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Boolean Expression to its simplest form using K-map

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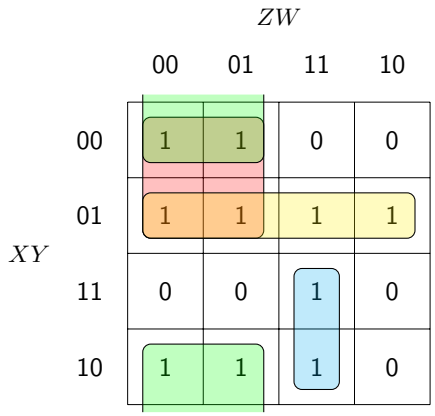
1 Introduction

K maps are used to Simplify Boolean Expressions the given Expression to solve F(X,Y,Z,W)=(0,1,4,5,6,7,8,9,11,15)

2 karnaugh-map



F=X'Z'+Y'Z'+X'Y+XZW

3 Components

Component	value	quantity
Resistor	220 ohm	1
Arduino	UNO	1
LED		1
Bread board		1
Jumper wires	M-M	10

Table 1:

4 Truth table for given expression

.

X	Y	Z	W	F
0	0	0	0	1
0	0	0	1	1
0	0	1	0	0
0	0	1	1	0
0	1	0	0	1
0	1	0	1	1
0	1	1	0	1
0	1	1	1	1
1	0	0	0	1
1	0	0	1	1
1	0	1	0	0
1	0	1	1	1
1	1	0	0	0
1	1	0	1	0
1	1	1	0	0
1	1	1	1	1

Table 2:

5 Connections and results

Also make connections to arduino UNO ,led and inputs based on table3.

Arduino UNO	2	3	4	5	8	gnd
Input	X	Y	Z	W		
led					+	-

Table 3:

Sample input	X	Y	Z	W	LED
1	0	0	0	0	ON
2	0	0	1	0	OFF

Table 4:

5.1 Code Link

https://github.com/19pa1a0405/sai1729/blob/main/ide_assign1/codes/code.cpp