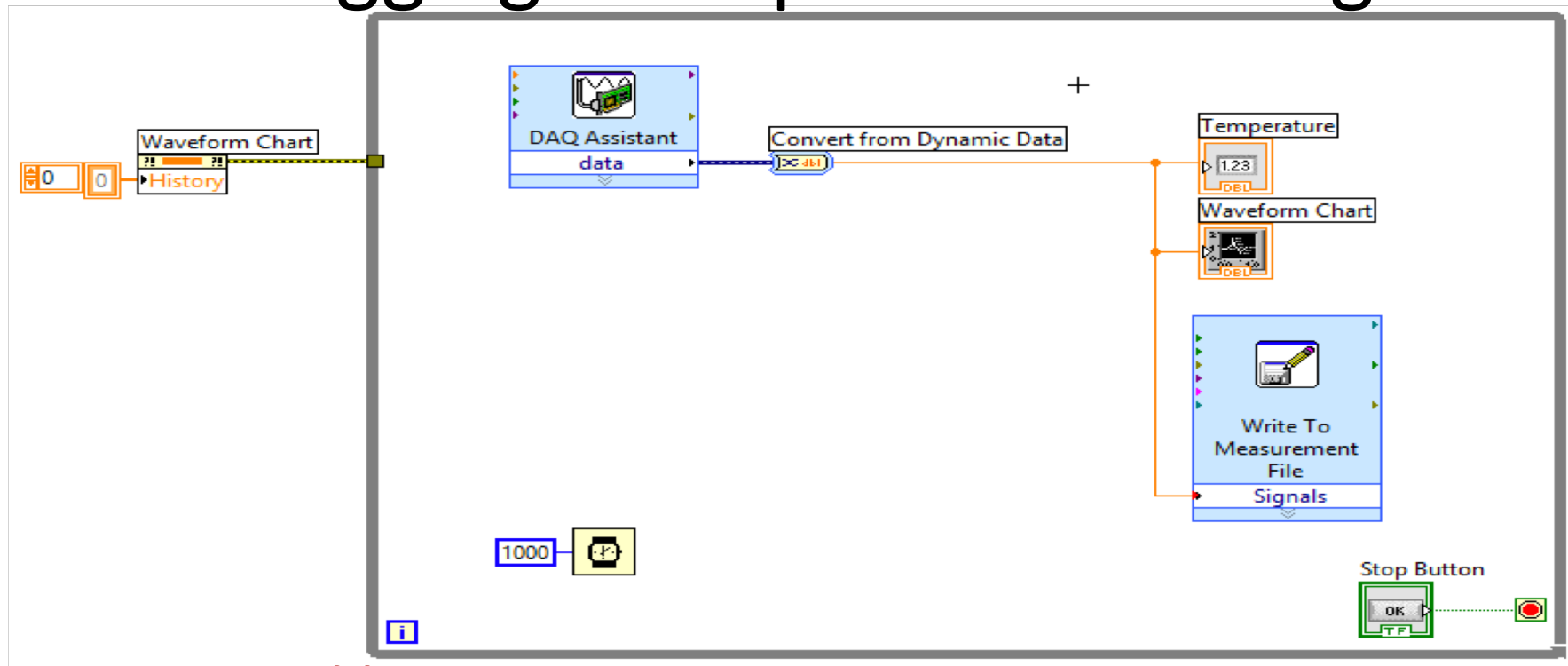


Data.lvm - Notepad

File Edit Format View Help

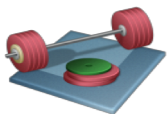
0.000000	23.722386
0.975883	23.782507
1.973000	23.714294
2.977028	23.719689
3.975200	23.719689
4.976168	23.716991
5.974145	23.714294
6.977184	23.774415
7.977247	23.779810
8.976395	23.777113
9.976493	23.771718
10.980489	23.763626
11.976687	23.771718
12.980719	23.766323
13.982748	23.763626
14.983700	23.766323
15.979765	23.763626
16.977789	23.760928
17.979809	23.760928
18.977904	23.760928
19.976963	23.758231
20.977973	23.755534
21.979071	23.755534
22.980054	23.752836
23.979137	23.752836
24.978214	23.750139
25.978157	23.747441
26.978513	23.752836

# Datalogging Example – Block Diagram



Students: **(1)** Log Temperature Data, both Celsius and Fahrenheit (use SubVI) to a “Measurement File”. **(2)** Then Plot the Data in the File in Excel.

