

## 10. 8:3 priority encoder

### CODE:

```
`timescale 1ns / 1ps

module priority_encoder(
    input [7:0] a,
    output reg [2:0] y
);

always@(*)begin
    case(a) //normal case won't work
        8'b00000001: y = 3'b000;
        8'b0000001x: y = 3'b001;
        8'b000001xx: y = 3'b010;
        8'b00001xxx: y = 3'b011;
        8'b0001xxxx: y = 3'b100;
        8'b001xxxxx: y = 3'b101;
        8'b01xxxxxx: y = 3'b110;
        8'b1xxxxxxx: y = 3'b111;
        default: y = 3'b000;
    endcase
end
endmodule
```

### //testbench

```
`timescale 1ns / 1ps

module tb_pe;
    reg [7:0] a;
    wire [2:0] y;

    priority_encoder pe1(a,y);

    initial begin
        a = 8'b00100100;
        #10
        a = 8'b10011111;
        #10
        a = 8'b00000011;
        #10
        $stop;
    end
endmodule
```

```
end
endmodule
```

Simulation Result:

