



# IMPLEMENTATION OF BOOLEAN LOGIC FOR D1 USING IN ARDUINO IDE

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## Contents

1 Abstract	1
2 flipflop way of working	1
3 Transition table	1
4 source code given	1
5 Components	1
5.1 Arduino . . . . .	1
6 Truth table for given K-map	1
7 procedure	1
8 equation by truth table	2
9 BooleanEquation	2
10 Software	2

## 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

**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

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

## table 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:** connect arduino d4 pin to the gnd or vcc according to inputs

**Step 6:** connect one LED+ to one end of the resistor 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 BooleanEquation

By solving the given K-map diagram we get the boolean equation as follows :  $D1 = Q2Q0' + Q1Q0$

## 10 Software

Download the following code

<https://github.com/satthish—devaragatla>