```
`timescale 1ns / 1ps
//////////////////////////////////////////////////////////////////////////////////
// Company:
// Engineer:
//
// Create Date: 05/10/2021 02:03:17 PM
// Design Name:
// Module Name: lab5_fsm_simulation
// Project Name:
// Target Devices:
// Tool Versions:
// Description:
//
// Dependencies:
//
// Revision:
// Revision 0.01 - File Created
// Additional Comments:
//
//////////////////////////////////////////////////////////////////////////////////


module lab5_fsm_simulation();
    reg clkin;
    reg Up = 1'b0;
    reg DTC = 1'b0;
    reg A = 1'b0;
    reg B = 1'b0;
    wire Load, Run, IncA, IncB, Score;
    lab5_state_machine FSM (.btnU(Up), .TimeUp(DTC), .Anow(A), .Bnow(B),
.clk(clkin), .LoadTime(Load), .RunTime(Run), .IncA(IncA), .IncB(IncB),
.ShowScore(Score));



    parameter PERIOD = 10;
    parameter real DUTY_CYCLE = 0.5;
    parameter OFFSET = 2;

    initial    // Clock process for clkin
    begin
        #OFFSET
          clkin = 1'b1;
        forever
        begin
            #(PERIOD-(PERIOD*DUTY_CYCLE)) clkin = ~clkin;
```

```
      end
    end

  initial
  begin
    // add your stimuli here
    // to set signal foo to value 0 use
    // foo = 1'b0;
    // to set signal foo to value 1 use
    // foo = 1'b1;
    //always advance time my multiples of 100ns
    // to advance time by 100ns use the following line
    #1000; //Initial. State 0, new game/game over.
    Up = 1'b1;
    #200; //Should be in state 1 now, telling counter to load.
    Up = 1'b0;
    #200; //Should be in state 2 now, counting down.
    DTC = 1'b1;
    #200; //Should be in state 3 now, game winning possible.
    A = 1'b1;
    #200; //A scored, return to state 0.
    DTC = 1'b0;
    A = 1'b0;
    B = 1'b1;
    Up = 1'b1;
    #200; //A down, B up, btnU up, so it should stay in the same state.
    B = 1'b0;
    #200; //Back to state 1.
    A = 1'b1;
    B = 1'b1;
    #200; //Switches while btnU is pressed! Should return to state 0 since game hasn
technically started yet!
    A = 1'b0;
    B = 1'b0;
    #200; //Alright, now the game should start!
    Up = 1'b0;
    #200; //Entering state 2.
    A = 1'b1;
    #200; //A went high too early! Point should go to B!
    A = 1'b0;
    #200; //We're back in state 0.
    Up = 1'b1;
    #200; //State 1.
    Up = 1'b0;
    #200; //State 2.
    A = 1'b1;
```

```
    B = 1'b1;
    #200; //Uh oh, they both went too early, guess that means they both lose!
    A = 1'b0;
    B = 1'b0;
    #200;
    Up = 1'b1;
    #200; //State 1.
    Up = 1'b0;
    #200; //State 2;
    DTC = 1'b1;
    #200; //State 3, been a while since we've been here.
    A = 1'b1;
    B = 1'b1;
    #200; //Both scored at the same time, should be a win for both of them.
    A = 1'b0;
    B = 1'b0;
    DTC = 1'b0;
   end
endmodule
```