

**SVKM'S NMIMS**

**Mukesh Patel School of Technology Management & Engineering**

Department of Mechatronics Engineering

**Signal Processing Lab**

Subject- Virtual Instrumentation

**EXPERIMENT NO. 2**

**Aim:**

2A – Develop HMI to convert 4 bit binary number to decimal

2B – Develop HMI to check if a given number is even or odd

2C – Develop HMI to design 4:1 Mux

**Software Used :** PC with software (NI LabVIEW)

**Theory:**

Boolean functions in LabVIEW are functions that operate on Boolean values, which can only have two possible states: True or False. In LabVIEW, Boolean functions are used to perform logical operations on Boolean values.

Some common Boolean functions in LabVIEW include:

1. And: This function returns True if all inputs are True, otherwise it returns False.
2. Or: This function returns True if at least one input is True, otherwise it returns False.
3. Not: This function returns the opposite of the input value. If the input is True, it returns False, and if the input is False, it returns True.
4. Xor: This function returns True if only one input is True, otherwise it returns False.
5. Imply: This function returns False if the first input is True and the second input is False, otherwise it returns True.
6. Equiv: This function returns True if both inputs are the same, otherwise it returns False.

Boolean functions can be used in LabVIEW to control program flow based on logical conditions. For example, a Boolean function could be used to determine whether or not a certain action should be taken based on the state of a sensor.

To check whether a number is even or odd in LabVIEW, you can use the Modulus operator and a comparison operator.

To design a 4:1 multiplexer using Boolean functions in LabVIEW, you can use the And and Or functions to create a Boolean expression that selects the appropriate input based on the select signal.