**(3)** You should also create a new VI in LabVIEW where you plot the data from the File in a Graph and in an Array.



# Read from Measurement File - Example

Configure Read From Measurement File [Read From Measurement File]

Filename  
C:\Work\Development\LabVIEW\DAQ\Data.lvm

File Format  
 Text (LVM)  
 Read generic text files  
 Binary (TDMS)  
 Binary with XML Header (TDM)  
 Lock file for faster access

Time Stamps  
 Relative to start of measurement  
 Absolute (date and time)

Segment Size  
 Retrieve segments of original size  
 Retrieve segments of specified size  
Samples: 100

Action  
 Ask user to choose file

Generic Text File  
Delimiter  
 Tabulator  
 Comma

Start row of numeric data  
1

First row is channel names  
 First column is time channel

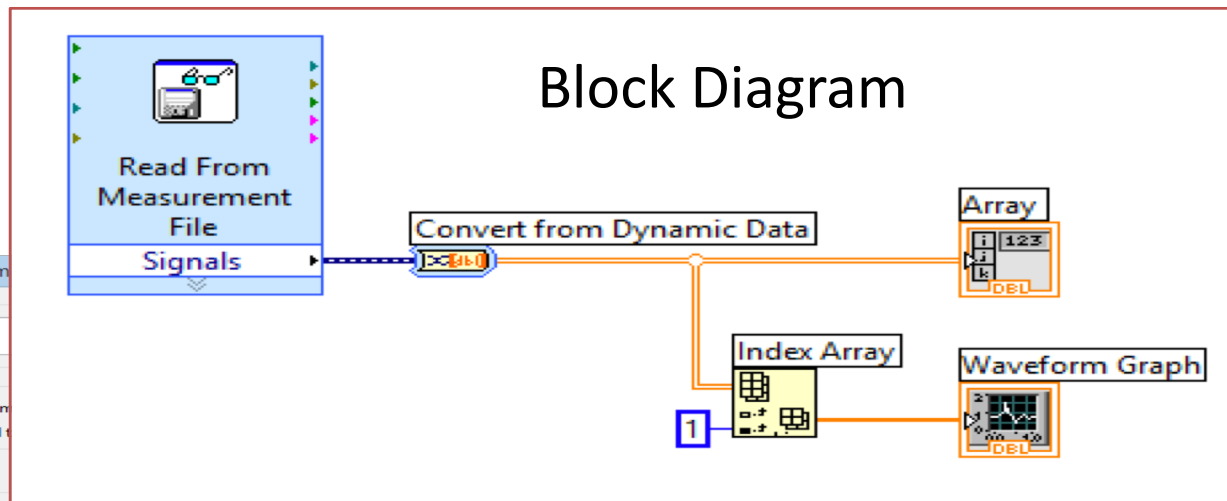
Decimal Point  
 . (dot)  
 , (comma)

Sample data

0	23.722386
0.975883	23.782507
1.973	23.714294
2.977028	23.719689
3.9752	23.719689
4.976168	23.716991
5.974145	23.714294
6.977184	23.774415
7.977247	23.77981
8.976395	23.777113
9.976493	23.771718
10.980489	23.763626
11.976687	23.771718

Read File Now

OK Cancel Help



Right-click-Properties

Read From Measurement File  
Signals

Recommended Settings

# Configure Read From Measurement File [Read From Measurement File]

## Filename

C:\Work\Development\LabVIEW\DAQ\Data.lvm

## File Format

- Text (LVM)
  - Read generic text files
- Binary (TDMS)
- Binary with XML Header (TDM)
  - Lock file for faster access

## Action

- Ask user to choose file

## Time Stamps

- Relative to start of measurement
- Absolute (date and time)

## Segment Size

- Retrieve segments of original size
- Retrieve segments of specified size

Samples

100

## Generic Text File

### Delimiter

- Tabulator
- Comma

Start row of numeric data

1

- First row is channel names
- First column is time channel

### Decimal Point

- . (dot)
- , (comma)

