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 -

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

Components required -

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

Theory -

In digital electronics, a gate is a logic circuit 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:

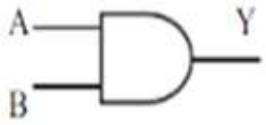
It performs logical addition. Its output becomes high if any of the inputs is in logic high. 7432 is a Quad 2 input OR gate.

NOT gate:

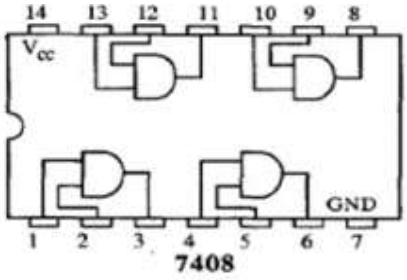
It performs basic logic functions for inversion or complementation. The purpose of the inverter is to change one logic level to the opposite level. IC 7404 is a Hex inverter.

Circuit Diagram, Truth Table -

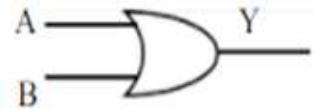
AND Gate -



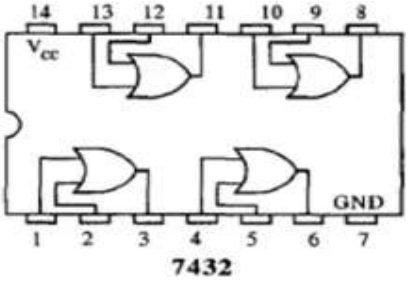
A	B	Y(A.B)
0	0	0
0	1	0
1	0	0
1	1	1



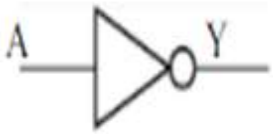
OR Gate -



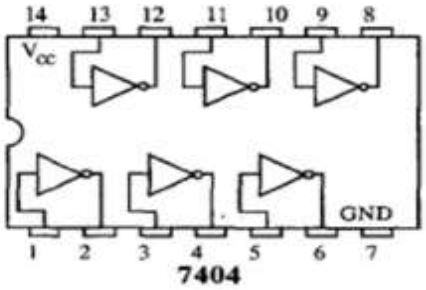
A	B	Y(A+B)
0	0	0
0	1	1
1	0	1
1	1	1



NOT Gate -



A	Y=A'
0	1
1	0



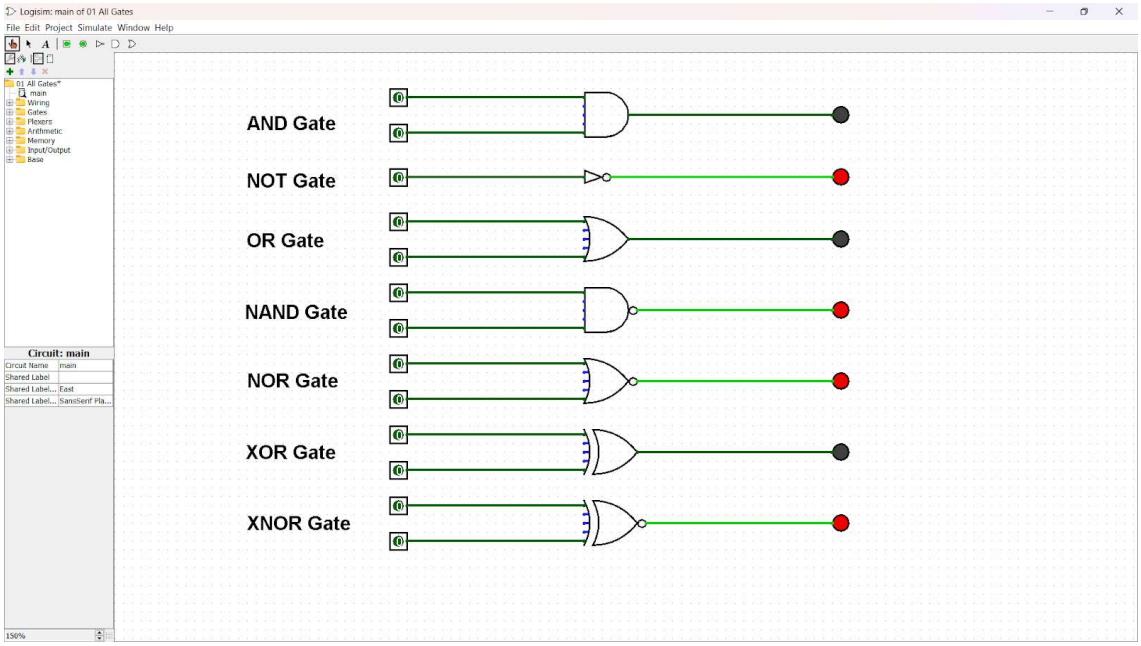
Procedure:

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.

Screenshot:



Conclusion -

In conclusion, Experiment 1 allowed us to delve into the practical aspects of digital logic gates using ICs 7408, 7432, and 7404. Through a systematic procedure, we verified the correct functionality of these logic gates, with specific attention to AND, OR, and NOT gates. This hands-on experience on the breadboard equipped us with the skills to construct and analyse simple digital circuits based on schematic diagrams. The successful verification of the truth tables demonstrated the fundamental operations of these gates. This experiment has been instrumental in deepening our understanding of logic gates and their real-world applications, laying a strong foundation for more complex digital logic and computer architecture concepts.