

# #50DAYS CHALLENGE

DAY 9

## 8:3 ENCODER

a)Design Code

```
module encoder_8_3(  
    input wire [7:0]i,  
    output reg [2:0]y);  
  
    always@(*)  
    begin  
        case(i)  
            8'b00000001: y=3'b000;  
            8'b00000010:y=3'b001;  
            8'b00000100:y=3'b010;  
            8'b00001000:y=3'b011;  
            8'b00010000: y=3'b100;  
            8'b00100000:y=3'b101;  
            8'b01000000:y=3'b110;  
            8'b10000000:y=3'b111;  
            default:y=3'b000;  
        endcase  
    end  
endmodule
```

## b) Testbench

```

module tb_encoder_8_3();
  reg [7:0] i;
  wire [2:0] y;
  integer j;
  encoder_8_3 dut(i,y);

  task initialize;
  begin
    {i}=0;
  end
endtask

  task inputs(input [7:0] j);
  begin
    i=j;
  end
endtask

  initial
  begin
    for(j=0;j<256;j=j+1)
    begin
      inputs(j);
      #10;
    end
  end

  initial
  $monitor("input i=%8b | and output y=%3b",i,y);
  initial
  #3000 $finish();
endmodule

```

## c) Waveform

Msgs											
/tb_encoder_8_3/i	11111111	00...	00101001	00101010	00101011	00101100	00101101	00101110	00101111	00110000	00110001
/tb_encoder_8_3/y	000	000									
/tb_encoder_8_3/j	256	40	41	42	43	44	45	46	47	48	49

## d) Console Output

[illegible]