PLATFORMIO ASSIGNMENT

Pavan Srinivas Marri
marripavan65@gmail.com
FWC22138 IITH - Future Wireless Communications

Contents

1 Problem

(GATE2022-QP-IN)
Q.21 The logic block shown has an output F given by _____

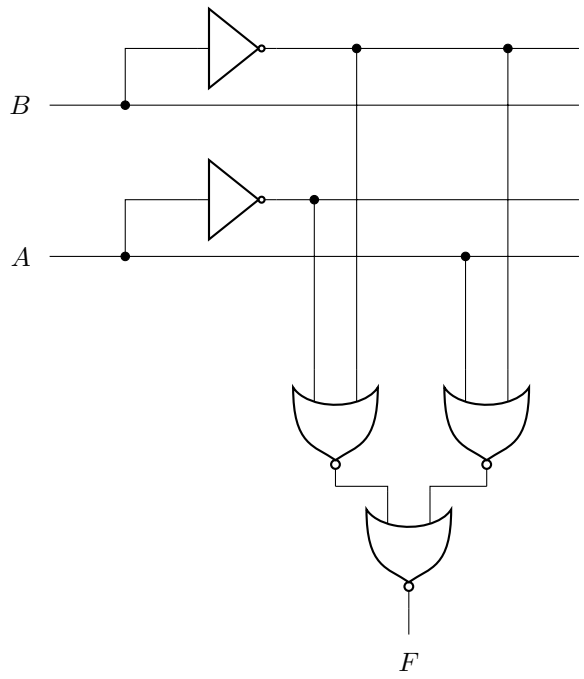

Figure 1: Circuit

(A) A + B

(B) A. $\overline{B}$

(C) A + $\overline{B}$

(D) $\overline{B}$

2 Components

Components	Value	Quantity
Breadboard	-	1
Arduino	Uno	1
Jumper Wires	-	4

Table 1: Components

2.1 Arduino

The Arduino Uno has some ground pins, analog input pins A0-A3 and digital pins D1-D13 that can be used for both input as well as output. It also has two power pins that can generate 3.3V and 5V. In this excercise we use input pins, digital pins, GND and 5V.

3 Implementation

3.1 Truth table

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

Table 2: Truth Table

3.2 Boolean Equation

By Solving the above problem we obtain as follows :

$$F = \overline{AB + \overline{A}B} \tag{1}$$

$$F = \overline{B(A + \overline{A})} \tag{2}$$

$$F = \overline{B} \tag{3}$$

4 Hardware

1. Connect one end of a jumper wire to the GND(ground) pin on the Arduino Uno board and other end to the breadboard's ground rail(-).
2. Connect one terminal of jumper wire (Input A) to the input pins on the Arduino(e.g., pin2) and other terminal to the positive rail(+) on the breadboard.
3. Connect one end of another jumper wire (Input B) to the input pin of Arduino(e.g., pin3) and other end to the positive rail(+) on the breadboard.
4. Enable the power supply to breadboard from arduino by connecting one end of jumper wire to the power pin of Arduino(5V) and other end to the positive rail(+) on the breadboard.

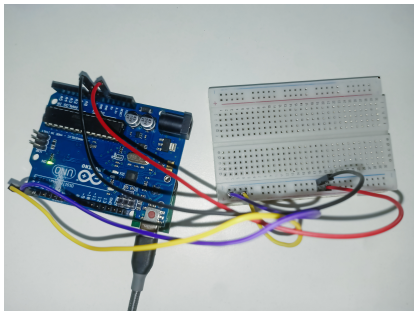

Figure 2: Connections

5 Software

Now write the code which is available in below path and upload to the Arduino.
https://github.com/Pavan2k01/CBSE-VECTOR-12TH/tree/main/Codes

6 Conclusion

Hence we have implemented the NOR gate for the given circuit using the code above with the help of Arduino.