Verification of First Distributive law of Boolean Algebra

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***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
Resistor	220Ohm	1
Decoder	7447	1
Arduino	UNO	1
Jumper Wires	M-M	20
BreadBoard		1
Sevenseg Display		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	2	3	4	5	5V	GND							
7447	A	B	C	D	VCC	GND	a	b	c	d	e	f	g
Sevenseg					COM		a	b	c	d	e	f	g

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 obtain the result as 0 in the sevensegment display for the given code.