Circuit Simulation Project

https://esim.fossee.in/circuit-simulation-project

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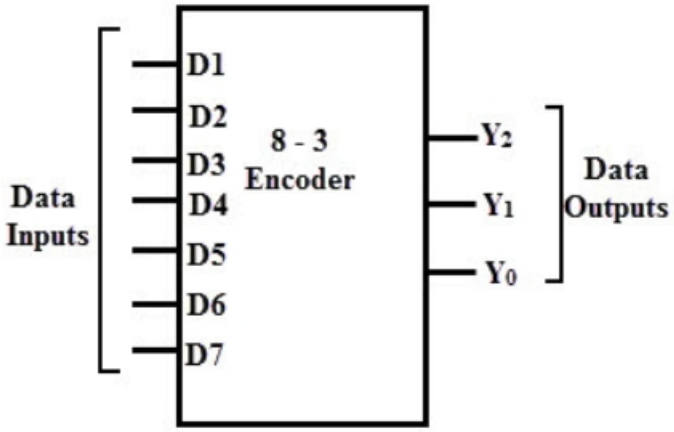
Title of the circuit : Octal to Binary encoder

Theory/Description :

An octal to binary encoder consists of 8 input lines and 3 output lines. Each input line corresponds to each octal digit and three outputs generate corresponding binary code.

In encoders, it is to be assumed that only one input is active or has a value 1 at any given time otherwise the circuit has no meaning. The figure below shows the logic symbol of octal to binary encoder along with its truth table.



Truth table:

No	Inputs								Outputs		
	D_7	D_6	D_5	D_4	D_3	D_2	D_1	D_0	Y_2	Y_1	Y_0
0	0	0	0	0	0	0	0	1	0	0	0
1	0	0	0	0	0	0	1	0	0	0	1
2	0	0	0	0	0	1	0	0	0	1	0
3	0	0	0	0	1	0	0	0	0	1	1
4	0	0	0	1	0	0	0	0	1	0	0
5	0	0	1	0	0	0	0	0	1	0	1
6	0	1	0	0	0	0	0	0	1	1	0
7	1	0	0	0	0	0	0	0	1	1	1

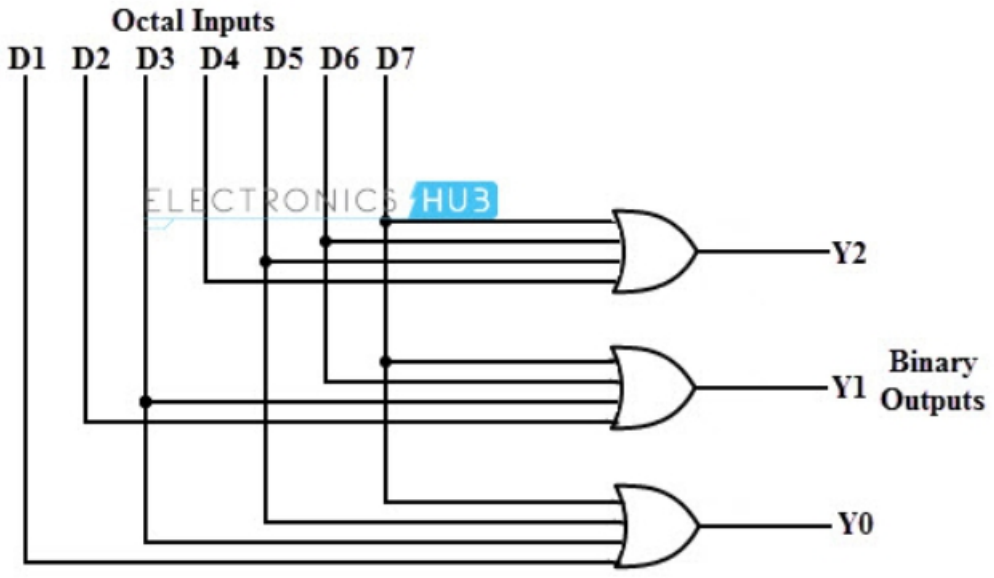
We can write an equation for Y2 as mentioned below,

Y2 = D4 + D5 + D6 + D7

Similarly, Y1 = D2 + D3 + D6 + D7 and

Y0 = D1 + D3 + D5 + D7

As D0 does’nt consider in any of the equation, we can consider it as Don’t care
by considering D0 as don’t care we can impliment circuit using OR gates as shown below,