## Sample data

0	23.722386
0.975883	23.782507
1.973	23.714294
2.977028	23.719689
3.9752	23.719689
4.976168	23.716991
5.974145	23.714294
6.977184	23.774415
7.977247	23.77981
8.976395	23.777113
9.976493	23.771718
10.980489	23.763626
11.976687	23.771718

Read File Now

# Recommended Settings

OK

Cancel

Help

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# Temperature Simulator

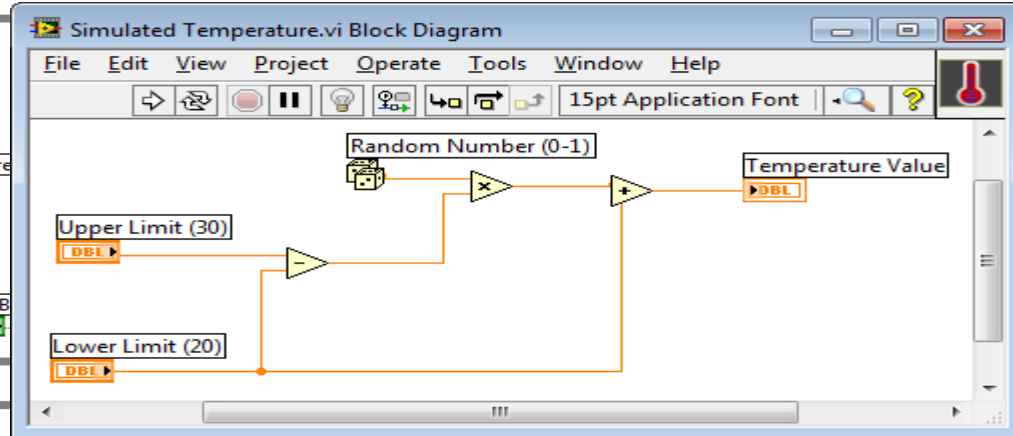
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# Temperature Simulator Example

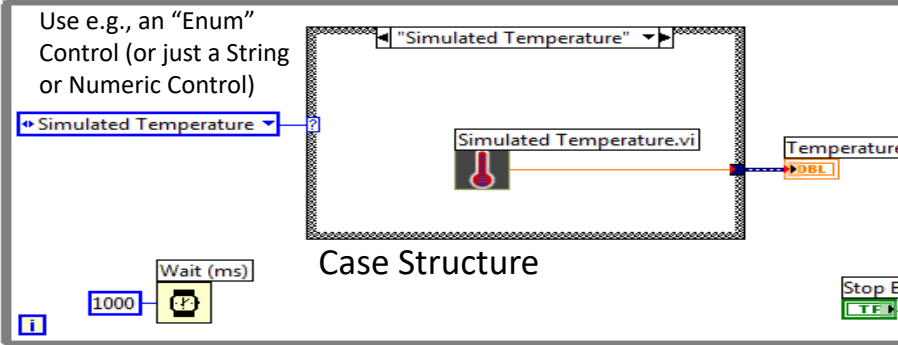


! If you do not have the TC01 device available, you can create and use a simple “Temperature Simulator” instead

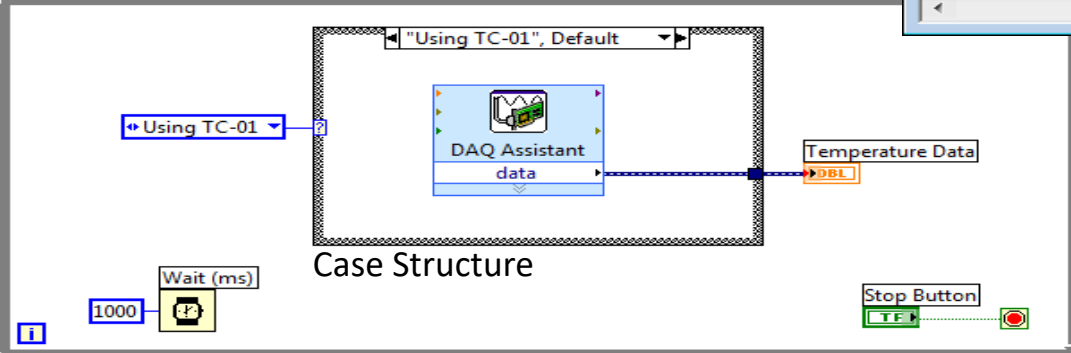
A simple SubVI that simulates a Temperature value using a Random Generator:



