1 Abstract

This manual shows Implementation of boolean expression for d1 on using arduino after converting into D flipflop

2 Components

Component	Value	Quantity
Bread board	-	1
Arduino	Uno	1
Resistor	-	1
LED	-	1
Jumper Wires	-	8

Table 1:

3 D-fliplop way of working

the single input is called data input.if the data input is high the flipflop would be SET. when the data input is low the flipflop would be RESET.that was shown in the below table.ny below table if we give high value means 1 flipflop would be SET.if we give low value means 0 flipflop would be RESET

4 transition table

q	q+	D
0	0	0
0	1	1
1	0	0
1	1	1

5 source code given

000–001–011–010–110–111–101–100–000———

6 Conversion table

q2	q1	q0	q2+	q1+	Q0+	d2	d1	d0
0	0	0	0	0	1	0	0	1
0	0	1	0	1	1	0	1	1
0	1	1	0	1	0	0	1	0
0	1	0	1	1	0	1	1	0
1	1	0	1	1	1	1	1	1
1	1	1	1	0	1	1	0	1
1	0	1	1	0	0	1	0	0
1	0	0	0	0	0	0	0	0

procedure

Step 1: connect 5v of the Arduino to the top red of the bread board ang GND to the bottom green

Step 2: connect d13 pin in the arduino to connect to one LED+

Step 3: connect arduino d2 pin to the gnd or vcc according to inputs

Step 4: connect arduino d3 pin to the gnd or vcc according to inputs

Step 5: coonect arduino d4 pin to the gnd or vcc according to inputs

Step 6: connect one LED+ to one end of the resisitor and other end of resistor to vcc and gnd the other terminal of LED

Step 7: change the d2 d3 d4 pins in the arduino from vcc to gnd and observe the outputs

7 kmap

q2—q1q0	00	01	11	10
0	0	1	1	1
1	0	0	0	1

Table 2: kmap

8 equation by truth table

D1 have high logic(1,3,2,6)=sum(1,3,2,6)

9 logic expression

By the following above kmap we can get the boolean logic expression for D1 is shown below D1 = Q2'Q0 +Q1Q0'

10 execution code

Execute the following code using the below provided link.

https://github.com/satthish-devaragatla