module traffic\_lights(north\_light,west\_light,south\_light,east\_light,clk,reset);

output reg[2:0] north\_light,west\_light,south\_light,east\_light;

input clk;

input reset;

reg [2:0] state;

parameter [2:0] north=3'b000,north\_yellow=3'b001,west=3'b010,west\_yellow=3'b011,

east=3'b100,east\_yellow=3'b101,south=3'b110,south\_yellow=3'b111;

reg [3:0] count;

always @(posedge clk,posedge reset)

begin

if (reset)

begin

state=north;

count=3'b0000;

end

else

begin

case (state)

north:

begin

if (count==4'b1111)

begin

count=4'b0000;

state=north\_yellow;

end

else

begin

count=count+4'b0001;

state=north;

end

end

north\_yellow:

begin

if (count==4'b0011)

begin

count=4'b0000;

state=west;

end

else

begin

count=count+4'b0001;

state=north;

end

end

south:

begin

if (count==4'b1111)

begin

count=4'b0000;

state=south\_yellow;

end

else

begin

count=count+4'b0001;

state=south;

end

end

south\_yellow:

begin

if (count==4'b0011)

begin

count=4'b0000;

state=east;

end

else

begin

count=count+4'b0001;

state=south\_yellow;

end

end

east:

begin

if (count==4'b1111)

begin

count=4'b0000;

state=east\_yellow;

end

else

begin

count=count+4'b0001;

state=east;

end

end

east\_yellow:

begin

if (count==4'b0011)

begin

count=4'b0000;

state=north;

end

else

begin

count=count+4'b0001;

state=east\_yellow;

end

end

west:

begin

if (count==4'b1111)

begin

count=4'b0000;

state=north\_yellow;

end

else

begin

count=count+4'b0001;

state=west;

end

end

west\_yellow:

begin

if (count==4'b0011)

begin

count=4'b0000;

state=south;

end

else

begin

count=count+4'b0001;

state=west\_yellow;

end

end

endcase

end

end

always @(state)

begin

case(state)

north:

begin

north\_light=3'b001;

south\_light=3'b100;

east\_light=3'b100;

west\_light=3'b100;

end

north\_yellow:

begin

north\_light=3'b010;

south\_light=3'b100;

east\_light=3'b100;

west\_light=3'b100;

end

south:

begin

north\_light=3'b100;

south\_light=3'b001;

east\_light=3'b100;

west\_light=3'b100;

end

south\_yellow:

begin

north\_light=3'b100;

south\_light=3'b010;

east\_light=3'b100;

west\_light=3'b100;

end

west:

begin

north\_light=3'b100;

south\_light=3'b100;

east\_light=3'b100;

west\_light=3'b001;

end

west\_yellow:

begin

north\_light=3'b100;

south\_light=3'b100;

east\_light=3'b100;

west\_light=3'b010;

end

east:

begin

north\_light=3'b100;

south\_light=3'b100;

east\_light=3'b001;

west\_light=3'b100;

end

east\_yellow:

begin

north\_light=3'b100;

south\_light=3'b100;

east\_light=3'b010;

west\_light=3'b100;

end

endcase

end

endmodule