Circuit Simulation Project

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

Name of the participant : Suthar Dhruvi Dilipkumar

Title of the circuit : Priority Encoder

Theory/Description :

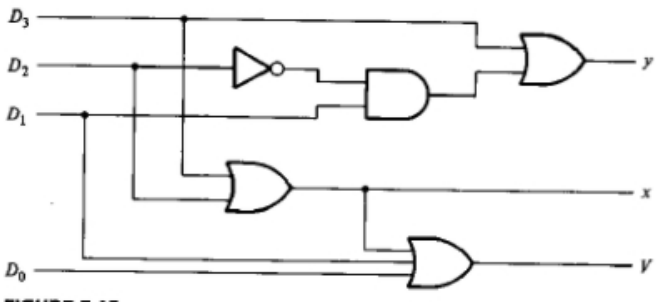
Parity encoder circuit basically convert 4 bit input data into binary representation.the operation of the parity encoder is such that if 2 or more inputs are 1 at a time then the input having highest priority will be take procedure.

Here x are Don't care conditions that means it can be either 0/1.

Truth table for the same is given below

Inputs				Outputs		
D_0	D_1	D_2	D_3	x	y	V
0	0	0	0	X	X	0
1	0	0	0	0	0	1
X	1	0	0	0	1	1
X	X	1	0	1	0	1
X	X	X	1	1	1	1

The simple circuit useing basic gates are as shown here,



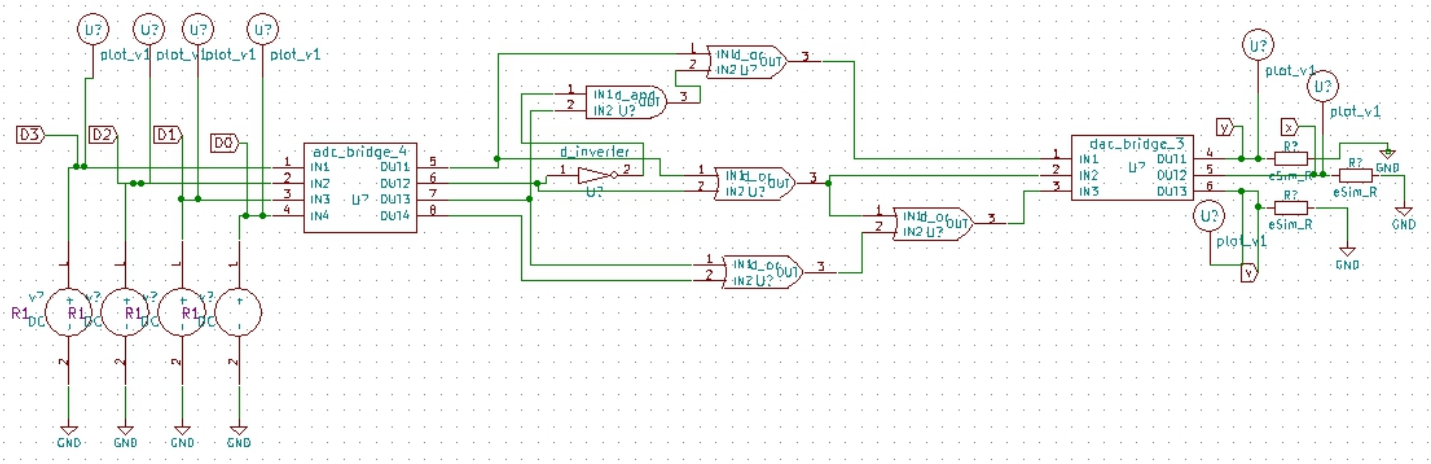
So basic equation for the circuit will be
X = D2+D3

