Title:

Design And Implement Multiplexer & Demultiplexer using Logic Gates

- ***Objective***:

The purpose of this exercise is to use logic gates to design and construct a multiplexer and demultiplexer circuit, fostering a practical understanding of data routing and distribution in digital systems. Through hands-on exploration, participants will gain valuable insights into the applications and significance of multiplexers and demultiplexers in real-world electronic circuits.

- ***Equipment***:

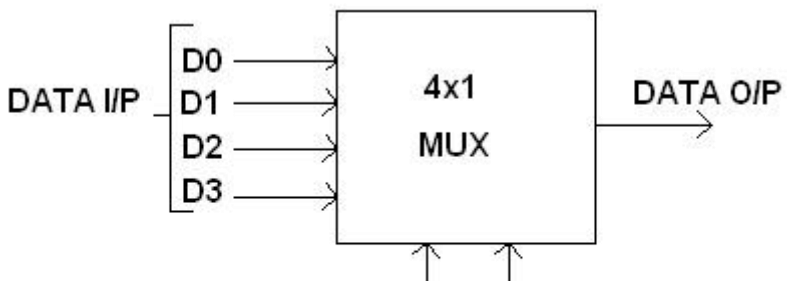
- Power supply
- Connecting wires
- Logic gates (AND, OR, NOT)
- Breadboard

❖ ***MULTIPLEXER***

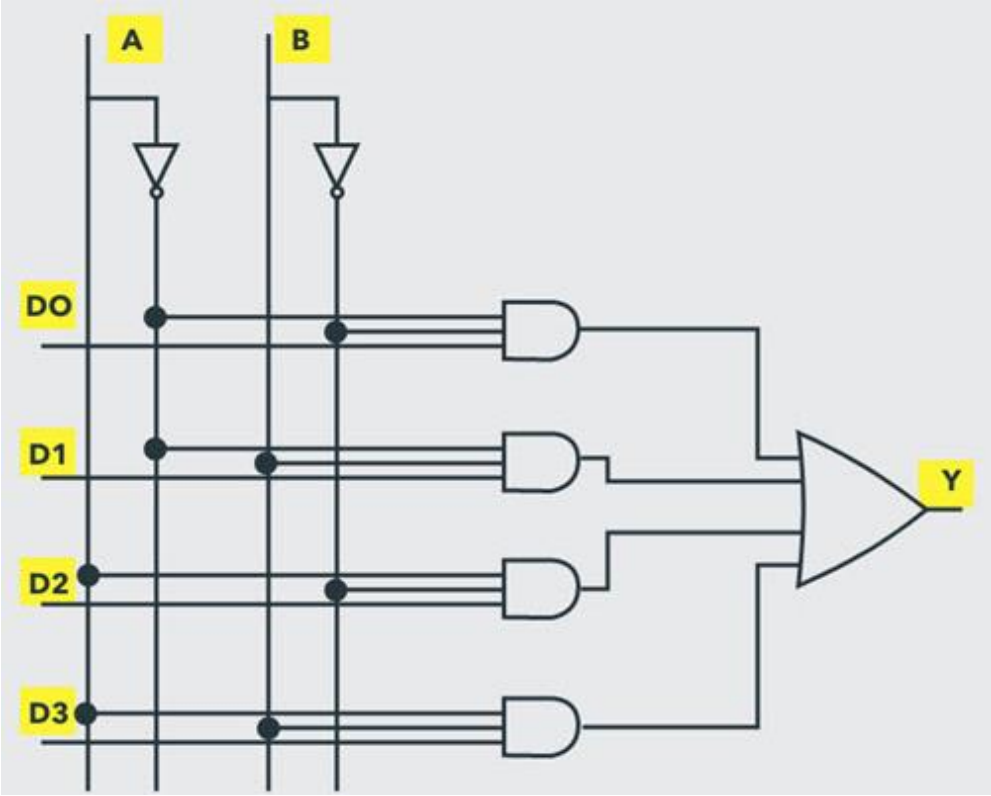
Truth Table:

S_0	S_1	***RESULT***
0	0	D_0
0	1	D_1
1	0	D_2
1	1	D_3

❖ ***Multiplexer Diagram***:



❖ ***Logic Diagram***:

