

3 to 8 Decoder through VAMAN ESP-32

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III. SOFTWARE

Problem 3.1 Execute the following script in termux which compiles the code and generates a .bin file and sends it to Vaman board.

Note: Change the ipaddress accordingly.

```
wget https://github.com/mygit-sampath-govardhan
/fwc-iith-assignments/blob/98ed8708b8864dc568f557e7fced70f441b7449
/Assignment-11(ESP_32%20-%203%20to%208%20decoder)/script.sh
```

I. COMPONENTS

Component	Value	Qunatity
Resistor	220Ohm	8
LED	Red	8
VAMAN Board		1
Jumper Wires	M-F	20
BreadBoard		1

TABLE I

Problem 3.2 Verify all the outputs as mentioned in Truth table (Table 4) by modifying the inputs X, Y, Z to 0's and 1's respectively.

Note: Output pins IO_11-18 are referenced as A-H respectively and input pins IO_8,9,10 are referred as X,Y,Z respectively.

II. SETUP

Problem 2.1 Make connections between the Vaman Board(ESP-32) and LED's as shown in Table 2

Problem 2.2 Connect anodes of LED's to the pins using resistors and cathodes to ground(gnd).

IO_11	IO_12	IO_13	IO_14	IO_15	IO_16	IO_17	IO_18
led1	led2	led3	led4	led5	led6	led7	led8

TABLE II

Problem 2.3 Connect the input pins X, Y, Z to Vaman as shown in Table 3.

X	Y	Z
IO_8	IO_9	IO_10

TABLE III

X	Y	Z	A	B	C	D	E	F	G	H
0	0	0	0	0	0	0	0	0	0	1
0	0	1	0	0	0	0	0	0	1	0
0	1	0	0	0	0	0	0	1	0	0
0	1	1	0	0	0	0	1	0	0	0
1	0	0	0	0	0	1	0	0	0	0
1	0	1	0	0	1	0	0	0	0	0
1	1	0	0	1	0	0	0	0	0	0
1	1	1	1	0	0	0	0	0	0	0

TABLE IV
TRUTH TABLE

IV. SOLUTION

In the Truth table (Table3) X,Y,Z are inputs and A,B,C,D,E,F,G,H are outputs. This table represents the system that behaves as a 3 to 8 decoder. Using Boolean logic,

$$A = X' Y' Z'$$

$$B = X' Y' Z$$

$$C = X' Y Z'$$

$$D = X' Y Z$$

$$E = X Y' Z'$$

$$F = X Y' Z$$

$$G = X Y Z'$$

$$H = X Y Z$$

V. CONCLUSION

A 3 to 8 decoder has 3 inputs and 8 outputs are generated using these 3 inputs.

Here 3 to 8 decoder with Vaman Board has been successfully verified.