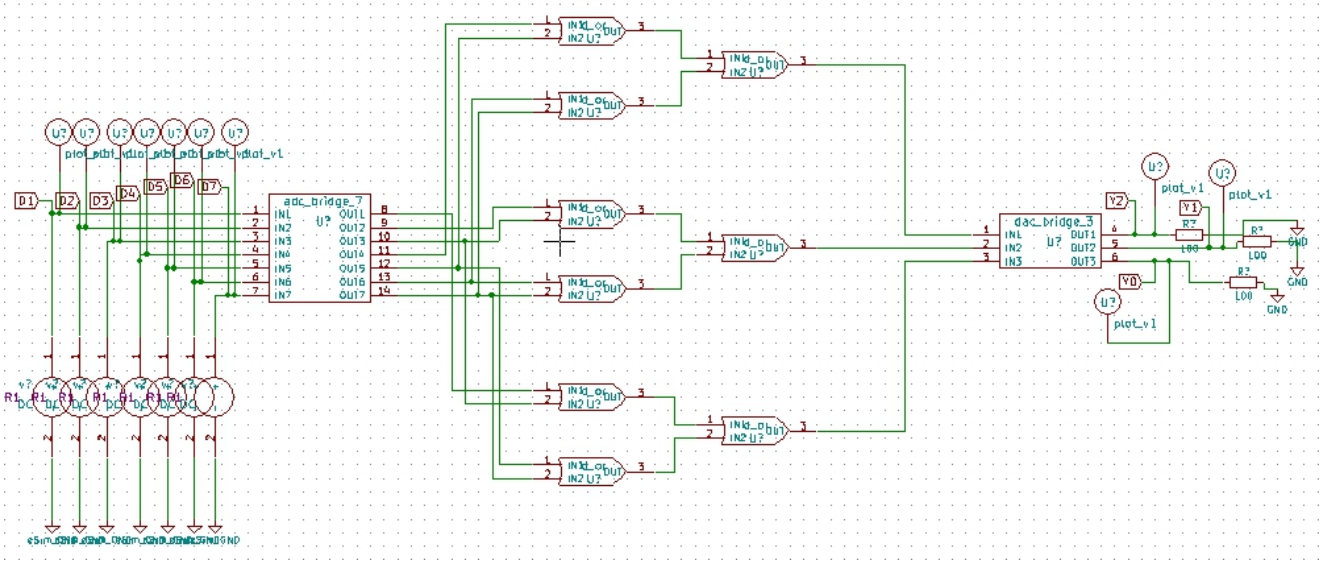


Problem:
if we give 0 to all inputs, we will be getting 0 as an output. Either D0 is 1/0 .

This can be resolved by specifying the condition that none of the inputs are active with an additional output.

Results (Input, Output waveforms and/or Multimeter readings) :

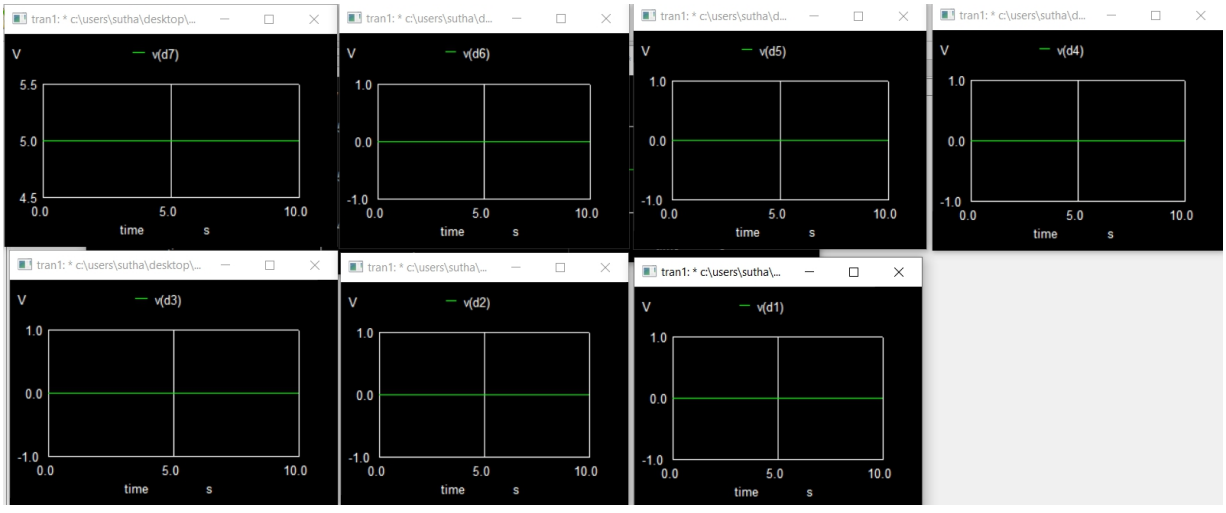
Circuit Diagram:



Let's give input as
d0,d1,d2 … D6 =0
and only D7 = 5 volts
thus ,output will be
Y0 = 5 volts

Y1 = 5 volts

Y2 = 5 volts
Input:



Output:

Source/Reference(s) :

https://www.electronicshub.org