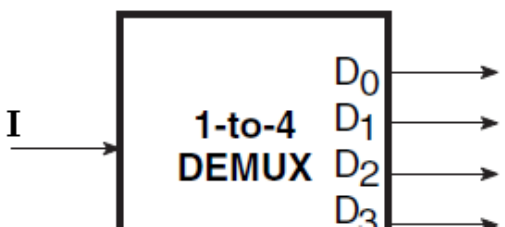


❖ *DE – MULTIPLEXER*

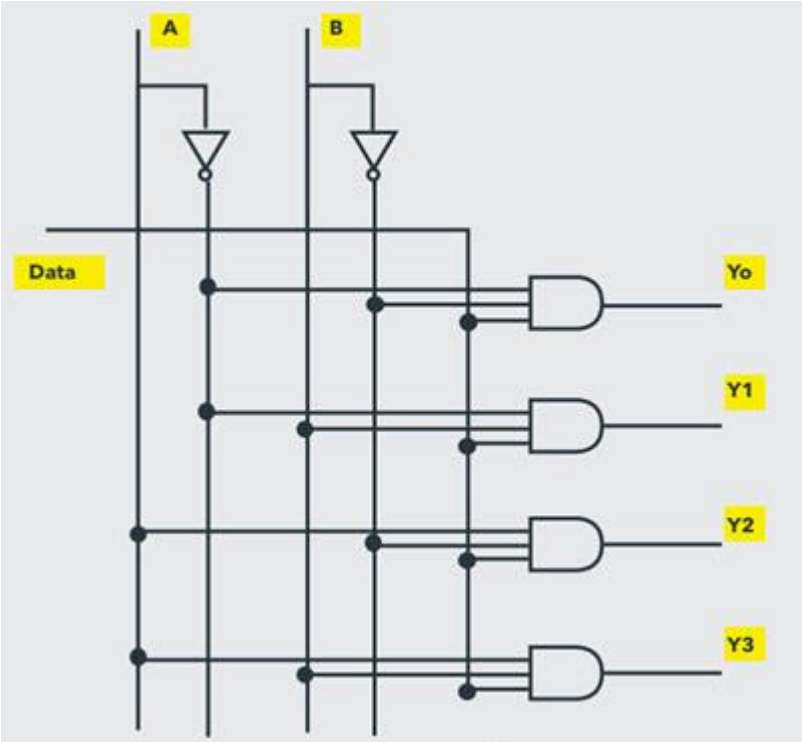
Truth Table:

S_0	S_1	I/P	D_0	D_1	D_2	D_3
0	0	1	1	0	0	0
0	1	1	0	1	0	0
1	0	1	0	0	1	0
1	1	1	0	0	0	1

❖ De – Multiplexer Diagram:

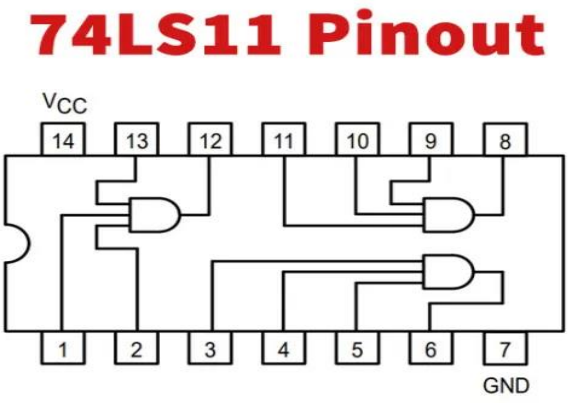


❖ **Logic Diagram**:

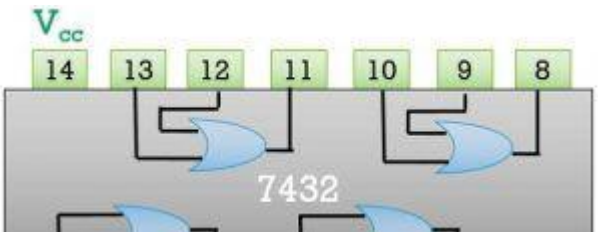


- ***Pin Configuration***:

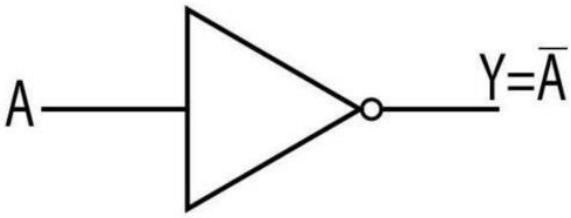
AND:



OR:



NOT:



NOT Gate - IC No 7404

- ***Conclusion***:

We have developed the multiplexer and demultiplexer in this lab on a breadboard, which essentially uses basic concepts of digital logic. Control signals dictate which inputs are selected by the 4-to-1 multiplexer, which uses logic gates to combine numerous input signals into a single output. The 1-to-4 demultiplexer, on the other hand, uses control inputs to divide a single input across a number of outputs. Both circuits carefully take into account the binary representation of control signals, utilising AND and OR gates to accomplish their functionalities.