RAJSHAHI UNIVERSITY OF ENGINEERING AND TECHNOLOGY
LAB REPORT - 05

COURSE NAME: SESSIONAL BASED ON CSE 2103
COURSE CODE: CSE 2104

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6.1) Experiment Name: Verify various Multiplexers Input and Output.

Objectives:
- To learn about Multiplexers.
- To know the circuit implementation of Multiplexers.
- To draw the diagram of Multiplexers.
- To write the Boolean expression for Multiplexers.
- To generate the truth table of a Multiplexers and verify its' input & output.

Theory: The device that selects between several analog or digital input signals and forwards the selected input to a single output line is called Multiplexer or 'MUX'(also known as a data selector).An electronic multiplexer can be considered as a multiple-input & single-output switch.

In our experiment,we will discuss about a multiplexer of f(x,y,z) = SOP(1,2,6,7) where x is MSB & z is LSB.

Experimental Analysis:

- **Circuit Diagram:**

6.1- Verifying various Multiplexers Input and Output:
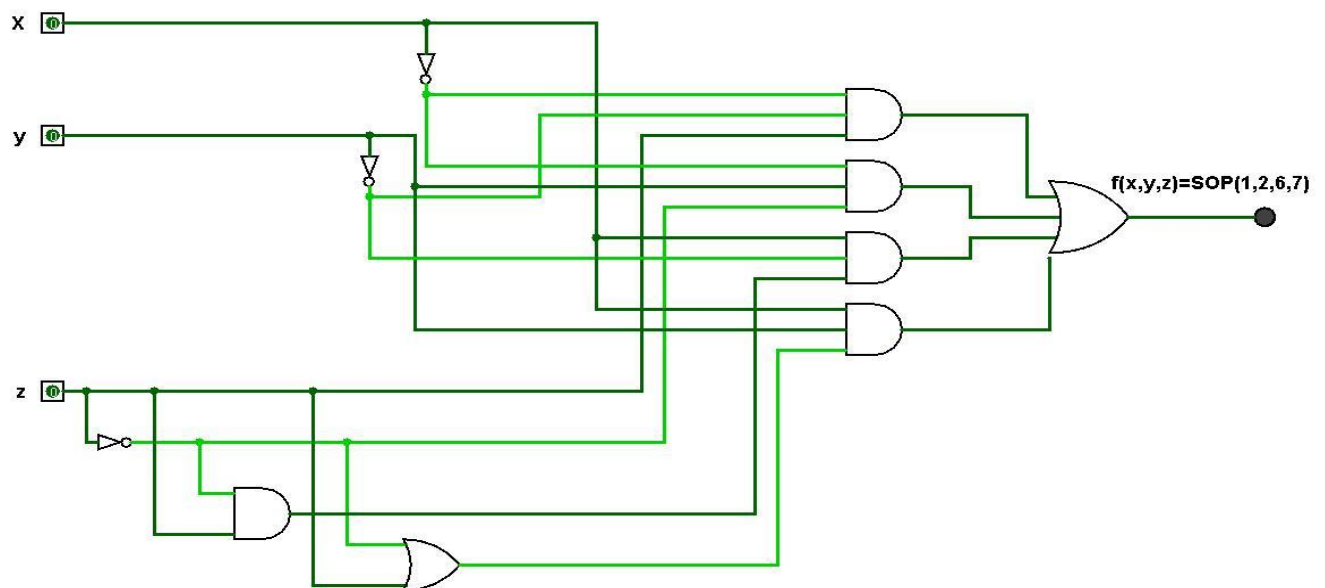
6.1: Verifying various multiplexers input and output

- **Truth Table:**

| x	y	z	f
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	1
1	1	1	1

Conclusion: In this experiment,we discussed about Multiplexers.The truth table shows the exact result of implementation.

6.2) Experiment Name: Verify various Encoders Input and Output.

