Digital Logic Lab Assignment #1

1. To verify the operation of Basic Gates.

TO VERIFY THE OPERATION OF NOT GATE.

THEORY:

NOT Gate is a basic type of gate, with one input logic and one output logic. Logical negation can be carried out through this electronic circuit.

Boolean expression = A'

CIRCUIT DIAGRAM:

Fig. NOT Gate

TRUTH TABLE:

Input	Output
A	A'
1	0
0	1

OBSERVATION:

Fig. Logical operation of NOT Gate

OBSERVATION TABLE:

Input	Output
A	A'
1	0
0	1

CONCLUSION:

Hence, the logical operation of NOT Gate was verified.

REFERENCE:

1. http://www.physicshandbook.com/topic/topicc/combgates.htm
2. Digital Logic - B. Holdsworth and R.C Woods

OBJECTIVE 1.2:

TO VERIFY THE OPERATION OF OR GATE.

THEORY:

OR Gate is a basic type of gate, with minimum two input logic and one output logic. Logical "or" operation can be carried out through this electronic circuit.

<u>**Boolean expression = A+B**</u>

CIRCUIT DIAGRAM:

Fig. OR Gate

TRUTH TABLE:

Input		Output
A	**B**	**A+B**
1	1	1
1	0	1
0	1	1
0	0	0

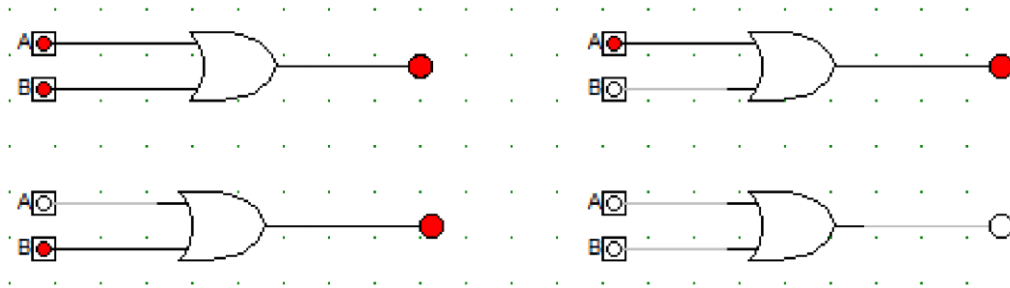| Input			Output
A	**B**	**C**	**A+B+C**
1	1	1	1
1	1	0	1
1	0	1	1
1	0	0	1
0	1	1	1
0	1	0	1
0	0	1	1
0	0	0	0

OBSERVATION:

Fig. Logical operation of OR Gate for 2 Inputs
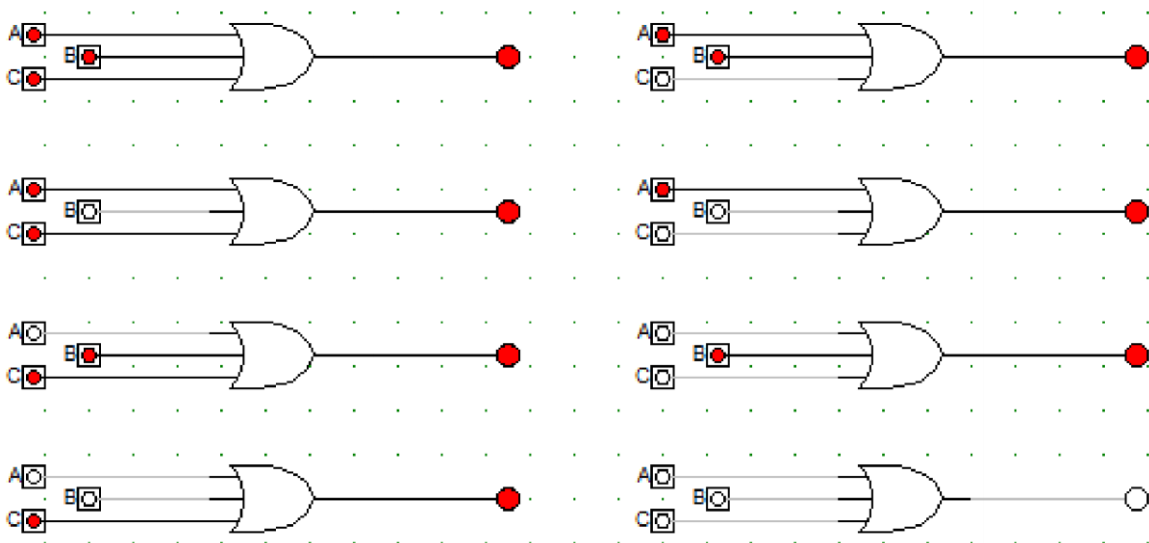
Fig. Logical operation of OR Gate for 3 Inputs

OBSERVATION TABLE:

Input		Output
A	B	A+B
1	1	1
1	0	1
0	1	1
0	0	0

Input			Output
A	B	C	A+B+C

1	1	1	1
1	1	0	1
1	0	1	1
1	0	0	1
0	1	1	1
0	1	0	1
0	0	1	1
0	0	0	0

CONCLUSION:

Hence, the logical operation of OR Gate was verified.

