Assignment-3

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Abstract

Reduce the following Boolean Expression to its simplest form using K-Map by using Avr gcc: E(U,V,Z,W)= (2 , 3 , 6 , 8 , 9 , 10 , 11 , 12 , 13)

1 Components

Components	Value	Quantity
Arduino	UNO	1
seven segment display	-	1
Jumper wires	M-M	18
Breadboard		1
Resister	150 ohm	1
Decoder	7447	1

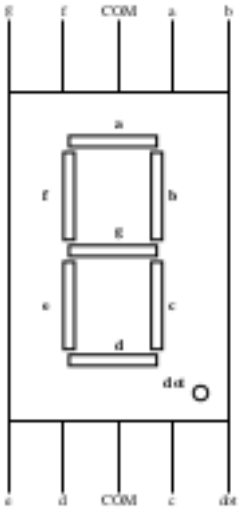

Figure 1: Seven segment display

Figure 2: Pin diagram of 7447IC

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

Figure 3:

2 K-Map

From the given data the minterms are 2,3,6,8,9,10,11,12,13.

ZY \ XW	00	01	11	10
00	0	0	1	1
01	0	0	0	1
11	1	1	0	0
10	1	1	1	1

The minimized expression is E=(UZ'+V'Z+U'ZW')

ZY \ XW	00	01	11	10
00	0	0	1	1
01	0	0	0	1
11	1	1	0	0
10	1	1	1	1

3 HardwareConnections

*Make the connections as shown in the Figure3 and Figure4.
*Connect COM pin of seven segment display to Vcc through Resister and Dot pin to ground.

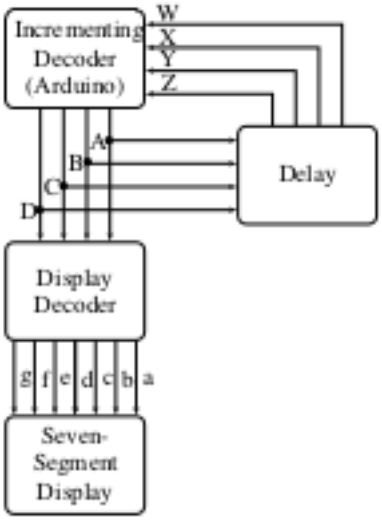

Figure 4:

U	V	Z	W	E
0	0	0	0	0
0	0	0	1	0
0	0	1	0	1
0	0	1	1	1
0	1	0	0	0
0	1	0	1	0
0	1	1	0	1
0	1	1	1	0
1	0	0	0	1
1	0	0	1	1
1	0	1	0	1
1	0	1	1	1
1	1	0	0	1
1	1	0	1	1
1	1	1	0	0
1	1	1	1	0

Truth Table

4 Execution

*Verify the above truth table by using the minimized expression in the following code.

`https://github.com/gowripriya-2002/FWC/blob/main/Asg-3/asg_3.c`