BOOLEAN LOGIC

prasad deva

I. PROBLEM

The boolean logic realized by the logic circuit is
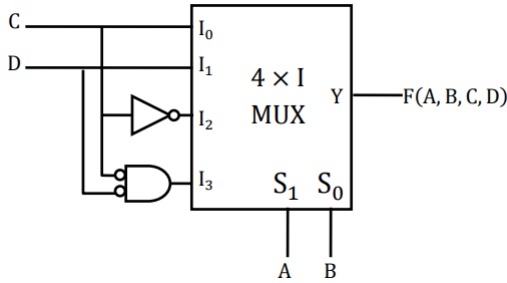

Fig. 1: cbgg

S.NO	A	B	C	D	F
1	0	0	0	0	0
2	0	0	0	1	0
3	0	0	1	0	1
4	0	0	1	1	1
5	0	1	0	0	0
6	0	1	0	1	1
7	0	1	1	0	0
8	0	1	1	1	1
9	1	0	0	0	1
10	1	0	0	1	1
11	1	0	1	0	0
12	1	0	1	1	0
13	1	1	0	0	1
14	1	1	0	1	1
15	1	1	1	0	1
16	1	1	1	1	0

TABLE II: Truth Table

II. COMPONENTS

ARDUINO	1
BREAD BOARD	1
JUMPER WIRES M-M	20
7447IC	1
SEVENSEGMENT DISPLAY	1
RESISTOR	1

TABLE I

A	B	Y
0	0	C
0	1	D
1	0	$\bar{C}$
1	1	$\bar{C}\bar{D}$

IV. KARNAUGH-MAP

The equations to be solved by using the truth table

D) $F = \sum(2, 3, 5, 7, 8, 9, 12, 13, 14)$

III. LOGIC

The logic is writen in the in the form

$\bar{A}\bar{B}I0 + \bar{A}BI1 + A\bar{B}I2 + ABI3$

$I0 = \bar{A}\bar{B};\ I1 = \bar{A}B;\ I2 = A\bar{B};\ I3 = AB$

$$CD$$

	00	01	11	10
00	0	0	1	1
01	0	1	1	0
11	1	1	0	1
10	1	1	0	0

AB

TABLE-2: K-map

The equation expressed as the TABLE-2

$$F = A\bar{C} + \bar{A}BD + \bar{A}\bar{B}C + AB\bar{D}$$

V. ARDUINO CONNECTIONS

1)The 7447IC to 7 segment display connections as per the given below table-3

7447	$\bar{a}$	$\bar{b}$	$\bar{c}$	$\bar{d}$	$\bar{e}$	$\bar{f}$	$\bar{g}$
DISPLAY	a	b	c	d	e	f	g

TABLE III

	W	X	Y	Z
INPUT	0	1	0	1
ARDUINO	6	7	8	9

TABLE V

2)The 7447IC to arduino connections as per the given below table-4

7447	A	B	C	D
ARDUINO	2	3	4	5

TABLE IV

3)The inputs has given arduino to negatine(GND).
4)If which value want 1 as per truth table(table-2) move that input pins (W,X,Y,Z) to the positive(5V).
5) The value is 1 it will print 1 .
6) The value is 0 it prints 0

VI. CODE

The code download by using the below link

https://github.com/prasaddeva287/FWC/tree/main/AVR–GCC/CODES