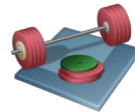
While Loop



While Loop



In this way you can easily switch between the real Temperature sensor (TC-01) and the Simulator

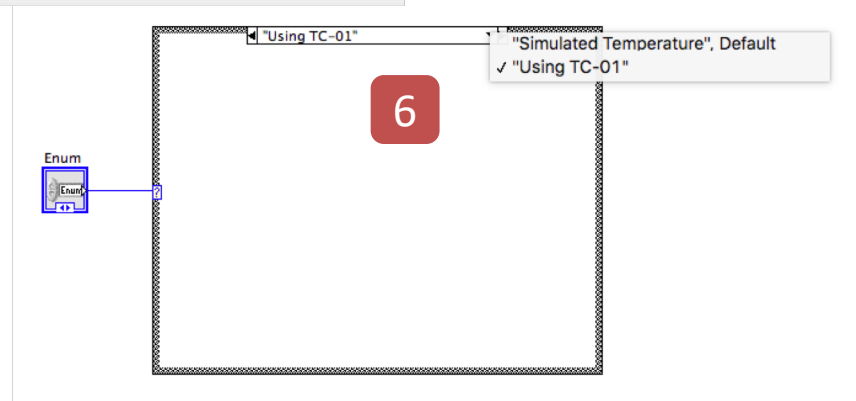
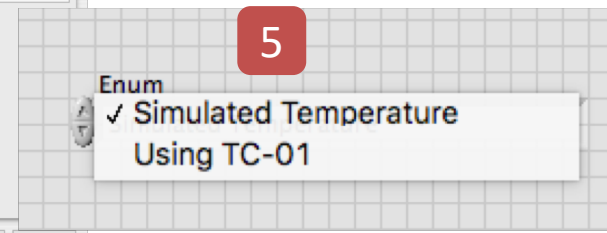
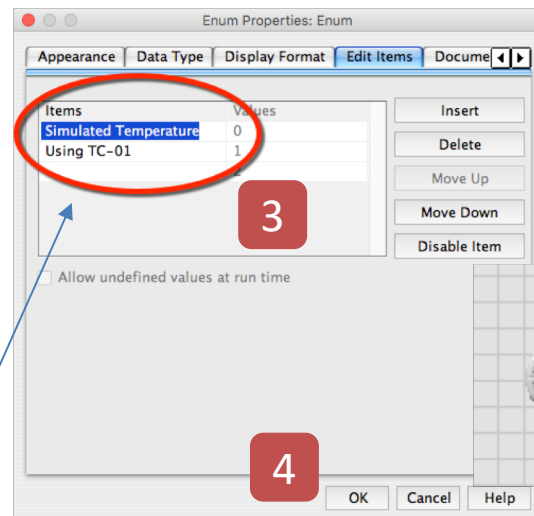
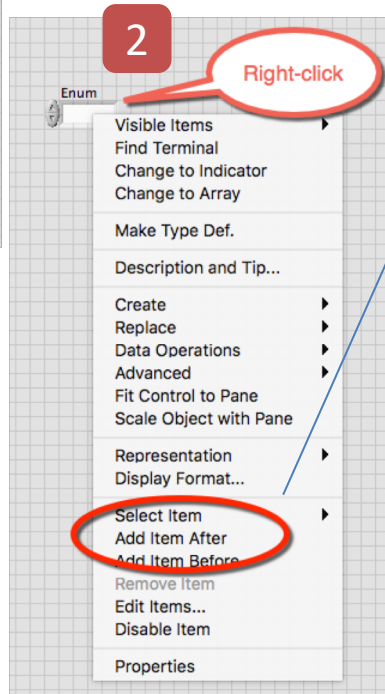
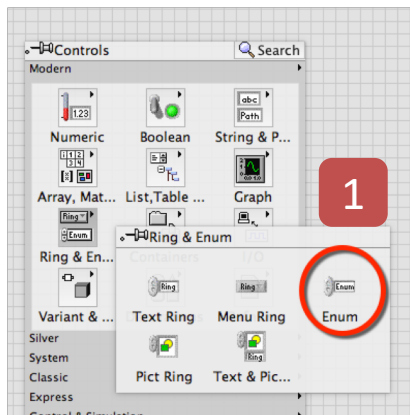


