`timescale 1ns / 1ps

module intro(

input [3:0] button,

output [7:0] led,

input sys\_clkn,

input sys\_clkp

);

reg [23:0] clkdiv;

reg [7:0] counter;

reg slow\_clk;

// This section defines the main system clock from two

//differential clock signals: sys\_clkn and sys\_clkp

// Clk is a high speed clock signal running at ~200MHz

wire clk;

IBUFGDS osc\_clk(

.O(clk),

.I(sys\_clkp),

.IB(sys\_clkn)

);

initial begin

clkdiv = 0;

counter = 8'h00;

end

assign led = ~counter;

// This code creates a slow clock from the high speed Clk signal

// You will use the slow clock to run your finite state machine

// The slow clock is derived from the fast 20 MHz clock by dividing it 10,000,000 time

// Hence, the slow clock will run at 2 Hz

always @(posedge clk) begin

clkdiv <= clkdiv + 1'b1;

if (clkdiv == 10000000) begin

slow\_clk <= ~slow\_clk;

clkdiv <= 0;

end

end

/\*

//The main code will run fr0m the slow clock. The rest of the code will be in this section.

//The counter will increment when button 0 is pressed and on the rising edge of the slow clk

//The counter will decrement when button 0 is pressed and on the rising edge of the slow clk

always @(posedge slow\_clk) begin

if (button [0] == 1'b0) begin

counter <= counter + 1'b1;

end

else if (button [1] == 1'b0) begin

counter <= counter - 1'b1;

end

end

\*/

// code to turn on all LEDs when button[0] is pressed

always @(posedge slow\_clk) begin

if ((button [0] == 1'b0) && (button[1]==1'b0 || button[2]==1'b0 || button[3]==1'b0)) begin

counter <= counter + 1'b0;

end

else if ((button [1] == 1'b0) && (button[0]==1'b0 || button[2]==1'b0 || button[3]==1'b0)) begin

counter <= counter + 1'b0;

end

else if ((button [2] == 1'b0) && (button[1]==1'b0 || button[0]==1'b0 || button[3]==1'b0)) begin

counter <= counter + 1'b0;

end

else if ((button [3] == 1'b0) && (button[1]==1'b0 || button[2]==1'b0 || button[0]==1'b0)) begin

counter <= counter + 1'b0;

end

else if (button [0] == 1'b0) begin

counter <= 8'hFF;

end

else if (button [1] == 1'b0) begin

counter <= 8'h00;

end

else if (button [2] == 1'b0) begin

if (counter > 8'hFD) begin

counter <= 8'h00;

end

else

counter <= counter + 2'b10;

end

else if (button [3] == 1'b0) begin

counter <= counter - 2'b10;

if (counter < 8'h02) begin

counter <= 8'h00;

end

else

counter <= counter - 2'b10;

end

end

endmodule