`timescale 1ns / 1ps

module VendingMachine(ticket,balance,coin,clk,rst);

//input,output and state definitions

input clk,rst;

input [1:0]coin;

output reg ticket,balance;

reg [1:0] state,next,next\_ticket,next\_balance;

parameter ZERO = 2'b00,

ONE = 2'b01,

TWO = 2'b10;

always @(posedge clk or posedge rst) begin

if(rst)

state<=ZERO;

else

state<=next;

end

always @(state or coin) begin

next = 2'bx;

case(state)

ZERO:case(coin)

2'b00:begin

next = ZERO;

next\_ticket = 0;

next\_balance = 0;

end

2'b01:begin

next = ONE;

next\_ticket = 0;

next\_balance = 0;

end

2'b10:begin

next = TWO;

next\_ticket = 0;

next\_balance = 0;

end

endcase

ONE:case(coin)

2'b00:begin

next = ONE;

next\_ticket = 0;

next\_balance = 0;

end

2'b01:begin

next = TWO;

next\_ticket = 0;

next\_balance = 0;

end

2'b10:begin

next = ZERO;

next\_ticket = 1;

next\_balance = 0;

end

endcase

TWO:case(coin)

2'b00:begin

next = TWO;

next\_ticket = 0;

next\_balance = 0;

end

2'b01:begin

next = ZERO;

next\_ticket = 1;

next\_balance = 0;

end

2'b10:begin

next = ZERO;

next\_ticket = 1;

next\_balance = 1;

end

endcase

endcase

end

always @(posedge clk or posedge rst) begin

if(rst)

begin

ticket<=0;

balance<=0;

end

else begin

ticket<=next\_ticket;

balance<=next\_balance;

end

end

endmodule