



Fall 2014

## MCT-242

### Lab. 1: Introduction to LabVIEW (December 2, 2014)

#### 1. Introduction

LabVIEW is a graphical programming environment used by millions of engineers and scientists to develop sophisticated measurement, test, and control systems using intuitive graphical icons and wires that resemble a flowchart. This lab gives a short introduction about Labview and let you be familiar with both block diagram and front panel.

#### 2. Lab Objectives

- 1- Understand the capabilities and the functionalities of LabVIEW.
- 2- Give general overview on LabVIEW graphical interface.
- 3- Use LabView as a programming language.

#### 3. Exercise 1

Following the previous example explained by the instructor, try to build a LabVIEW program to behave as the flow chart shown in Figure (1). Design a VI to provide an appropriate interface for the user. A snapshot of the block diagram (without wiring) is shown in Figure (2).

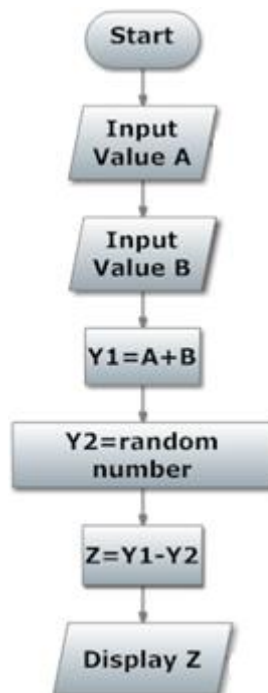


Figure 1: Exercise 1 Flow Chart

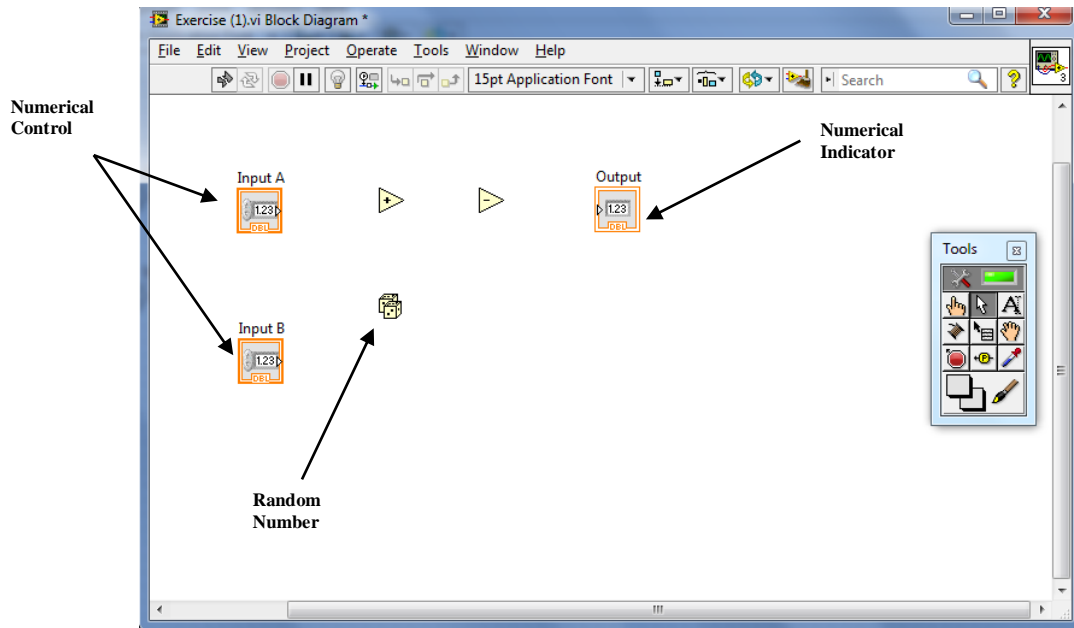


Figure 2: Exercise 1 Block Diagram

**Help:**

Controls Palette>>Express>>Num Ctrls>> Num Ctrl

Controls Palette>>Express>>Num Inds>> Num Inds

Functions Palette>>Programming>>Numeric>>Add, Subtract, Random Number

**4. EXERCISE 2**

Design a program that uses a simulated signal (sine wave) and let the user controls both amplitude and frequency of the signal and show the simulated signal on wave chart graph. A block diagram – without connections – is shown in Figure(3).

