Exp no:1	Title: Verification of truth table of logic gates
Date: 26-08-2021	

Aim:

This experiment will examine the operation of the OR, AND, NOT, NAND, NOR and XOR logic gates and compare the expected outputs to the truth tables using simulation results.

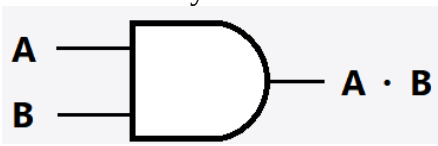
Required tools:

Multisim online circuit simulator

Theory:

AND gate:

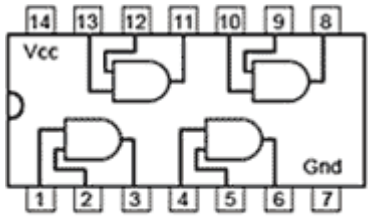
Symbol



Truth table

A	B	Y=A.B
0	0	0
0	1	0
1	0	0
1	1	1

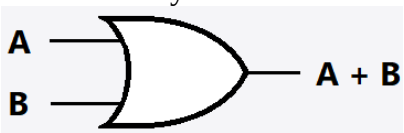
IC diagram



7408 Quad 2 input AND Gates

OR gate:

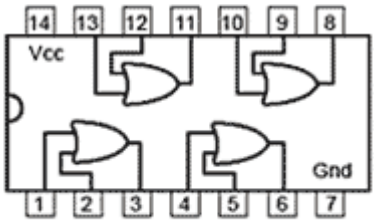
Symbol



Truth table

A	B	Y=A+B
0	0	0
0	1	1
1	0	1
1	1	1

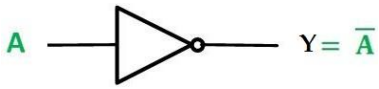
IC diagram



7432 Quad 2 input OR Gates

NOT gate:

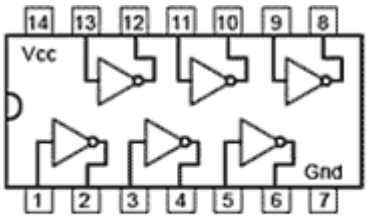
Symbol



Truth table

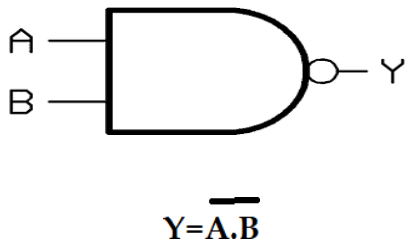
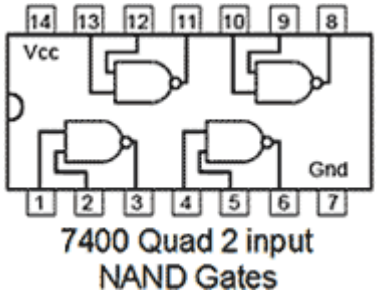
A	Y
0	1
1	0

IC diagram



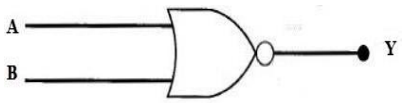
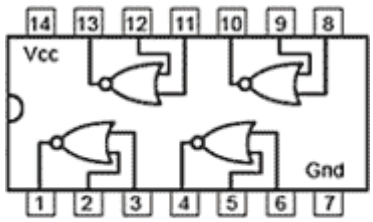
7404 NOT Gates (Inverters)

NAND gate:

Symbol	Truth table	IC diagram
 $Y=\overline{A.B}$		 7400 Quad 2 input NAND Gates

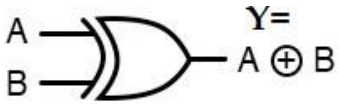
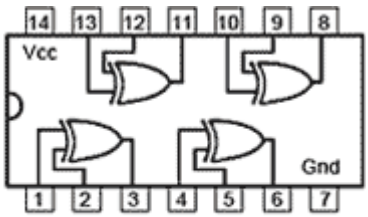
A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

NOR gate:

Symbol	Truth table	IC diagram
 $Y=\overline{A+B}$		 7402 Quad 2 input NOR Gates

A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

XOR gate:

Symbol	Truth table	IC diagram
		 7486 Quad 2 input XOR Gates

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

Results:

AND gate:

A	B	Y	Simulation result
0	0	0	0
0	1	0	0
1	0	0	0
1	1	1	1

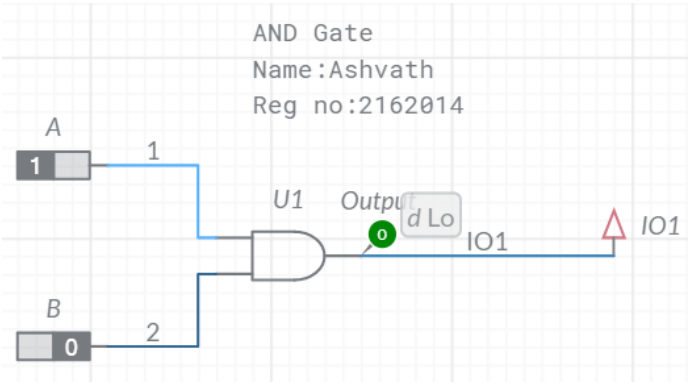


Figure: Verification of AND gate

OR gate:

