IMPLEMENTATION OF BOOLEAN LOGIC FOR D1 USING IN ARDUINO IDE

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1 Abstract

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

2 flipflop 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

3 Transition table

Q	Q+	D
0	0	0
0	1	1
1	0	0
1	1	1

4 source code given

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

5 Components

Component	Value	Quantity
Arduino	UNO	1
Bread board	-	1
Jumper wires	M-M	8
Led	-	1
Resistor	150ohms	1

5.1 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 the following exercises, only the ground, 5V and digital pins will be used.

6 Truth table for given K-map

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

TABLE 1

7 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

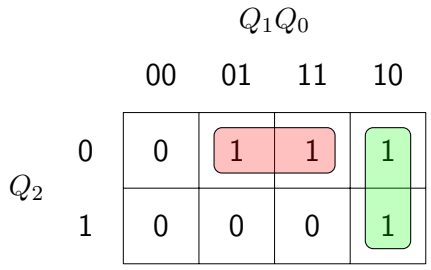
8 equation by truth table

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

9 Software

Execute the following code using the below provided link.

https://github.com/satthish-devaragatla



k-map diagram

10 BooleanEquation

By solving the given K-map diagram we get the boolean eayuation as follows
D1 = Q2'Q0 +Q1Q0'