

#50DAYS CHALLENGE

DAY 10

4:2 ENCODER

a)Design Code

```
module encoder_4_2(input wire [3:0]i,output reg [1:0]y);  
  always@(*)  
begin  
  case(i)  
    4'b0001:y=2'b00;  
    4'b0010:y=2'b01;  
    4'b0100:y=2'b10;  
    4'b1000:y=2'b11;  
    default:y=2'b00;  
  endcase  
  
end  
endmodule
```

b)Testbench

```
`timescale 1ns/1ps  
  
module encoder_4_2_tb();  
  reg [3:0] i;  
  wire [1:0] y;  
  
  encoder_4_2 dut(i, y);  
  
  initial begin  
    $monitor("Time=%t | i=%4b | y=%2b", $time, i, y);  
  
    i = 4'b0000; #10;  
    i = 4'b0001; #10;  
    i = 4'b0010; #10;  
    i = 4'b0100; #10;  
    i = 4'b1000; #10;  
  
    $finish;  
  end  
  
endmodule
```

c)Waveform

	Msgs					
+ /encoder_4_2_tb/i	1000	0000	0001	0010	0100	1000
+ /encoder_4_2_tb/y	11	00		01	10	11

d)Console Output

```
# Time=          0 | i=0000 | y=00
# Time=       10000 | i=0001 | y=00
# Time=       20000 | i=0010 | y=01
# Time=       30000 | i=0100 | y=10
# Time=       40000 | i=1000 | y=11
```