

REALIZATION OF BOOLEAN EXPRESSION

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Abstract—The objective of this manual is to implement the given boolean function, $F = XY'Z + X'YZ$, draw the logic diagram, obtain the truth table of F, through the arduino IDE

2 Introduction

2.1 Boolean Expression and Variables:

A Boolean expression is an expression that produces a Boolean value when evaluated, true or false, Whereas boolean variables are variables that store Boolean numbers. Boolean variables that can only store two values: 0 and 1.

2.2 Truth Tables:

In logic problems such as Boolean algebra and electronic circuits, truth tables are commonly used. T or 1 denotes 'True' F or 0 denotes 'False' in the truth table.

2.3 AND GATE:

If any of the inputs are low (0), the output is also low in this gate. When all of the inputs are high (1), the output will be high as well.

2.4 OR GATE:

If one or both of the gate's inputs are high, the logical OR operation produces a high output (1). (1). If neither of the inputs is high, the result is a low output (0).

2.5 LOGIC DIAGRAM

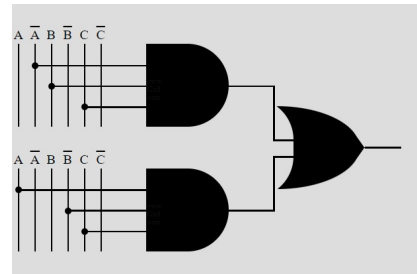


Figure 1: Logic circuit of the given Boolean Equation

2.6 TRUTH TABLE

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

Figure 2: TRUTH TABLE

3 Components

Components	Value	Quantity
1.BreadBoard		1
2.Arduino	UNO	1
3.LED		1
4.Jumper Wires		5

Figure 3: Required Components

4 Display Control through Hardware

1.Plug the Arduino to the computer/Laptop with the help of the cable.

2.Take the Breadboard place it on the table,then next take a LED place that on the breadboard.

3.With the help of jumper wire make the connections in between arduino pin-2 to Positive pin of LED.

4.Make connections in between GND pin of arduino to negative pin of LED.

5 Display Control through Software

1.Make connections according to the above steps provided.

2.Download the following code using the arduino IDE and execute.

5.1 CODE

This is the source code

Source file link

3.Now generate the outputs according to the above provided truth table by modifying the above program