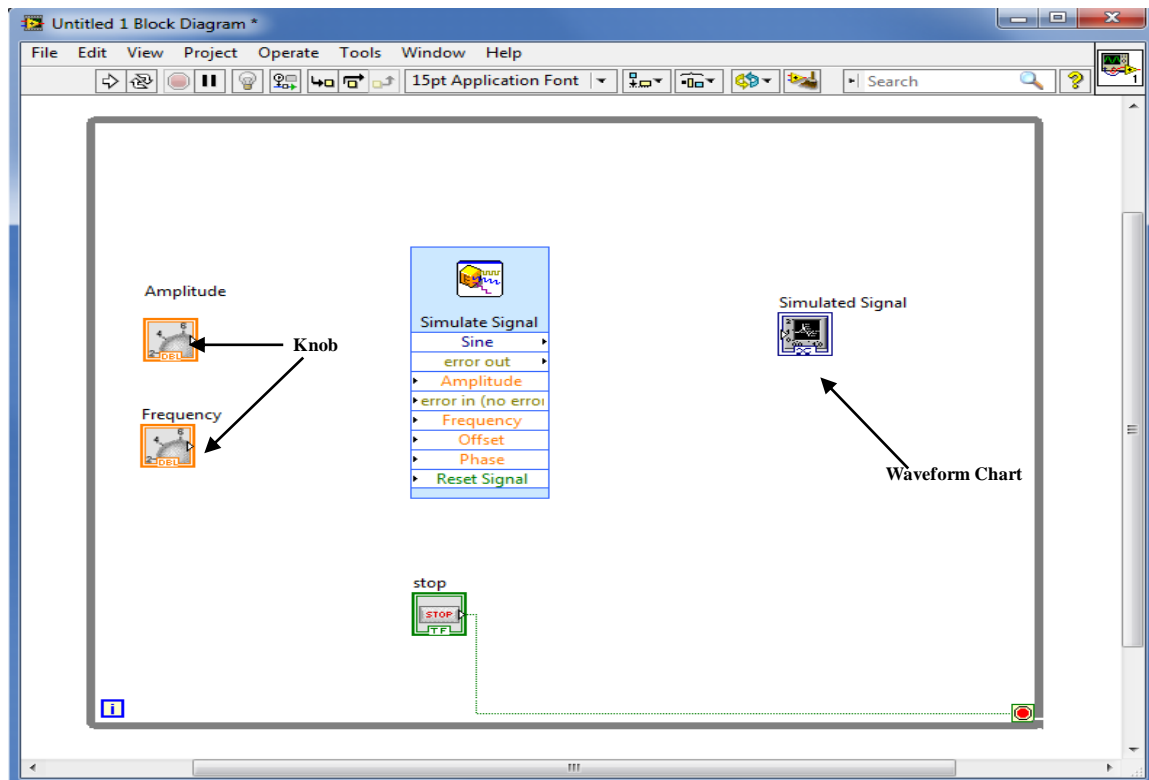


Figure 3: Exercise 2 Block Diagram

**Help:**

Controls Palette>>Express>>Num Ctrl>> Knob

Controls Palette>>Express>>Graph Indicators>> Chart

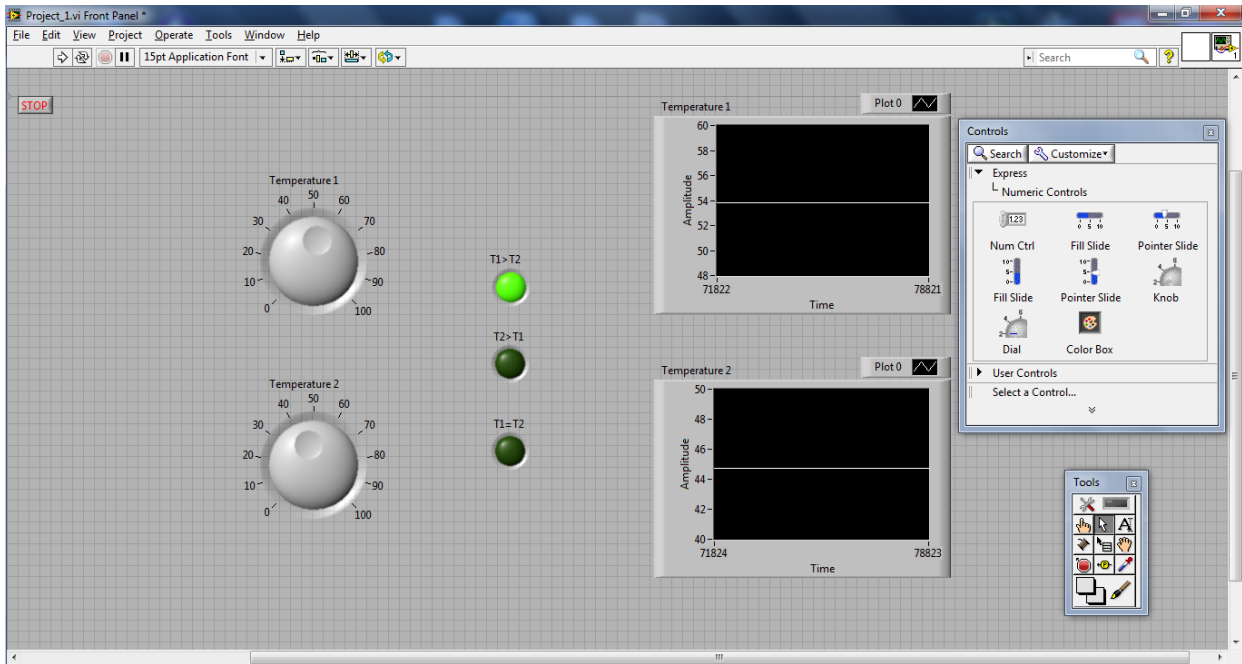
Functions Palette>>Express>>Input>>Simulated Signal

**5. Exercise 3**

Design a VI that lets the user controls two knobs (Temperature 1 & Temperature 2),

- if  $T1 > T2$  led (1) is on.
- if  $T2 > T1$  led (2) is on.
- if  $T1 = T2$  led (3) is on.

Also show Temperature (1) and Temperature (2) on a waveform chart. The front panel looks like Figure 4.



**Figure 4: Exercise 3 Front Panel**