#50DAYS CHALLENGE

DAY 6

MULTIPLEXER

MUX 2:1

a)Design Code

```
module mux2_1(input sel,i0,i1,output y);
assign y=sel?i1:i0;
endmodule
```

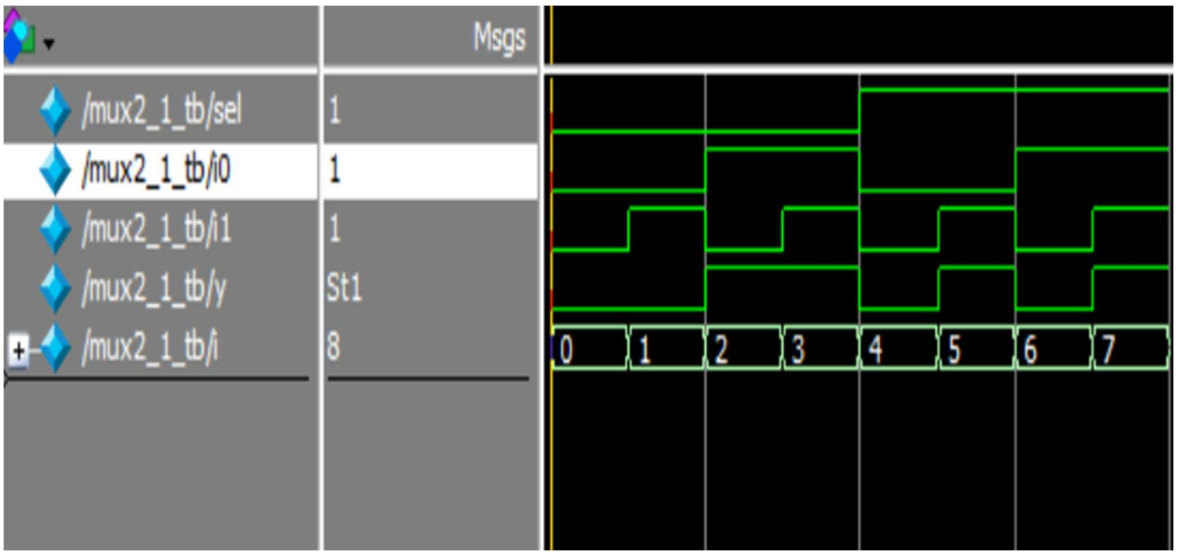
b)Testbench

```
module mux2_1_tb();
reg sel,i0,i1;
wire y;
integer i;
mux2_1 dut(.sel(sel),.i0(i0),.i1(i1),.y(y));

initial
begin

for(i=0;i<8;i=i+1)
begin
{sel,i0,i1}=i;
#10;
end
end
initial
begin
    $monitor("Time=%0t | sel=%b | i0=%b | i1=%b | y=%b",
              $time, sel, i0, i1, y);
end
endmodule
```

c)Waveform



d)Console Output

```
# Time=0 | sel=0 | i0=0 | i1=0 | y=0
# Time=10 | sel=0 | i0=0 | i1=1 | y=0
# Time=20 | sel=0 | i0=1 | i1=0 | y=1
# Time=30 | sel=0 | i0=1 | i1=1 | y=1
# Time=40 | sel=1 | i0=0 | i1=0 | y=0
# Time=50 | sel=1 | i0=0 | i1=1 | y=1
# Time=60 | sel=1 | i0=1 | i1=0 | y=0
# Time=70 | sel=1 | i0=1 | i1=1 | y=1
```