Sr. No: 11

Name: Soham Desai

Xavier ID: 202003021

Date: 02/02/22

Experiment 4

Aim: Implementation of MUX and DeMUX

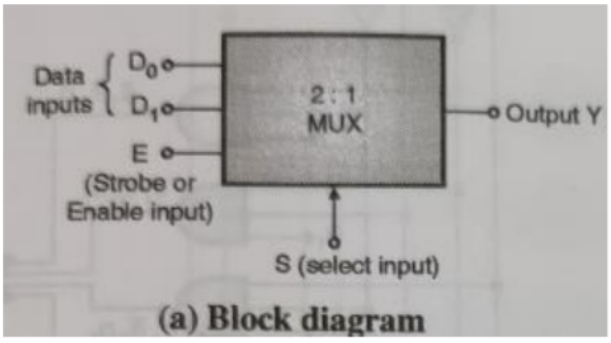
LO & Statement : LO: 2) Analyze and design combinational circuits

Software Requirements: Logisim software

Theory:

Multiplexer

- A Multiplexers (MUX) is a combinational logic component that has several inputs and only one output.
- MUX directs one of the inputs to its output line by using a control bit word (selection line) to its select lines.
- The multiplexer is sometimes called a data selector.
- The multiplexer acts like an electronic switch that selects one from different.



(a) Block diagram

Enable	Select input S	Output Y
0	X	0
1	0	D_0
1	1	D_1

X = Don't care

(b) Truth table

Enable E	Select S	D_1	D_0	Output Y
0	X	X	X	0
1	0	X	0	0
1	0	X	1	1
1	1	0	X	0
1	1	1	X	1

Sr. No: 11

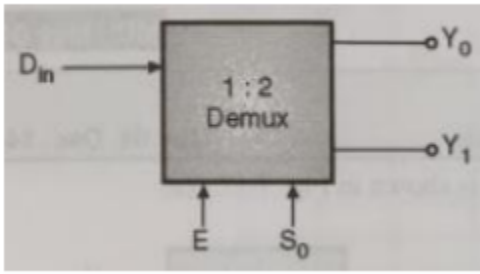
Name: Soham Desai

Xavier ID: 202003021

Date: 02/02/22

Demultiplexer

- The demultiplexer is a combinational logic circuit that performs the reverse operation of a multiplexer (Several output lines, one input line).
- Few types of multiplexer are 1-to-2, 1-to-4, 1-to-8, 1-to-16 multiplexer
- The digitally controlled analogue switches of the demultiplexer select an input resistor to vary the value of Rin.
- The combination of these resistors will determine the overall voltage gain of the amplifier, (Av)



Enable	Select	Outputs	
E	S_0	Y_1	Y_0
0	X	0	0
1	0	0	D_{in}
1	1	D_{in}	0

Table 7.13.2 : Detail truth table of demux 1 : 2

Enable	Data	Select	Outputs		
E	D_{in}	S_0	Y_1	Y_0	
0	X	X	0	0	
1	0	0	0	0	Y_0 is connected to D_{in}
1	1	0	0	1	
1	0	1	0	0	Y_1 is connected to D_{in}
1	1	1	1	0	

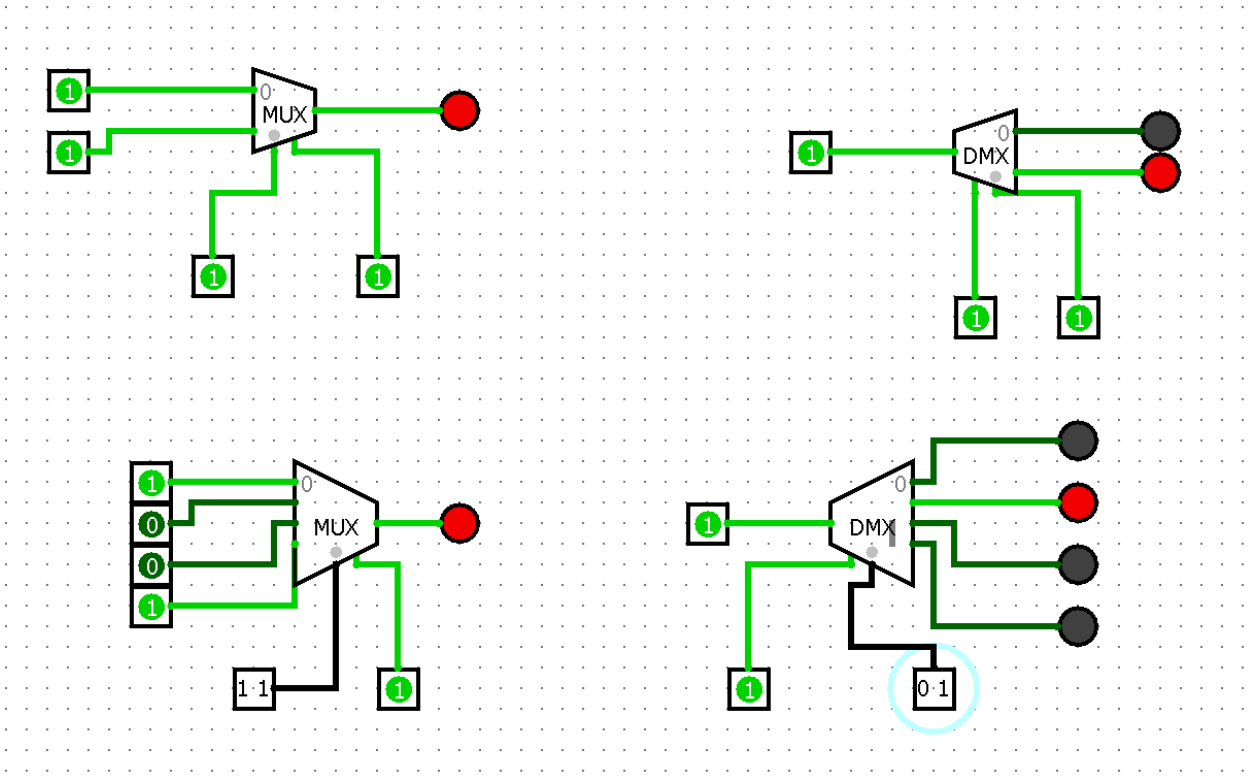
Sr. No: 11

Name: Soham Desai

Xavier ID: 202003021

Date: 02/02/22

Output:



Conclusion:

The implementation of MUX and DEMUX is carried out successfully.