

ARM Assignment

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Problem Statement - Draw a logic circuit for the boolean expression, $(U + V').W' + Z$ and verify it's functionality.

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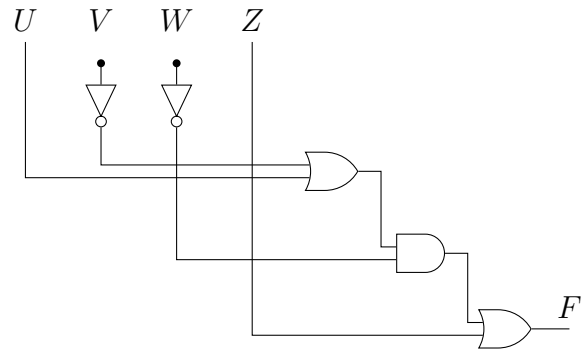
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3 Logic Circuit



Logic Circuit for " $F = (U + V').W' + Z$ "

4 Truth Table

1 Components

S.No	Component	Number
1.	Vaman Board	1
2.	Bread Board	1
3.	Jumer Wires(F-M)	10
4.	LED	1
5.	Resistor(150 ohm)	1

2 Description

Given is a boolean expression with four different variables implying that four inputs are to be given for the circuit, in addition to that we have some mathematical operations, apostrophe and dot operators.

These symbols are nothing but the logic gates representing AND, OR, NOT gates for symbols " . ", " + ", " ' " respectively.

So, for the given expression 5 distinct logic gates are to be connected using the four inputs in accordance with the boolean expression to execute the logic in practice.

U	V	W	Z	F
0	0	0	0	1
0	0	0	1	1
0	0	1	0	0
0	0	1	1	1
0	1	0	0	0
0	1	0	1	1
0	1	1	0	0
0	1	1	1	1
1	0	0	0	1
1	0	0	1	1
1	0	1	0	0
1	0	1	1	1
1	1	0	0	1
1	1	0	1	1
1	1	1	0	0
1	1	1	1	1

5 Procedure

1. After executing the following code using make, a binary file is generated with .bin extension in the output directory.

"Code"

2. Now from the termux, using scp protocol, send the generated bin file to the laptop.

3. There we are supposed to flash the .bin file into the ARM through the terminal.

4. After flashing, reset the Vaman board.

5. Make connections between the LED and ARM board using jumper wires.

6. Now check the output with reference to the truth table present above.

6 K-Map

From the Truth Table we can draw a K-map and it is as follows:

		WZ			
		00	01	11	10
UV	00	1	1	1	0
	01	0	1	1	0
	11	1	1	1	0
	10	1	1	1	0

7 Conclusion

Hence implemented the given boolean expression and drawn its corresponding Logic Circuit after verifying its functionality using ARM.