

LabVIEW Lab(2)

Design of Measurement Systems



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LAB Goals:

- ▶ Performing basic statistical analysis of measured data using LabVIEW.



Building Arrays

What is an array?

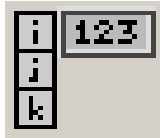
- ▶ An array can either resemble a vector or a matrix. As does a vector and a matrix, an array groups similar pieces of data.
- ▶ Arrays may contain numeric, Boolean, string, and cluster data types. They may be used as an indicator (output) or a control (input).



Creating a One-Dimension Array.

In the Front-Panel:

- ▶ Controls Palette → Modern → Array, Matrix & Cluster → Array



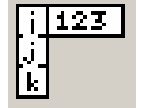
- ▶ Notice when you first put the array on the front panel that it is empty. You can determine your array type by inserting either a control or indicator inside the array.
- ▶ For example, for a numerical indicator array:
Controls Palette → Num Inds → Num Ind → Place inside Array.



Creating a One-Dimension Array.

In the Block-Diagram (Creating Constant Array):

- ▶ Functions Palette → Programming → Array → Array Constant
- ▶ To make the array a numerical constant array:
 - ▶ Functions Palette → Mathematics → Numeric → Numeric Constant
 - ▶ Drag and drop it to the Array constant box



OR:

- ▶ Functions Palette → Programming → Array → Build Array
- ▶ Functions Palette → Mathematics → Numeric → Numeric Constant. And connect the numerical constant to the build Array box.



Exercise (1)

- ▶ Implement a VI that calculates the mean, the standard deviation for the given measurement set.

Trial	1	2	3	4	5	6	7	8	9	10
Current (mA)	21.5	22.1	21.3	21.7	22	22.2	21.8	21.4	21.9	22.1



Exercise (2)

- ▶ Implement a VI that finds the best-fit straight line for the given calibration data (decreasing direction).

Input (x)	Output (y) (decreasing direction)
0	0
5	1.2
10	3.5
15	3
20	5
25	5.5
30	7
35	7.7
40	9

