DAY-76

#100DAYSOFRTL

Aim:- Implementation of T FLIPFLOP to JK FLIPFLOP.

RTL CODE:-

```
////DATE:-16/03/2024
////DAY-76
////Implementation of T FF to JK FF
module Day_76(input clk,rst,J,K,output  q,qbar);
wire w1,w2,w3;
and g1(w1,J,qbar);
and g2(w2,K,q);
or g3(w3,w1,w2);
Tff TFF(clk,rst,w3,q,qbar);
endmodule

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

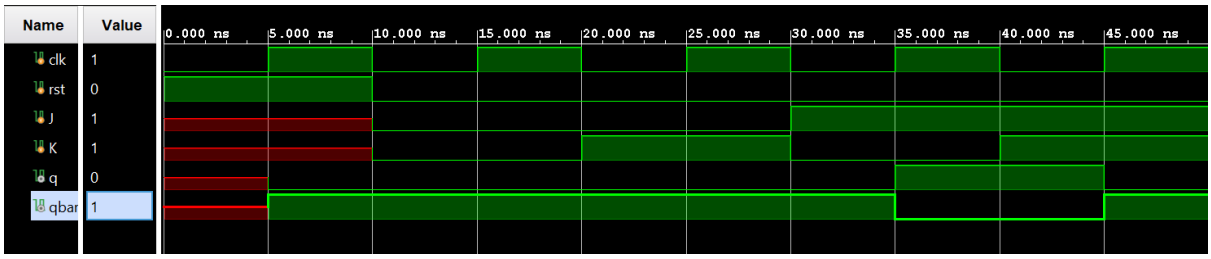
OUTPUT:-

```
J=0,K=0,q=0,qbar=1
J=0,K=1,q=0,qbar=1
J=1,K=0,q=1,qbar=0
J=1,K=1,q=0,qbar=1
```

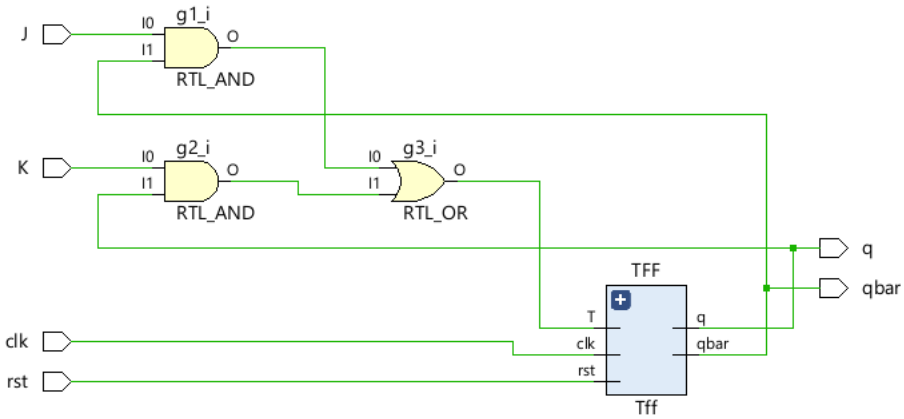
TESTBENCH:-

```
module Day_76_tb();
reg clk,rst,J,K;
wire q,qbar;
Day_76 uut(clk,rst,J,K,q,qbar);
always #5 clk=~clk;
initial
clk=0;
initial begin
rst=1; #10;
rst=0;
J=0; K=0; #10;
$display("J=%b,K=%b,q=%b,qbar=%b",J,K,q,qbar);
J=0; K=1; #10;
$display("J=%b,K=%b,q=%b,qbar=%b",J,K,q,qbar);
J=1; K=0; #10;
$display("J=%b,K=%b,q=%b,qbar=%b",J,K,q,qbar);
J=1; K=1; #10;
$display("J=%b,K=%b,q=%b,qbar=%b",J,K,q,qbar);
$finish();
end
endmodule
```

WAVEFORMS:-



SCHEMATIC:-



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