Verification of First Distributive law of Boolean Algebra

Beere Suresh

***Abstract*—This document shows the verification of first distributive law of Boolean Algerbra through Truth Table**

I. Statement

This law states that X.(Y+Z) = X.Y + X.Z

This law can be verified by the Truth table mentioned below:

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

TABLE I
1.1 Truth Table

II. Components

Component	Value	Qunatity
Arduino	UNO	1
Jumper Wires	M-M	2
BreadBoard		1
LED		1

TABLE II
1.1 Components

III. Hardware

Problem 2.1. Connect COM of Seven Segment Display to the 5V with a resistor of 220 Ohms in series.

Problem 2.2. Make connections between the Arduino UNO, 7447 and Sevenseg Display as shown in Table 2.1

Arduino	12	GND
LED	+ ve	- ve

TABLE III
2.1 Connections

IV. Software

Problem 3.1 Now execute the following program and verify the outputs as mentioned in Table 3.1 by modifying the inputs X, Y, Z.

wget https://github.com/sureshoye/IDE-Assignment/blob/main/distributivelaw.cpp

TABLE IV

Note: You will observe that the light adjacent to PIN 13 and LED bulb glow together.