Y = D3 + D1 D2

Z = D0 + D1 + D2 + D3

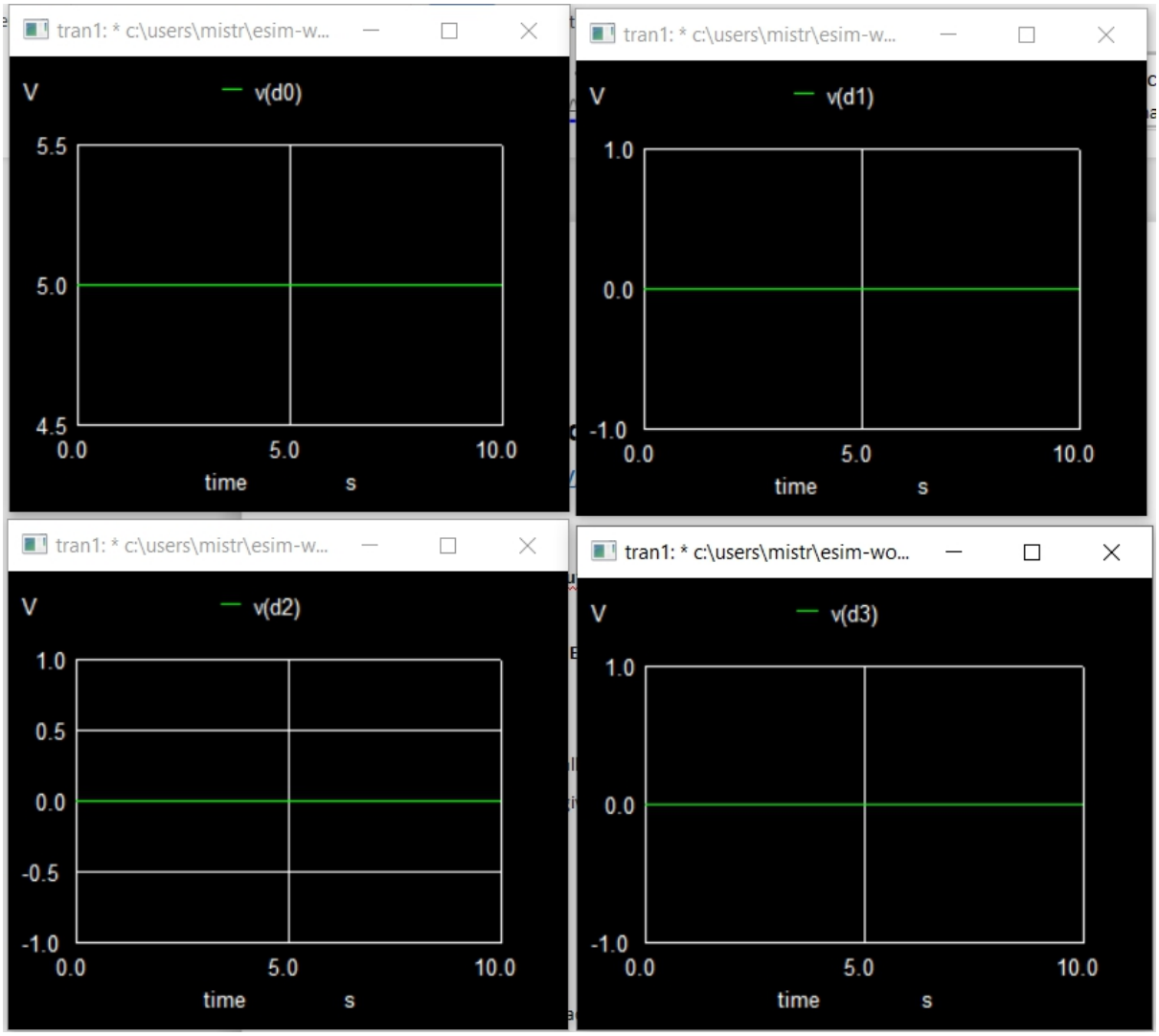
application of parity encoder : A common use of priority encoders is for interrupt controllers, to select the most critical out of multiple interrupt requests.

Circuit Diagram(s) :

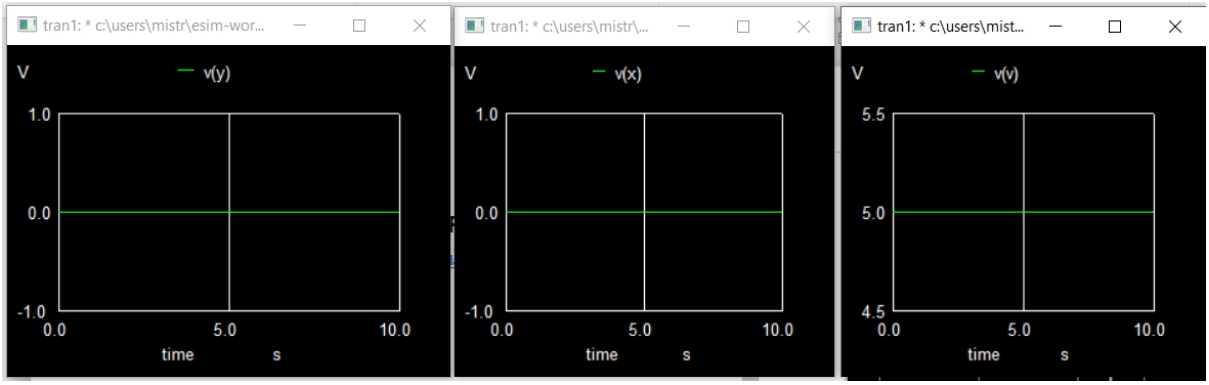


Results (Input, Output waveforms and/or Multimeter readings) :

inputs:


tran1: * c:\users\mistr\esim-w...
V
v(d0)
5.5
5.0
4.5
0.0
5.0
10.0
time
s
tran1: * c:\users\mistr\esim-w...
V
v(d1)
1.0
0.0
-1.0
0.0
5.0
10.0
time
s
tran1: * c:\users\mistr\esim-w...
V
v(d2)
1.0
0.5
0.0
-0.5
-1.0
0.0
5.0
10.0
time
s
tran1: * c:\users\mistr\esim-wo...
V
v(d3)
1.0
0.0
-1.0
0.0
5.0
10.0
time
s

Output:



Source/Reference(s) : https://tams.informatik.uni-hamburg.de/