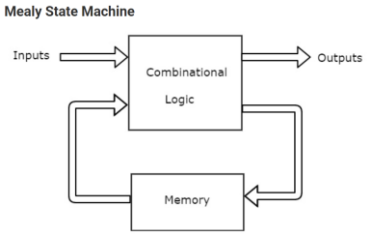
# DAY-46

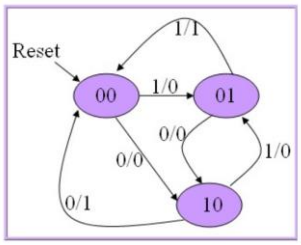
# #100DAYSRTL

**"Aim":-**To design a Melay FSM sequence detector to detect the sequence 11 or 00 (Non Overlapping)

# "Theory":-



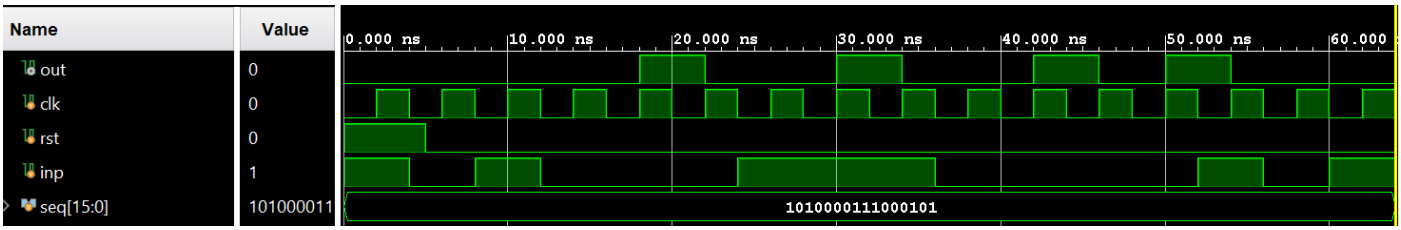

- Mealy machine depends on present state and present input




# "Design Code":-

```
module mealy(clk,rst,inp,out);
input clk, rst, inp;
output reg out;
reg [1:0] state;
always @(posedge clk, posedge rst) begin
if(rst) begin
            out <= 0;
            state <= 2'b00;
        end
else begin
case (state)
2'b00:begin if (inp) begin state <=2'b01;out <=0; end
                    else begin state <=2'b10;out <=0; end
     end
2'b01:begin if(inp) begin state <= 2'b00;out <= 1; end
                    else begin state <= 2'b10;out <= 0; end
     end
2'b10:begin if(inp) begin state <= 2'b01;out <= 0; end
                    else begin state <= 2'b00;out <= 1; end
     end
default:begin state <= 2'b00; out <= 0; end
endcase
end
end
endmodule
```

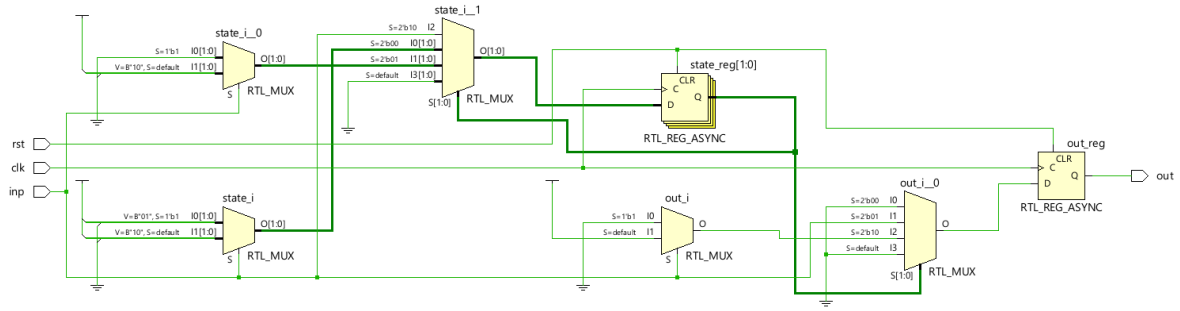
# “Waveforms”:-



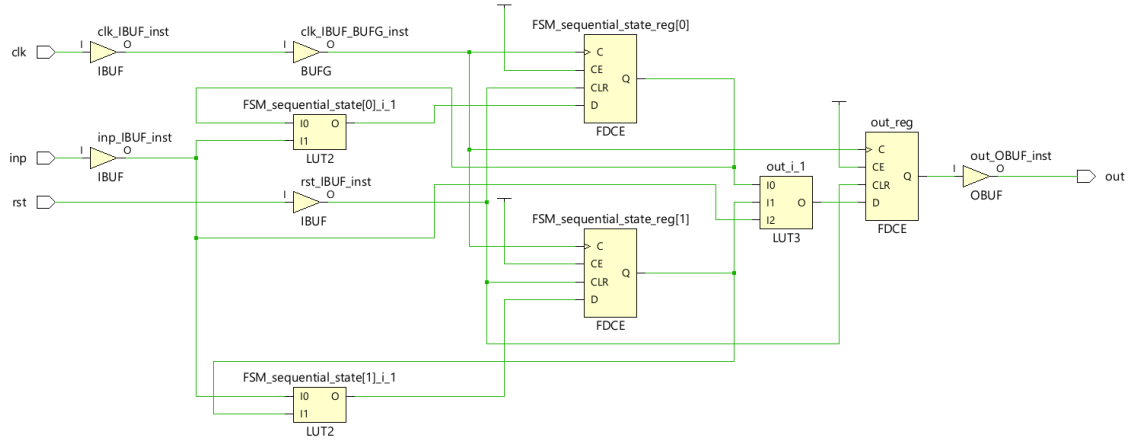

# “Console”:-

```
state = 0| input = 1| output = 0
state = 2| input = 0| output = 0
state = 1| input = 1| output = 0
state = 2| input = 0| output = 0
state = 0| input = 0| output = 1
state = 2| input = 0| output = 0
state = 1| input = 1| output = 0
state = 0| input = 1| output = 1
state = 1| input = 1| output = 0
state = 2| input = 0| output = 0
state = 0| input = 0| output = 1
state = 2| input = 0| output = 0
state = 0| input = 0| output = 1
state = 1| input = 1| output = 0
state = 2| input = 0| output = 0
state = 1| input = 1| output = 0
```

# “Elaborated Design”:-




# “Implemented Design”:-



## Summary

Power analysis from Implemented netlist. Activity derived from constraints files, simulation files or vectorless analysis.

| | |
|---|---|
| **Total On-Chip Power:** | **0.859 W** |
| **Design Power Budget:** | **Not Specified** |
| **Power Budget Margin:** | **N/A** |
| **Junction Temperature:** | **26.6°C** |
| Thermal Margin: | 58.4°C (30.8 W) |
| Effective ϑJA: | 1.9°C/W |
| Power supplied to off-chip devices: | 0 W |
| Confidence level: | Low |

Launch Power Constraint Advisor to find and fix invalid switching activity