A	B	Y	Simulation result
0	0	0	0
0	1	1	1
1	0	1	1
1	1	1	1

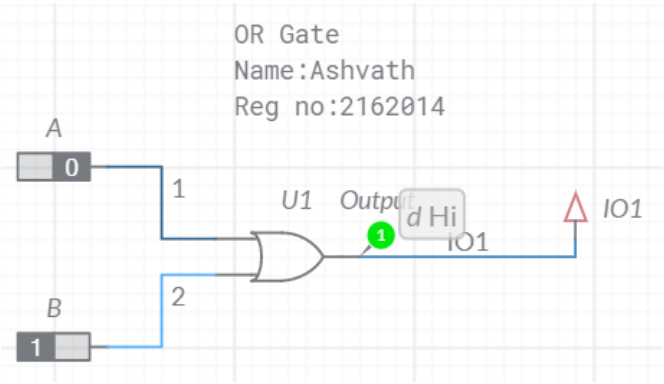


Figure: Verification of OR gate

NOT gate:

A	Y	Simulation result
0	1	1
1	0	0

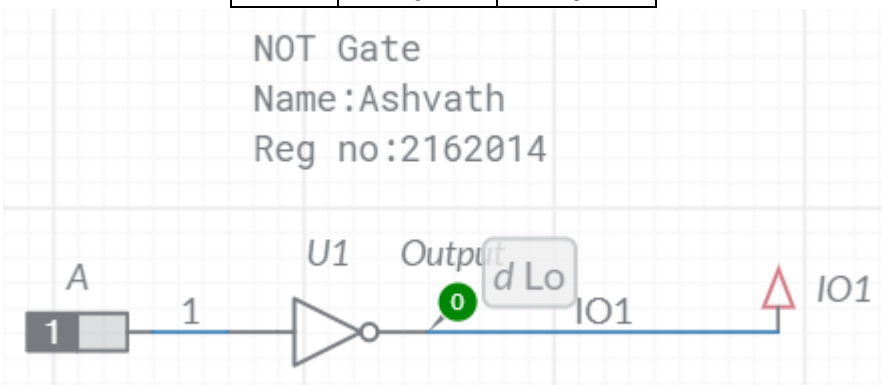


Figure: Verification of NOT gate

NAND gate:

A	B	Y	Simulation result
0	0	1	1
0	1	1	1
1	0	1	1
1	1	0	0

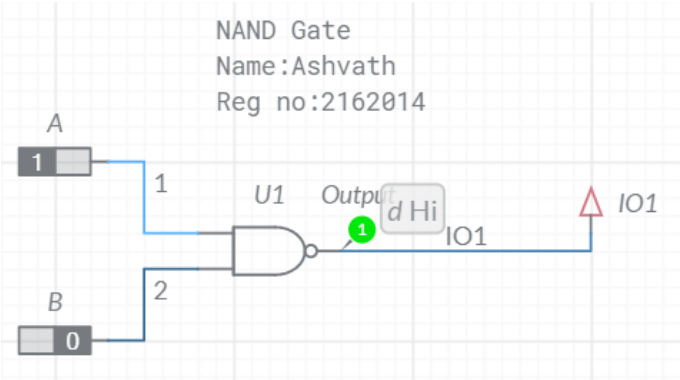


Figure: Verification of NAND gate

NOR gate:

A	B	Y	Simulation result
0	0	1	1
0	1	0	0
1	0	0	0
1	1	0	0

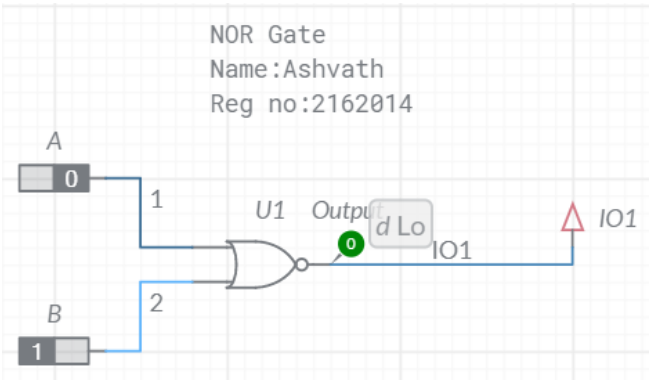


Figure: Verification of NOR gate

XOR gate:

A	B	Y	Simulation result
0	0	0	0
0	1	1	1
1	0	1	1
1	1	0	0

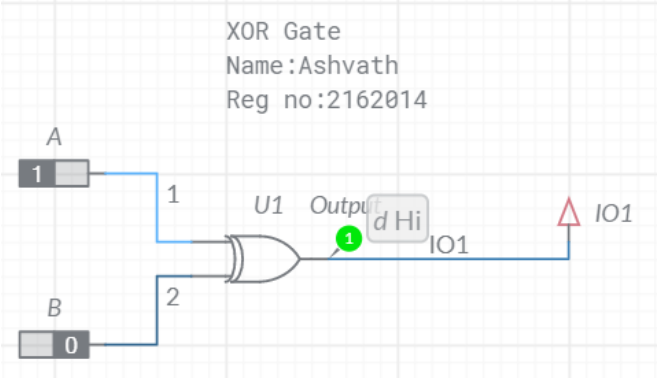


Figure: Verification of XOR gate

Inference:

The truth tables of all the logic gates are verified through multisim online simulator successfully.

Student signature:	Marks:
S.P Ashvath	Faculty signature: