LAB REPORT: 7

Name: Arghya Roy
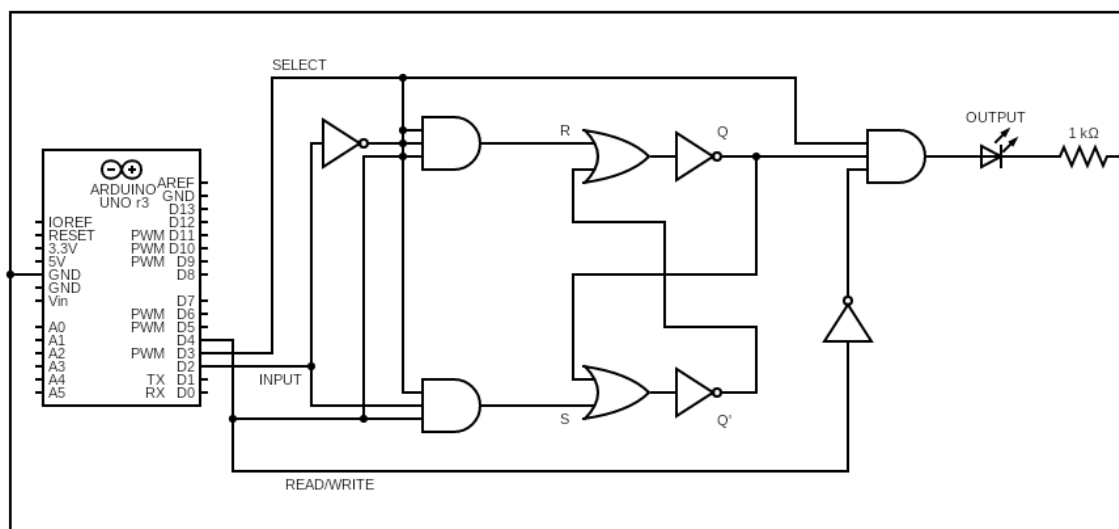
Roll Number: 2021115008

Group: 8

Aim/Objective of the experiment:

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

Electronic components used:

Arduino Uno R3, 3 breadboards, 1 kilo ohm resistor, LED, 3 hex inverter ICs(74HC04), two 3-input AND gate ICs(74HC11), quad OR gate IC(74HC32), pushbutton, wires

Reference Circuit:

1. The binary memory cell is designed in accordance with the circuit diagram above.
2. The Select, Read/Write and Input values are taken as inputs from Arduino.
3. Appropriate code is written on Arduino.
4. The outputs are noted for a sequence of inputs.

The code:

```
int s,rw,i;

void setup()
{
  pinMode(3,OUTPUT);
  pinMode(4,OUTPUT);
  pinMode(2,OUTPUT);

  Serial.begin(9600);
}

void loop()
{
  if(Serial.available()>0)
  {
    s=Serial.read();
    s=s-'0';
    digitalWrite(3,s);
  }

  if(Serial.available()>0)
  {
    rw=Serial.read();
    rw=rw-'0';
    digitalWrite(4,rw);
  }

  if(Serial.available()>0)
  {
    i=Serial.read();
    i=i-'0';
```

```
      digitalWrite(2,i);
    }

    delay(100);
  }
```

Conclusion:

The output values are tabulated for 16 input stream:

Select (S)	Read/Write (RW)	Input (I)	OUTPUT
1	1	1	0
1	0	0	1
1	0	1	1
1	1	0	0
1	0	0	0
1	0	1	0
1	1	1	0
1	0	0	1
1	0	1	1
0	0	0	0
0	1	0	0
0	0	1	0
0	1	1	0
1	1	1	0
1	0	0	1
1	0	1	1

So, the operation of the memory cell is verified.

<u>TinderCAD simulation:</u>

https://www.tinkercad.com/things/7mZxoTUhI9i-arghya-lab-7/