

Arm Assignment

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A	B	C	x(LHS)	y(RHS)
0	0	0	0	0
0	0	1	0	0
0	1	0	0	0
0	1	1	0	0
1	0	0	0	0
1	0	1	1	1
1	1	0	1	1
1	1	1	1	1

Table 2:

5 Connections

Make connections to the LED's and Vamanboard based on table3 and figure1.

Vaman Pins	4	5	7	GND
LED	LED1+	LED2+	LED3+	-ve of 3 LED's

Table 3:

1 Introduction

There are different type of boolean algebra rules to simplify the boolean expression. One of the important law is distributive law. This can be stated as follows: $A.(B+C)=A.B+A.C$ (OR distributive law). $A+(B.C)=(A+B).(A+C)$ (AND distributive law).

2 Method to solve

To prove distributive law I used 3 LED's for LHS($A.(B+C)$), RHS($(A+B).(A+C)$) and for condition of LHS=RHS.

3 Components

Component	value	quantity
Resistor	220 ohm	1
Arduino	UNO	1
LED		3
Bread board		1
Jumper wires	M-M	20

Table 1:

4 Distributive law proof with truth table

6 Conclusion

The output of LED3 is 1 for all possible inputs. So LHS=RHS i.e $A.(B+C)=A.B+A.C$ hence distributive law verified.

code link :

<https://github.com/Sravan24365/iith-fwc/blob/main/fpga-examples/blink/helloworldfpga.v>