REFERENCE:

1. http://www.physicshandbook.com/topic/topicc/combgates.htm
2. Digital Logic - B. Holdsworth and R.C Woods

OBJECTIVE 1.3:

TO VERIFY THE OPERATION OF AND GATE

THEORY:

AND Gate is a basic type of gate, with minimum two input logic and one output logic. Logical "and" operation can be carried out through this electronic circuit.
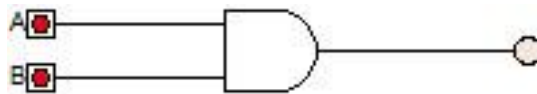
<u>**Boolean expression = A.B**</u>

CIRCUIT DIAGRAM:

Fig. AND Gate

TRUTH TABLE:

Input		Output
A	**B**	**A.B**
1	1	1
1	0	0
0	1	0
0	0	0

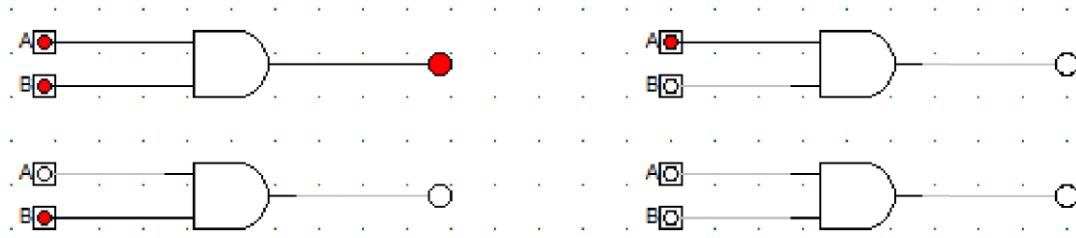| Input			Output
A	**B**	**C**	**A.B.C**
1	1	1	1
1	1	0	0
1	0	1	0
1	0	0	0
0	1	1	0
0	1	0	0
0	0	1	0
0	0	0	0

OBSERVATION:

Fig. Logical operation of OR Gate for 2 Inputs
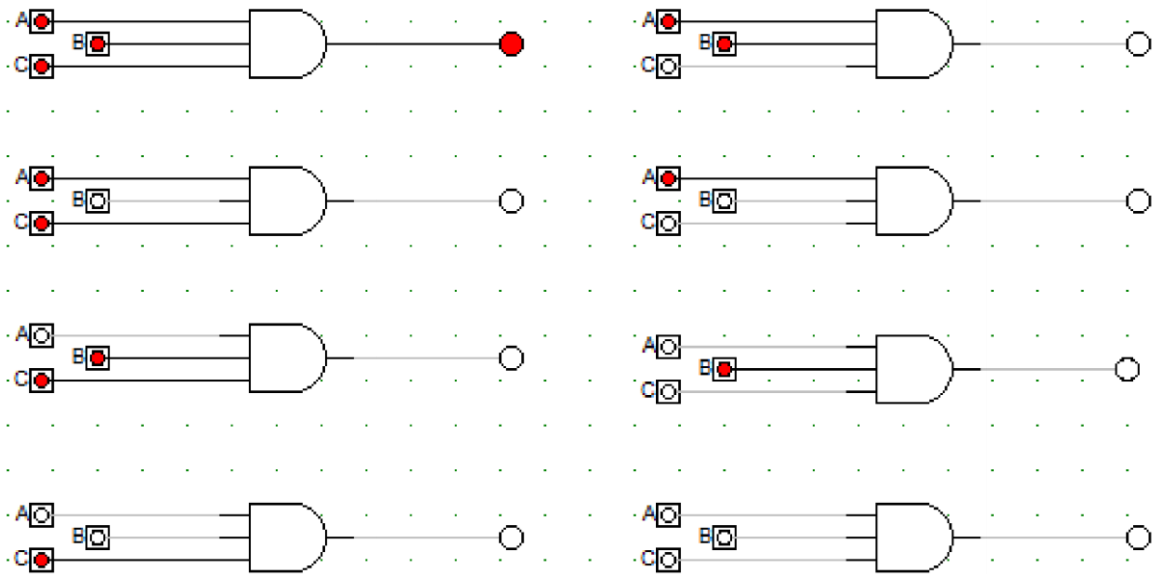
Fig. Logical operation of OR Gate for 3 Inputs

OBSERVATION TABLE:

Input		Output
A	B	A.B
1	1	1
1	0	0
0	1	0
0	0	0

Input	Output

A	B	C	A.B.C
1	1	1	1
1	1	0	0
1	0	1	0
1	0	0	0
0	1	1	0
0	1	0	0
0	0	1	0
0	0	0	0

CONCLUSION:

Hence, the logical operation of AND Gate was verified.

REFERENCE:

3. http://www.physicshandbook.com/topic/topicc/combgates.htm
4. Digital Logic - B. Holdsworth and R.C Woods