LAB REPORT : 7

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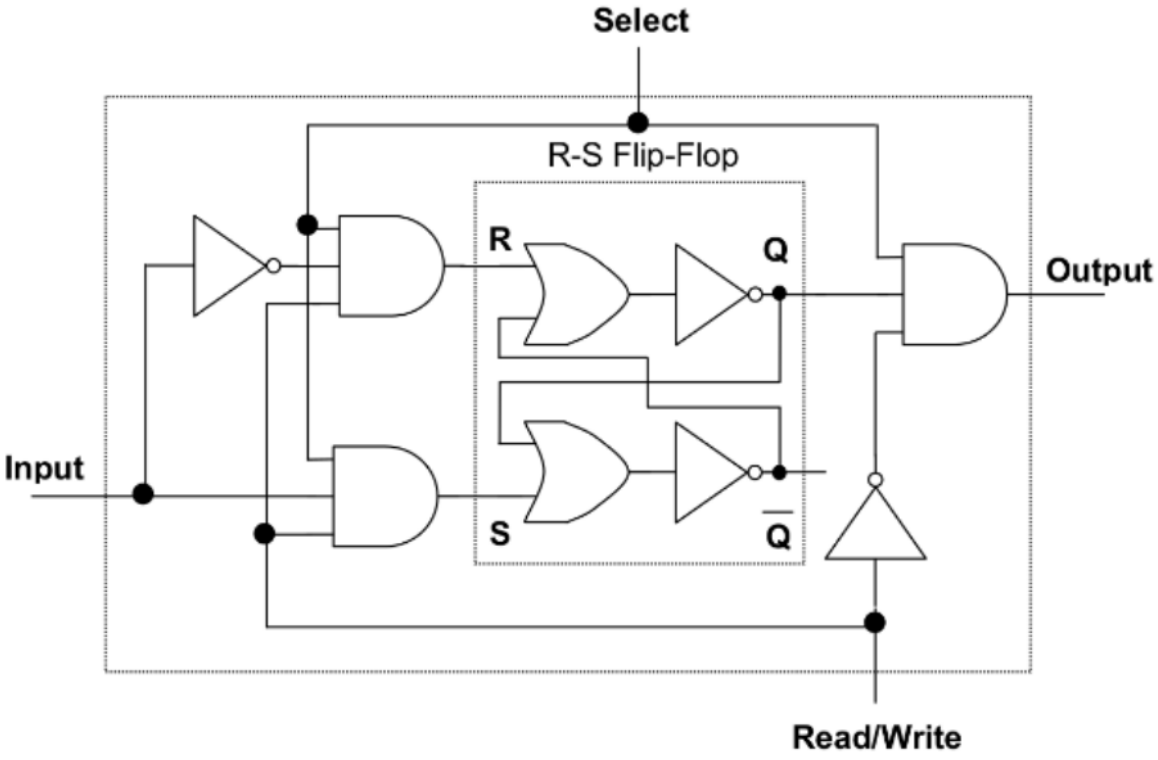
Aim: To implement and verify the operation of a Binary cell for RAM based on RS fipflop.

Electronic components used : 3-input-AND IC, NOR IC's , Inverter IC, Arduino, breadboard, LED'S, resistor, push button.

Reference circuit:



Procedure : 1.Create a tinkerCAD circuit similar to the shown above.
2.Add a push button at input of one NOR gate to stimulte the cicuit.

3.Working:
a.The "select" input is used to access the cell, either for reading or writing.
b.A low, "0", will signify "read" while a high, "1", will signify "write". One point to be noted is that both the operations cannot be done simultaneously.

c.When the select line of the binary cell is low, “0”, then the cell is not being read from or written to.
d.When the select line is high, “1”, then a memory operation can be performed on this cell.

e.Reading the contents:
“Read/write” line is low its an indicating the cell contents are to be read. In this case, the value output by the cell will depend solely on the Q value of the flip-flop. When the cell is being read its contents cannot be modified.

f.Writing contents on to the cell:
When the cell is selected and the “Read/write” line is set to high, signifying a “write” operation, the value placed into the cell will depend solely on the state of the “Input” line. Thus, if “Input” is high, S (set) will receive a high and the flip-flop will store a “1”. If, on the other hand, “Input” is low, then R (reset) which receives a negated version of “Input” will go high and the flip-flop will reset to “0”.

Conclusion:

Input	Write	Select	Output	Data stored(Q(n+1))
X	X	0	0	Q(n)
1	1	1	0	1
X	0	1	Q(n)	Q(n)
0	1	1	0	1

TinkerCAD link: https://www.tinkercad.com/things/gX0rFhy9z6T