## Front Panel:

Experiment 2A: Develop HMI to convert 4 bits binary number to decimal number

Bit 4- MSB Bit



Bit 3



Bit 2



Bit 1- LSB Bit



Numeric

0

Experiment 2B: Develop HMI to check if a given number is even or odd

Numeric  
0

Odd



Even



Experiment 2C: Develop HMI to design 4:1 mux

Input 0



Input 1



Input 2



Input 3



Select 0



Select 1

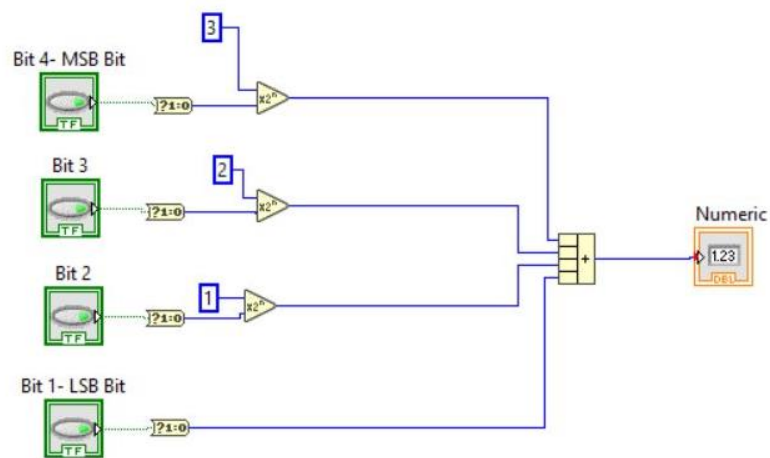


Output 1

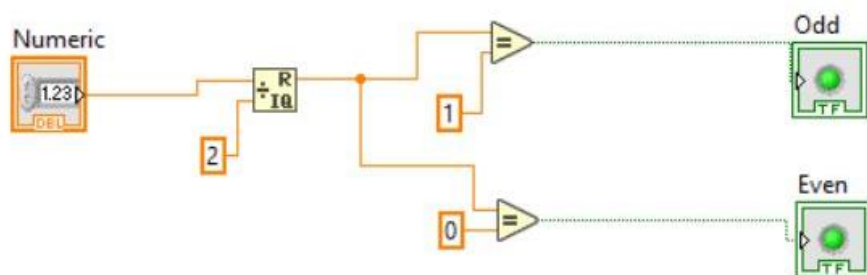


**Block Diagram:**

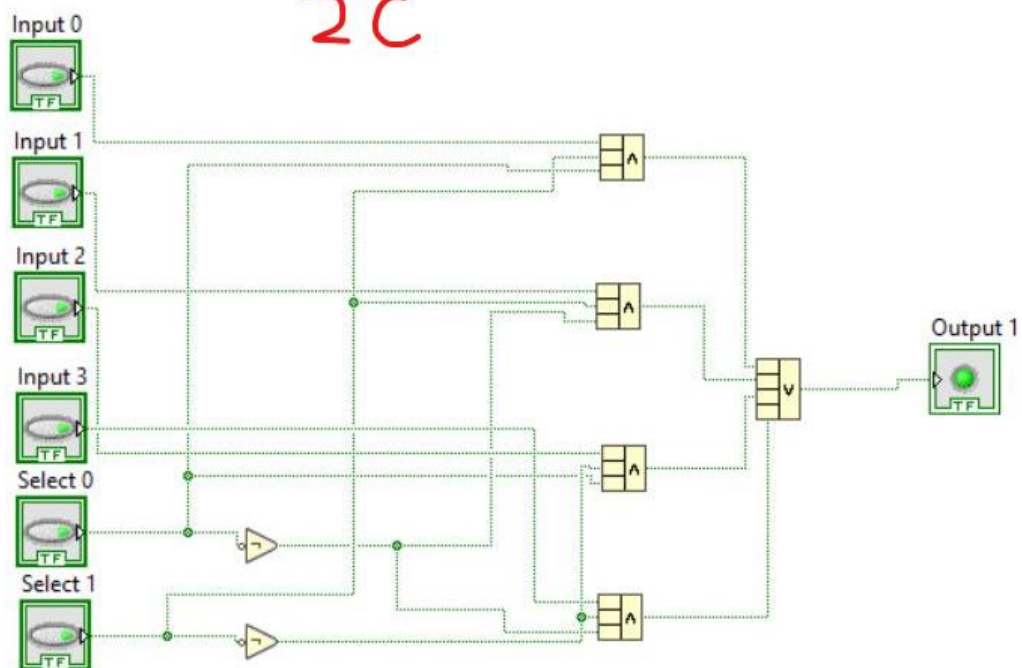
2A



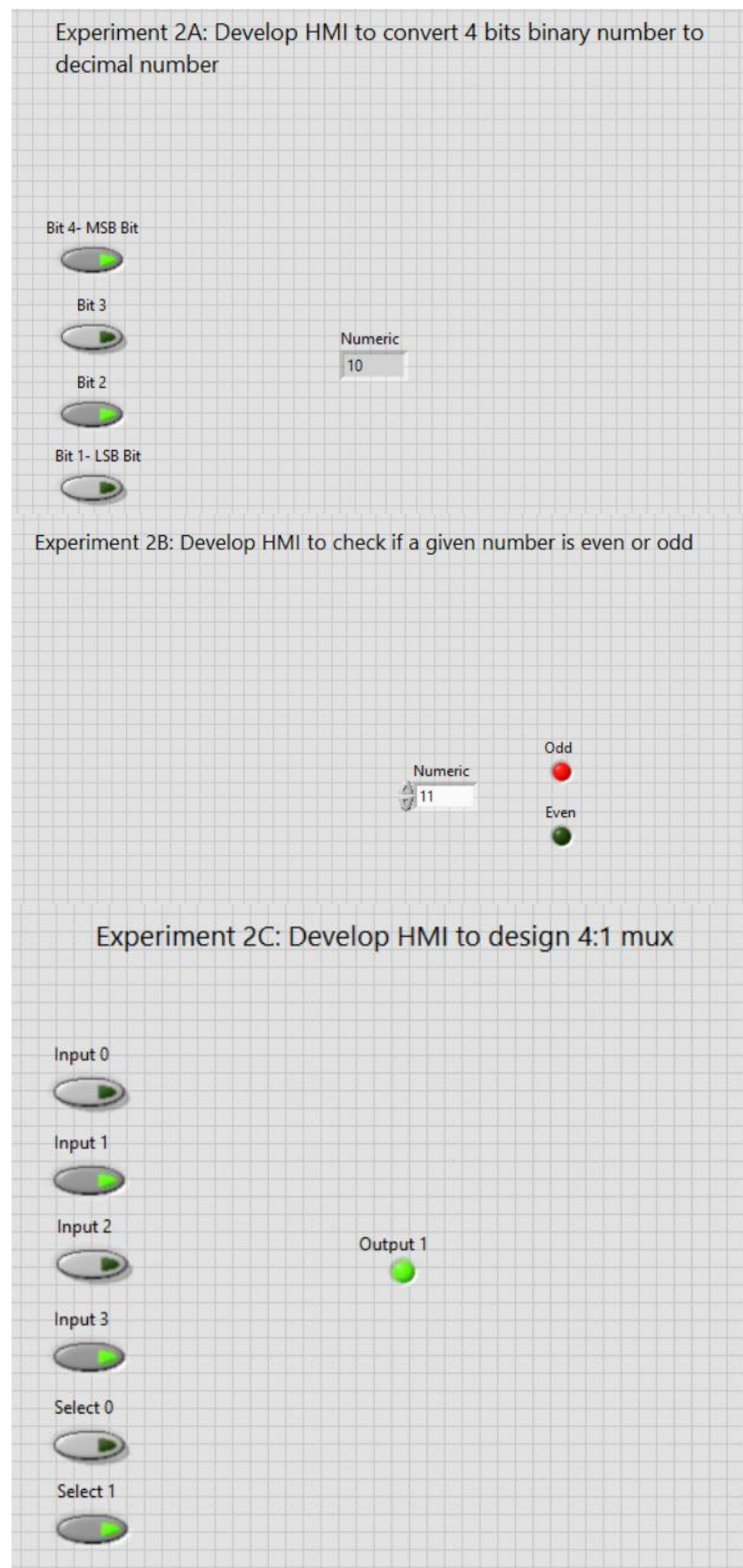
2 B



2C



## Output :



**Conclusion :**

The experiment was carried out successfully in LabVIEW.