भारतीय प्रौद्योगिकी संस्थान हैदराबाद
Indian Institute of Technology Hyderabad

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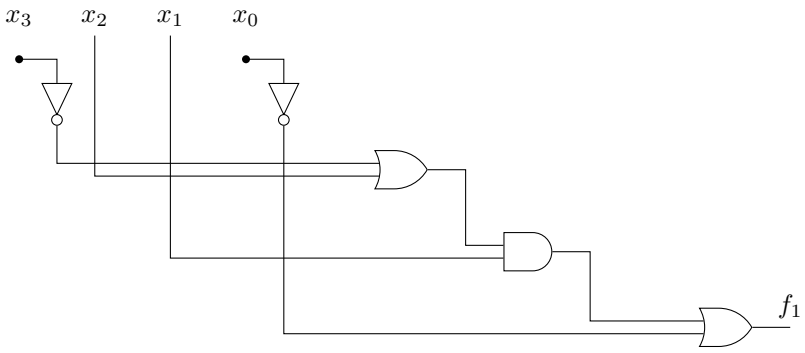
PROBLEM STATEMENT:

Draw the Logic Circuit for the following Boolean Expression : f(x3,x2,x1,x0) = (!x3+x2).x1 + !x0

solution:



AIM:

To Draw the Logic Circuit and implement using Arduino for the following Boolean Expression :
f(x3,x2,x1,x0) = (!x3+x2).x1 + !x0

Components:

S.No	Component	Number
1	Arduino	1
2	Bread Board	1
3	Jumer Wires(M-M)	10
4	7447 IC	1
5	Seven segment display	1

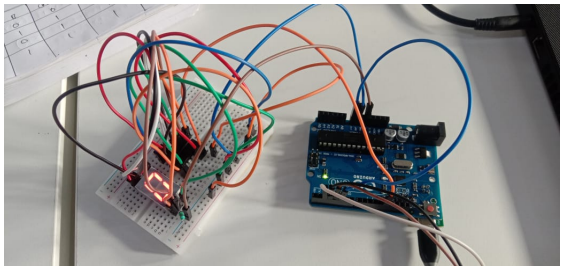
Procedure:

1) First make the 2,3,4,5 digital pins of arduino as input pins and declare the 13 pin as output pin.
2)Write the given logic in code and upload in to the arduino.
3)Connect the output pin i.e pin 13 of arduino to the one of the input of 7447 IC and the remaining input pins are connected to ground.
4)Connect the outputs of IC 7447 to the corresponding pins of sevensegment display.
5)The out put will be displayed in display either 1 or 0 corresponds to the out given boolean expression.

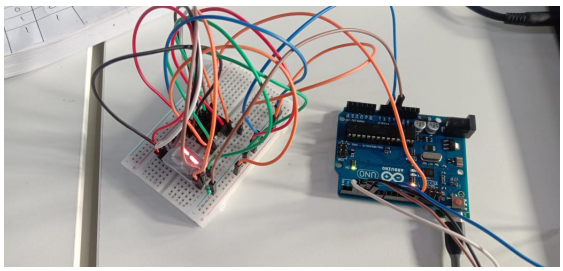
OUTPUTS:

Truthtable:

x3	x2	x1	x0	f
0	0	0	1	1
0	0	0	1	0
0	0	1	1	1
0	0	1	1	1
0	1	0	1	1
0	1	0	1	0
0	1	1	1	1
1	1	1	1	1
1	0	0	1	1
1	0	0	1	0
1	0	1	1	1
1	0	1	1	0
1	1	0	1	1
1	1	0	1	0
1	1	1	1	1
1	1	1	1	1



The output is displayed as 0 in seven segment display corresponds to the given inputs.



The output is displayed as 1 in seven segment display corresponds to the given inputs.

Conclusion:

Hence I have drawn the logic circuit for the given logic expression and I have implemented the circuit in arduino and verified the outputs.