Experiment No. 1
Truth table of various logic gates using ICs.
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Date of Performance:
Date of Submission:

Aim - To verify the truth table of various logic gates using ICs.

Objective -

- Understand how to use the breadboard to patch up, test your logic design and debug it.
- The principal objective of this experiment is to fully understand the function and use of logic gates.
- Understand how to implement simple circuits based on a schematic diagram using logic gates.

Components required -

1. IC's 7408, 7432, 7404
2. Bread Board.
3. Connecting wires.

Theory -

In digital electronics, a gate is logic circuits with one output and one or more inputs. Logic gates are available as integrated circuits.

AND gate :

AND gate performs logical multiplication, more commonly known as AND operation. The AND gate output will be in high state only when all the inputs are in high state.7408 is a Quad 2 input AND gate.

OR gate:

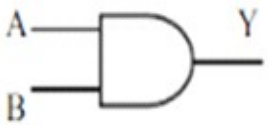
It performs logical addition. Its output become high if any of the inputs is in logic high. 7432 is a Quad 2 input OR gate.

NOT gate:

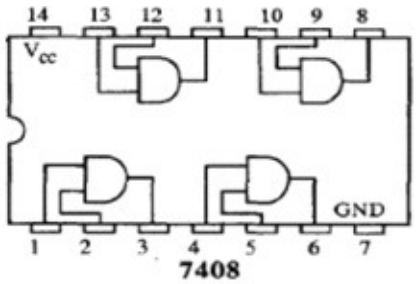
It performs basic logic function for inversion or complementation. The purpose of the inverter is to change one logic level to the opposite level. IC 7404 is a Hex inverter.

Circuit Diagram, Truth Table -

AND Gate -

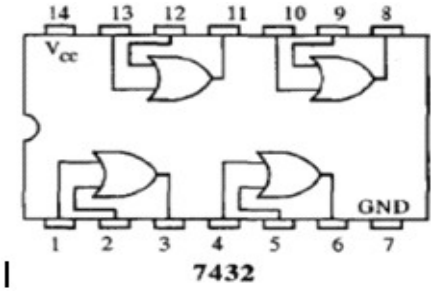


A	B	Y(A.B)
0	0	0
0	1	0
1	0	0
1	1	1

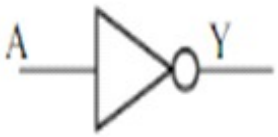


OR Gate -

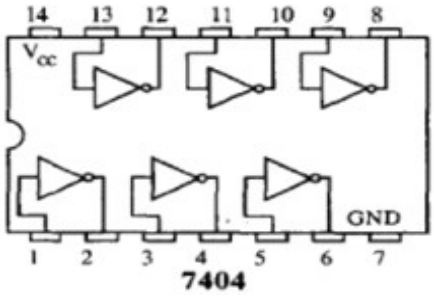
A	B	Y(A + B)
0	0	0
0	1	1
1	0	1
1	1	1



NOT Gate -



A	Y=A'
0	1
1	0



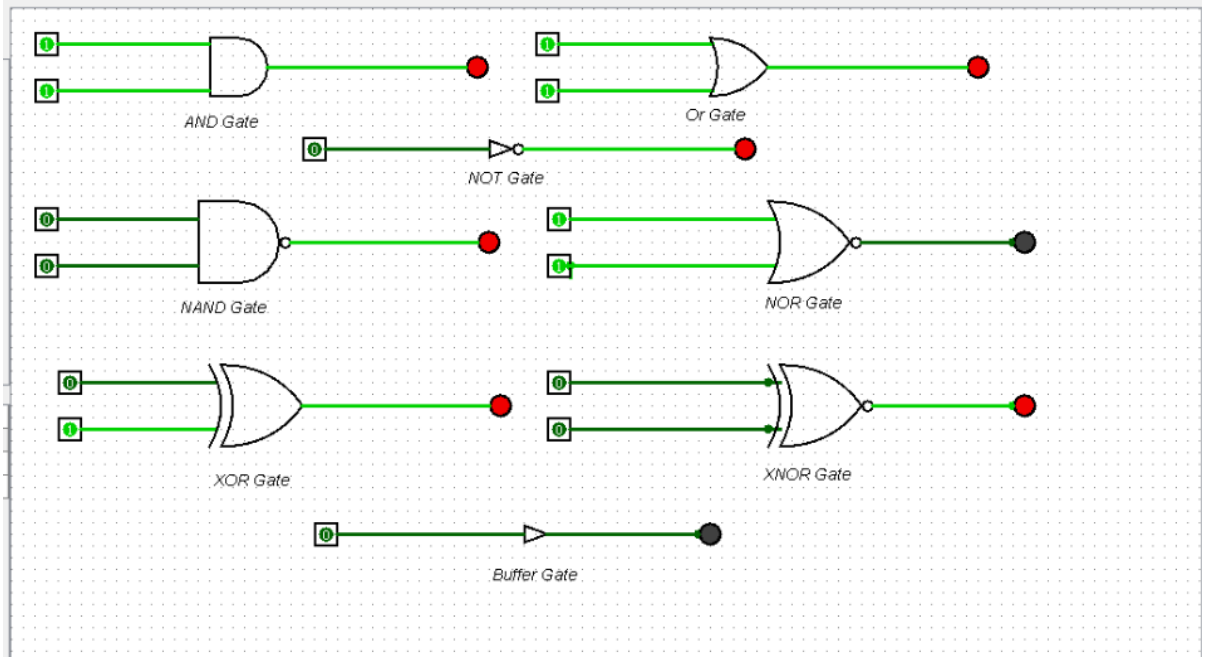
Procedure:

1.Test all the components in the Ic packages using a digital IC tester. Also assure whether all the connecting wires are in good condition by testing for the continuity using a Multimeter or a trainer kit.

2.Verify the dual in line package (DIP) inout of the IC before feeding the inputs.

3.Set up the circuits and observe the outputs.

Output:-



Conclusion -

This Logisim experiment taught us about different logic gates: NOT, AND, OR, and XOR. It showed us how to use these gates for various tasks in digital circuits. This hands-on experience made digital logic easier to understand and prepares us for more advanced circuit work in fields like electrical engineering and computer science.