



## DAY-89

### #100DAYSOFRTL

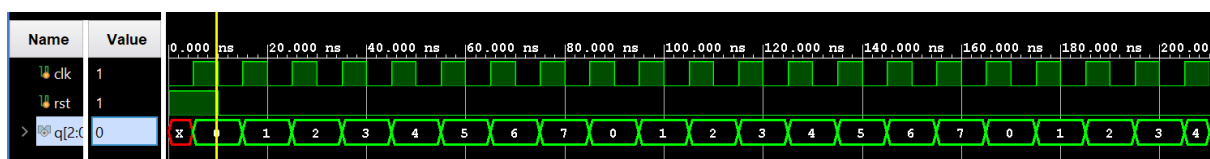
**Aim:-** Implementation of **3-BIT SYNCHRONOUS COUNTER USING T Flipflop.**

### RTL CODE:-

```
//////DATE:-29/03/2024
//////DAY-89
//////Implementation of 3 bit Synchronous Counter by T Flipflop.
module Day_89(input clk,rst, output [2:0] q);
  wire w1;
  wire [2:0] qbar;
  and g1(w1,q[0],q[1]);
  Tff T1(clk,rst,1'b1,q[0],qbar[0]);
  Tff T2(clk,rst,q[0],q[1],qbar[1]);
  Tff T3(clk,rst,w1,q[2],qbar[2]);
endmodule

module Tff(input clk,rst,T,
output reg q,output qbar);
always@(posedge clk) begin
  if(rst)
    q<=0;
  else begin
    case (T)
      1'b0:q<=q;
      1'b1:q<=~q;
    endcase
  end
end
assign qbar=~q;
endmodule
```

### WAVEFORMS:-



## TESTBENCH:-

```
module Day_89_tb();  
  reg clk,rst;  
  wire [2:0] q;  
  Day_89 uut(clk,rst,q);  
  ○ always #5 clk=~clk;  
  ○ initial clk=0;  
    initial begin  
  ○ rst=1; #10;  
  ○ rst=0;  
  ○ #200;  
  ○ → $finish();  
  end  
endmodule
```

## SCHEMATIC:-

