# LAB REPORT-7

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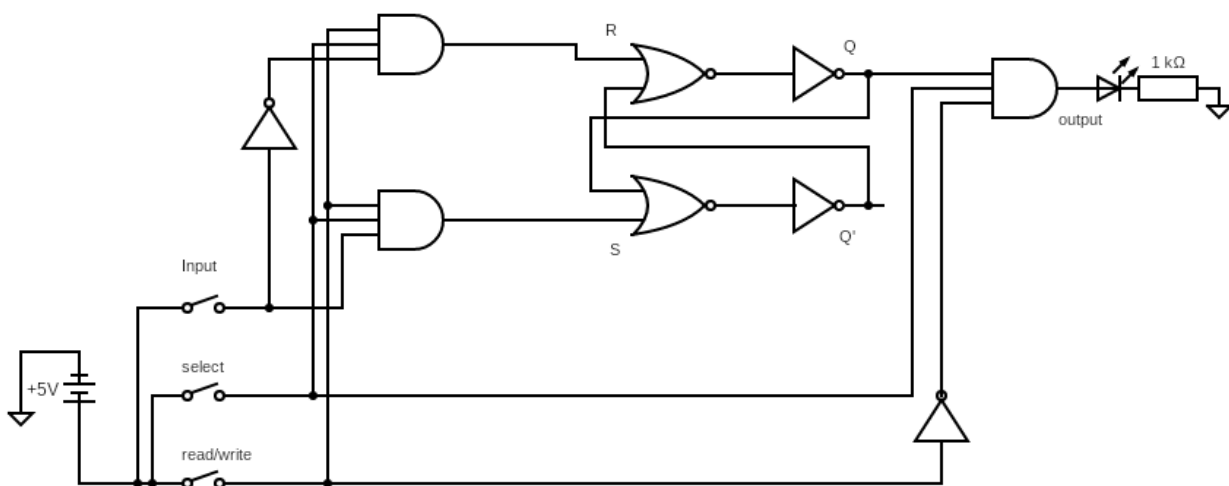**Group Number:** G6

## BINARY CELL FOR RAM

### AIM/OBJECTIVE OF THE EXPERIEMENT:

To implement and verify the operation of a Binary cell for RAM based on SR flipflop

### ELECTRONIC COMPONENTS USED:

1)Ardunio
2)Breadboard
3)HEX inverter(IC-74HC04)
4)Triple input AND gate (IC-74HC11)
5)Quad NOR gate (IC-74HC02)
6)LED
7)Resistor
8)Slide switches-3
9)Wires

### REFERENCE CIRCUIT:

## PROCEDURE:

1)Take a breadboard and Ardunio. Give Vcc and GND connections to the breadboard through the Ardunio.

2)Take a triple input AND gate IC-74HC11, HEX inveter IC-74HC04 and Quad NOR gate IC-74HC02 .Place it on the breadboard and give Vcc and GND connections to the respective Ics.

3)Take three slide switches and connect their terminal 1 to ground and terminal 2 to power. Label them DATA INPUT, READ/WRITE and SELECT lines.

4)Give the select pin,read/write and input to the any of the 3 inputs (3A,3B,3C) of the triple input AND gate.Connect the output (say 1A) of the NOR gate.

5)This AND gate performs the operation for Srflipflop and gives the input for S.

6)Give the select pin ,read/write pin and the negated INPUT pin to any 3 inputs (say 1A,1B,1C) of the triple input AND gate.Connect the output to the input (say 1A) of the NOR gate.

7)This AND gate performs the operation for Srflipflop and gives input for R.

8)Since the inputs S and R are complements of each other,the circuit is prevented from entering its invalid state.

9)Now give the output 2 of the NOR gate to the input 1B and the output 1 to the input 2A in order to complete the connections of the RS flipflop.

10)The ouputs of the flipflop (Q and Q') are connected to the LEDs with the help of resistors.

11)Now, to get the output of the binary cell, connect the select pin,Q ouput of the flipflop and the negated read/write pin to the inputs of the AND gate(say 2A,2B,2C) and connect the output 3 to an LED with the help of a resistor.

12)This gives the output of the binary cell.Connect LEDs to inputs READ/WRITE,SELECT and INPUT in order to clearly observe the working of the binary cell.

13)Now,observe the operation of the binary cell using different combinations of the inputs.

## CONCLUSION:

1)From this experiement we observe that how Binary cell works for read and write. And know about how to use READ and WRITE.

2)Below outputs is observed for our inputs as folllows.

| Select | Read/Write | Input | Output |
|--------|------------|-------|--------|
| 1 | 1 | 1 | 0 |
| 1 | 0 | X | 1 |
| 1 | 1 | 0 | 0 |
| 0 | X | X | 0 |

## LINK FOR THE TINKERCAD SIMULATION:

https://www.tinkercad.com/things/4R2FgpS82Ga-lab-7-binary-cell/editel