

Day12-Priority Encoder

#75daysRTL

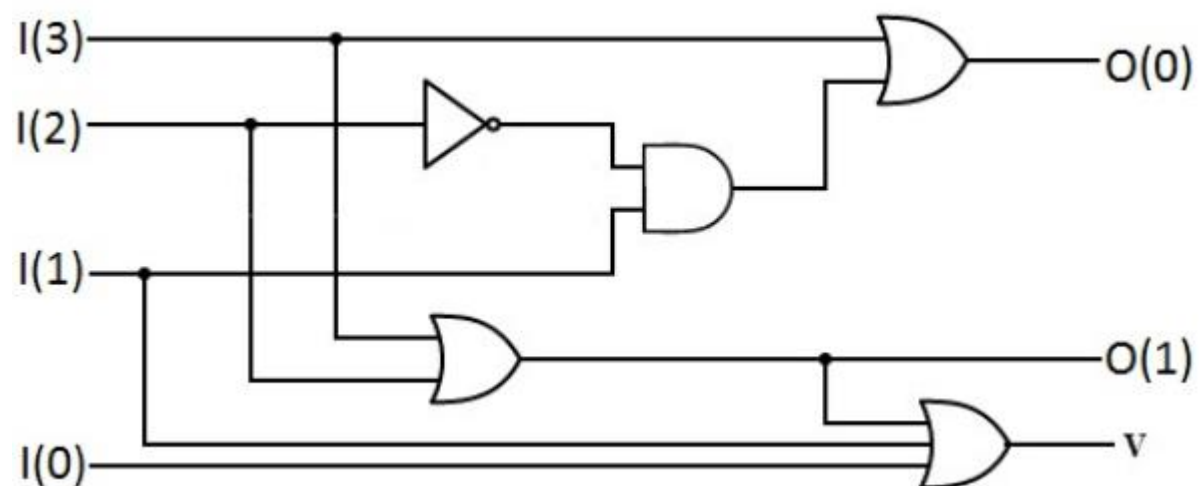
An encoder is a combinational circuit. It has 2^n input lines and n output lines. It takes up these 2^n input data and encodes them into n -bit data. The priority encoder overcomes the drawback of a basic encoder that generates invalid output for more than one input line is set to high. The priority encoder prioritizes each input line and provides an encoder output corresponding to its highest input priority.

The priority encoder is widely used in digital applications. One common example of a microprocessor detecting the highest priority interrupt. The priority encoders are also used in navigation systems, robotics for controlling arm positions, communication systems, etc.

Truth Table-

Input – In[3:0]	Output- Y[1]	Output – Y[0]
0000	0	0
0001	0	1
001x	1	0
01xx	1	1

Circuit Diagram of Priority Encoder-



Verilog Code –

```
module priority_encoder(in,out);
input [3:0]in;
output reg [1:0]out;
always @(in)
begin
casex(in)
4'b0000:out=2'bxx;

```

```
4'b0001:out=0;
4'b001x:out=1;
4'b01xx:out=2;
4'b1xxx:out=3;
endcase
end
endmodule
```

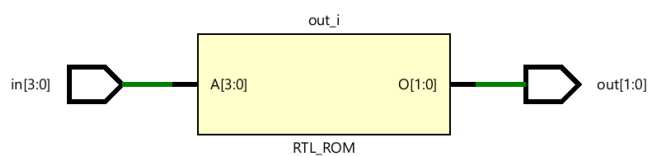
TestBench Code-

```
module priority_encoder_tb();
reg [3:0]in;
wire [1:0]out;
priority_encoder dut(in,out);
initial
begin
in=4'b0000;#20
in=4'b0001;#20
in=4'b0011;#20
in=4'b0101;#20
in=4'b1001;#20
$finish;
end
endmodule
```

Schematic View of Priority Encoder-

Project Summary
Schematic
priority_encoder.v
priority_encoder_tb.v
?

1 Cell
6 I/O Ports
6 Nets



Simulation Result of Priority Encoder-

