

# Implementation of Boolean Logic using OR and Inverter Gates

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7447

**Display** 

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2	Components	1					
			according to Table 3 and connecting VCC,GND of IC to				
3	Hardware	1	5V,GND of Arduino respectively.				

Implementation	1	7447	D	С	В	Α	
		Arduino	5	4	3	2	

## **Abstract**

4

This manual shows how to implement Boolean Logic with OR and Inverter Gates through 7447 BCD-Seven Segment Display Decoder

#### 1 Introduction

There are many different ways to implement a Boolean Logic through different Gates.In this manual, we implement the Boolean expression, F=xy+x'y'+y'z using OR and Inverter Gates.

# 2 Components

Component	value	quantity
Resistor	220 ohm	1
Arduino	UNO	1
decoder	7447	1
Jumper wires	M-M	20
sevensegment display		1
Bread board		1

Table 1:

#### 3 Hardware

 $\bf 3.1$  Connection between the sevensegment display and 7447 IC in Figure 1 using Table 2.



Figure 1:Sevensegment and 7447 IC.

3.2 connection of lower pins of 7447 IC to the Arduino

3.3 Finally, Giving 1 as input to the arduino through making the connections in table 4.

Table 3:

b

c d

g

	Х	Υ	Z
Input	0	0	1
Arduino	8	7	6

Table 4:

# 4 Implementation

- **4.1** By making Logic circuit for the Boolean Logic, F=xy+x'y'+y'z, we get the circuit as in figure 2. And the thruth table for the circuit is given in Table 5.
- **4.2** The code below realizes the Boolean Logic for F in table 5.

https://github.com/kumarg9999/IITH\_FWC/blob/main/main.cpp

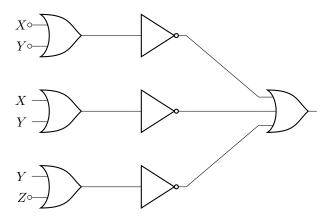


Figure 2

X	Υ	Z	F	D	С	В	Α
0	0	1	1	0	0	0	1
0	1	0	1	0	0	0	1
0	0	0	0	0	0	0	0
0	1	1	0	0	0	0	0
1	0	0	0	0	0	0	0
1	0	1	1	0	0	0	1
1	1	0	1	0	0	0	1
1	1	1	1	0	0	0	1