भारतीय प्रौद्योगिकी संस्थान हैदराबाद
Indian Institute of Technology Hyderabad

FWC22025

ASSIGNMENT-ASSEMBLY

Contents

Abstract—**Here we are going to verify the following using Boolean Laws.**
X+Y' = X.Y+X.Y'+X'.Y'

1 Components

S.No	Component	Number
1.	Arduino	1
2.	Bread Board	1
3.	Jumer Wires(M-M)	5
4.	LED	1
5.	Resistor(150 ohm)	1

2 Boolean Laws

1. Using Boolean logic,

$$A+A' = 1$$
$$A+A'.B = A+B$$

The expression given can be minimized as, X.Y+X.Y'+X'.Y' = X.(Y+Y')+X'.Y'
= X+X'.Y'
= X+Y'

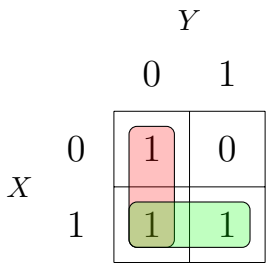
2. The corresponding truth table is available in Table 0

X	Y	(X+Y')	(X.Y+X.Y'+X'.Y')
0	0	1	1
0	1	0	0
1	0	1	1
1	1	1	1

Table 0

3 Karnaugh Maps

1. Using Boolean logic, output in Table 0 can be in terms of inputs X and Y as X.Y+X.Y'+X'.Y'
2. The expression can be minimized using K-map.The implicants in boxes 0,2 result in Y' and the implicants in boxes 2,3 result in X.Thus, after minimization it can be expressed as X+Y'



3.Connect inputs to arduino 2,3 digital pins and connect the output digital pin declared in the source code link below to one end of the resistor and connect the resistor's other end to the LED.

https://github.com/madind5668/FWC/blob/main/assembly/codes/main.asm