Lab Report – 8

Name: Chanda Akshay Kumar
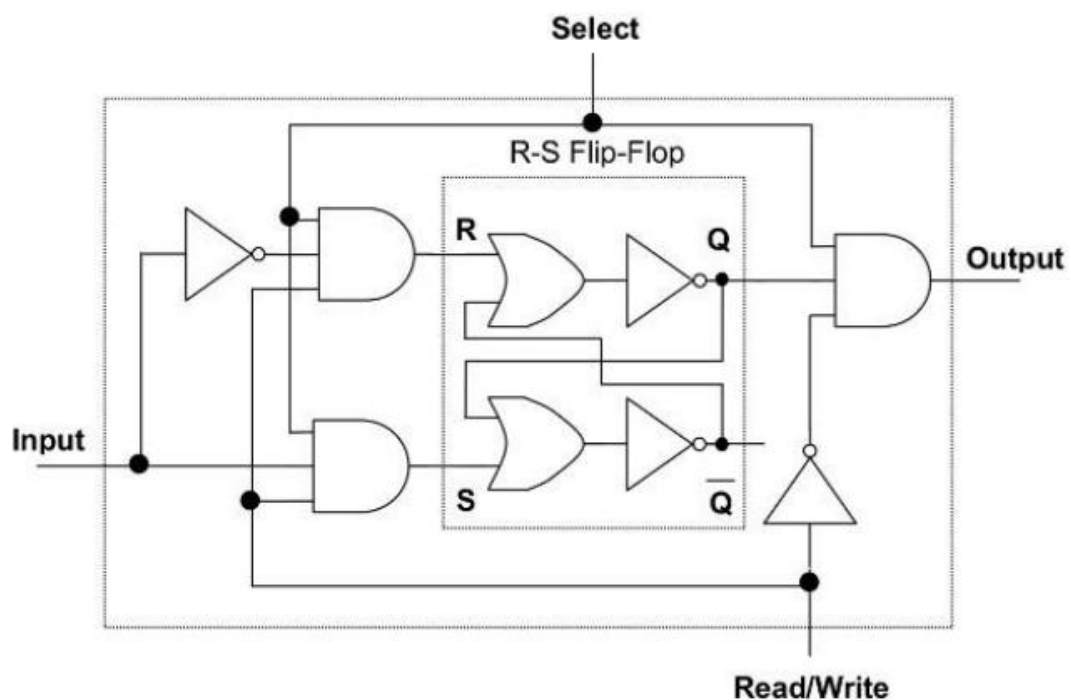
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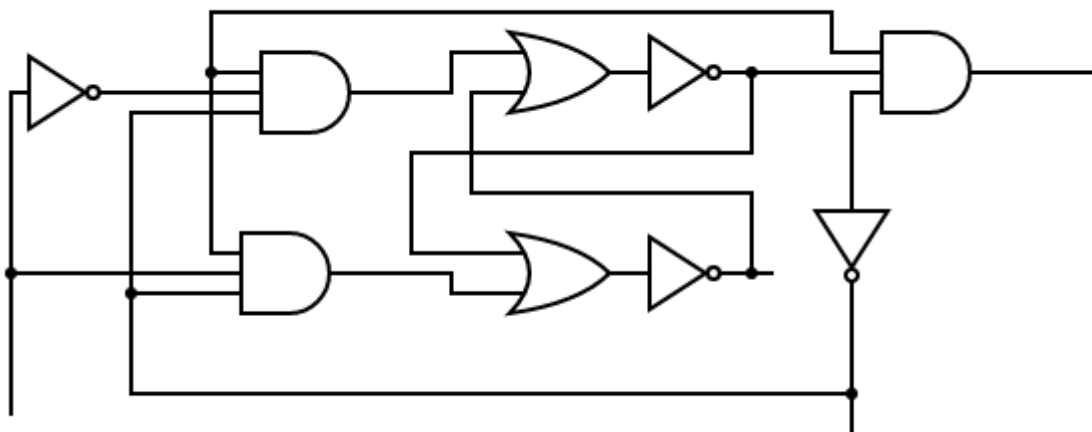
Group No.: 7(Teams-9)

Experiment

Objective:

To implement and verify the operation of a Binary cell for RAM based on RS flip-flop.

Electronic components used:

1. One Hex Inverter (7404 IC)

2. One Quad 2-Input OR Gate (7432 IC)

3. One 3-Input NAND Gate (7411 IC)

4. Digital Test Kit

The reference Circuit:

Procedure:

5. Assemble an electronic circuit employing a Hex Inverter (7404 IC), a 3- Input NAND Gate (7411 IC), and a Quad 2-Input OR Gate (7432 IC) based on the provided circuit diagram.

6. Make user interaction by implementing switches to input data, make selections, and specify read/write operations.

7. Integrate an LED with an appropriate resistor into the circuit to generate the desired output.

8. Record the observations in a truth table.

Conclusion:

The following is the truth table of the above circuit:

Select (S)	Read/ Write	Input	Q (Current State)	Q (Next State)	Output (Q)	Description
0	X	X	0	0	0	Don't Care
1	0	X	0	0	0	Read mode, holds 0
1	0	X	1	1	1	Read mode, holds 1
1	1	0	0	0	0	Write 0 to output
1	1	0	1	0	0	Write 0 to output
1	1	1	0	1	1	Write 1 to output
1	1	1	1	1	1	Write 1 to output

1. The memory operation will be performed if "select" is 'High'.

2. Read/Write works as clock in this circuit.

3. If the Read/Write line is low, it indicates the cell contents are to be read. In this case, the output value is completely dependent on the Q value of the flip-flop. Depends on the value stored.

Hence, the operation of a Binary cell for RAM is verified and also it shows thesame output.

Link for the Tinkercad simulation: