Boolean expression with AND ,NOT

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1 Problem

To implement the boolean function Y = AB+A'B'+B'C with AND and Inverter gates.

2 solution

The given Equation can be realised and can be implemented using the and and not gates

3 Components Required

1 Bread Board . . . . 1 2 LED . . . . 1 3 Arduino . . . . .1 4 Jumper wires 2

4 Components

4.1 Bread Board

The purpose of the breadboard is to make quick electrical connections between components- like resistors, LEDs, capacitors, etc- so that you can test your circuit before permanently soldering it together. Breadboards have many small sockets on them, and some groups of sockets are electrically connected to each other.

4.2 LED

A light-emitting diode (LED) is a semiconductor light source that emits light when current flows through it.It is used as the output indicator.

4.3 Arduino

The Arduino Uno has some ground pins, analog input pins A0-A3 and digital pins D1-D13 that can be used for both input as well as output. It also has two power pins that can generate 3.3V and 5V.

4.4 Jumper Wires

Jumper wires are electrical wires with connector pins at each end. They are used to connect two points in a circuit without soldering.

5 Output Control Through Hardware

5.1 Step 1:

Place the LED on the Breadboard and identify the positive and negative terminals

5.2 Step 2:

Connect the Pin 2 of Arduino to the positive terminal of LED and negative terminal of LED to the ground pin of Arduino
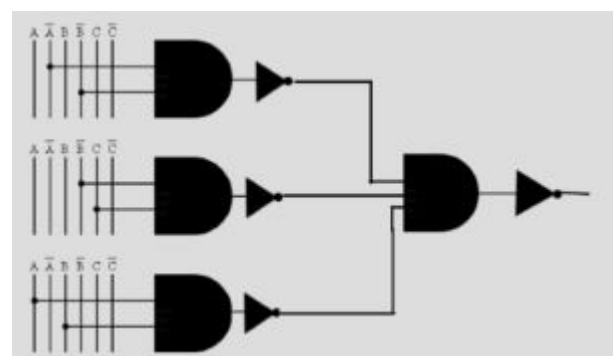
6 Logic Diagram

Figure 1: Logic circuit for for the given Boolean equation

7 Truth Table

Truth Table

	A	B	C	Y
0	0	0	0	1
1	0	0	1	1
2	0	1	0	0
3	0	1	1	0
4	1	0	0	0
5	1	0	1	1
6	1	1	0	1
7	1	1	1	1

Figure 2: Truth Table

8 Source Code

source file link