Objectives:
- To learn about Encoders.
- To know the implementation way of Encoders.
- To draw the diagram of Encoder.
- To write the Boolean expression for Encoder.
- To generate the truth table of a Encoder.

Theory: An encoder is a combinational logic circuit that generate n output lines from 2^n (or less) inputs.It has the reverse function of the decoder.Encoders are used to reduce the number of bits needed to represent given information.
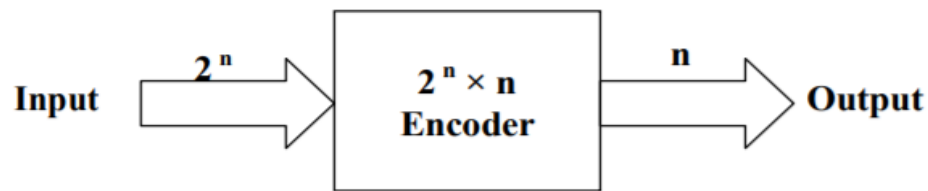
A priority encoder is a circuit or algorithm that compresses multiple binary inputs into a smaller number of outputs.

In our experiment,we will discuss about a 4-input priority encoder.Suppose D0,D1,D2 and D3 are the inputs & x,y are the outputs & v is the validity pin.If v = 0, the output is not valid and if v = 1,the output is valid.The expressions of its' outputs are-
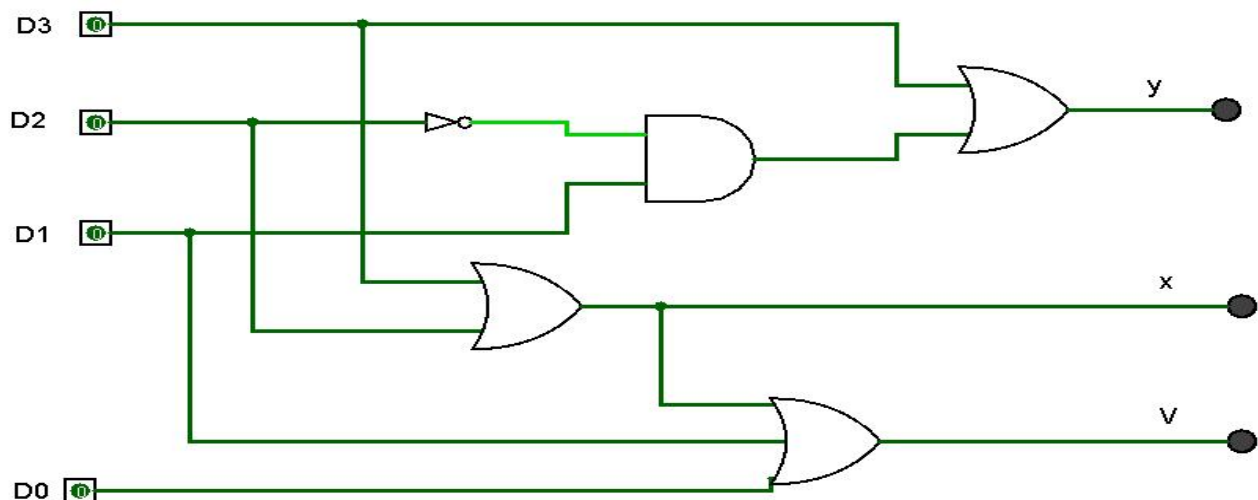
$x = D2 + D3$

$y = D3 + D1D2'$

$v = D0 + D1 + D2 + D3$

Experimental Analysis:

- **Circuit Diagram:**

6.2- Verify various Encoders Input and Output:

6.2: Verifying various encoders input and output

- **Truth Table:**

D0	D1	D2	D3	x	y	v
0	0	0	0	x	x	0
1	0	0	0	0	0	1
x	1	0	0	0	0	1
x	x	1	0	1	0	1
x	x	x	1	1	1	1

Conclusion: In this experiment,we discussed about Encoders.The truth table shows the exact result of implementation.