Students: Create a “Temperature Simulator”. Here you just see a simple example - feel free to create a more realistic Temperature Simulator



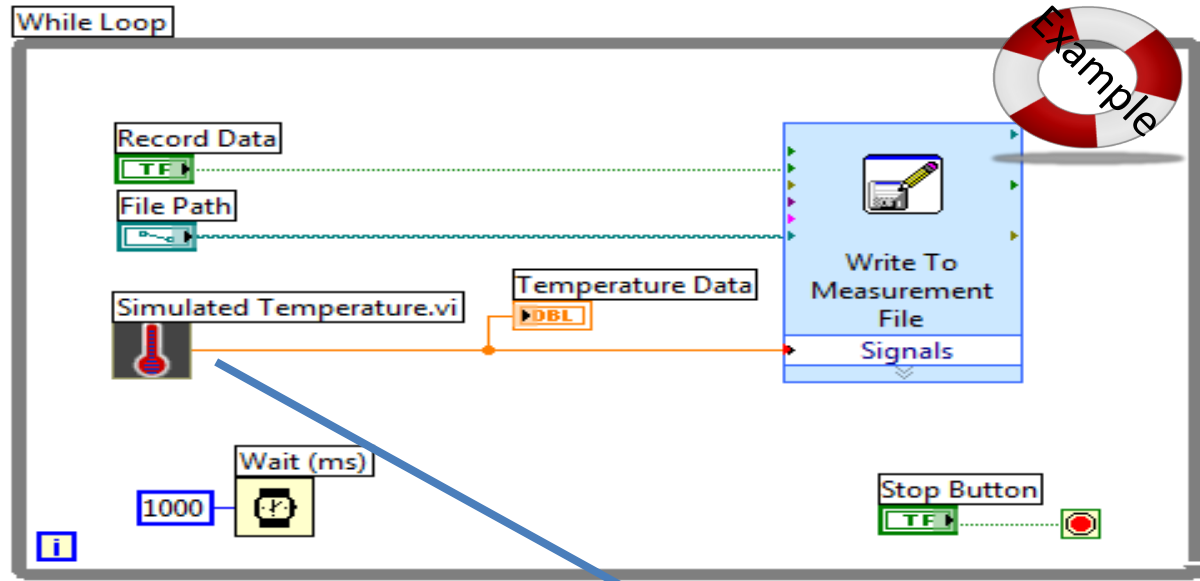
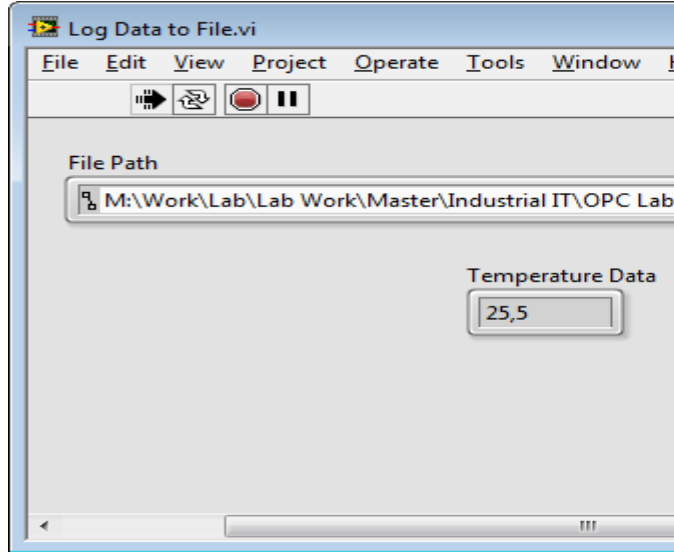
# How to create an "Enum" in LabVIEW

(used in the Temperature Simulator Example)



# Log Data to File

Simple Example of how to log data to a Measurement File using the “Write To Measurement File” function in LabVIEW



In this example we get data from a simulator.

You can turn logging On/Off

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