DAY-26

#100DAYSOFRTL

Aim:- Implementation of K:1 Mux using parameter statement (K=64).

RTL CODE:-

```
////DATE:-26/01/2024
////Implementation of Nx1 Mux
module Mux_Nx1#(parameter K=64)(input [K-1:0] A,
input [5:0] Sel, output reg y);
always @(*) begin
for(integer i=0; i<K; i=i+1) begin
case(Sel)
i:y=A[i];
endcase
end
end
endmodule
```

TESTBENCH:-

```
module Nx1Mux_tb#(parameter K=64)();
reg [K-1:0] A;
reg [5:0] Sel;
wire y;
Mux_Nx1 uut(A,Sel,y);
initial begin
for(int i=0; i<K; i++) begin
A=$random();
Sel=$random();
#10;
$display("A=%b,Sel=%d,y=%d",A,Sel,y);
#10;
end
end
initial begin
#700;
$finish();
end
endmodule
```

OUTPUT:-

```
A=0000000000000000000000000000000011010110011111110110101101011,Sel=21,y=0
A=1111111111111111111111111111111100000010001011101001010000000010,Sel=46,y=1
A=0000000000000000000000000000000011101111111111010010011101,Sel=15,y=1
A=0000000000000000000000000000000010001100001000100100100100011,Sel=10,y=0
A=1111111111111111111111111111111110010101110011000010101100101 0,Sel=60,y=1
A=0000000000000000000000000000000011110010110100010111101111100 10,Sel=10,y=1
A=0000000000000000000000000000000010000011000100101100110100000 1,Sel=24,y=0
A=0000000000000000000000000000000011110000100001111001101111000,Sel= 9,y=1
A=0000000000000000000000000000000011101011100010100001101111010 11,Sel=54,y=0
A=0000000000000000000000000000000011000110100010111111100111000 110,Sel=46,y=0
A=1111111111111111111111111111111110111100111010100000010101111 00,Sel=42,y=1
A=1111111111111111111111111111111110000101110101111001101000001 011,Sel=49,y=1
A=0000000000000000000000000000000010001011110010010000011000010 1,Sel=15,y=0
A=1111111111111111111111111111111110011101110011000110000000111 011,Sel=58,y=0
A=1111111111111111111111111111111110111111001000110011001001111 110,Sel=21,y=1
```

WAVEFORMS:-

SCHEMATIC:-