Coffee Moore/lab 2 uitwerking

Computation II: embedded system design (Technische Universiteit Eindhoven)

```
`timescale 1ns / 1ps


module coffee_moore(
    input clk,
    input insert,
    input reset,
    input [1:0] coins,
    output coffee,
    output [2:0] state_display
);

reg [2:0] current_coins = 0;
reg insert_previous;
reg insert_current;
reg coffee_output;

localparam [2:0] // 5 states are required
    zerocnoC = 3'b000,
    fivecnoC = 3'b001,
    tencnoC = 3'b010,
    zerocyesC = 3'b011,
    fivecyesC = 3'b100;

reg[2:0] stateMoore_reg, stateMoore_next;

always @(posedge clk, posedge reset)begin
    if(reset) // go to state zero if rese
        begin
        stateMoore_reg <= zerocnoC;
        coffee_output = 1'b0;
        end
    else // otherwise update the states
        begin
        stateMoore_reg = stateMoore_next;
        end
end

always @(stateMoore_reg, insert, coins)begin
    stateMoore_next = stateMoore_reg; // dit moet ofzo
    insert_previous = insert_current;
    insert_current = insert;

if (stateMoore_reg == zerocyesC || stateMoore_reg == fivecyesC)begin
    coffee_output = 1'b1;
    end
else begin
     coffee_output = 1'b0;
     end
if(insert_current == 1'b1 && insert_previous == 1'b0)begin
case(stateMoore_reg)
    zerocnoC:
        if(coins == 2'b10)begin
            stateMoore_next = fivecnoC;
            end
        else if(coins == 2'b01)begin
            stateMoore_next = tencnoC;
            end
    fivecnoC:
        if(coins == 2'b10)begin
                stateMoore_next = tencnoC;
                end
            else if(coins == 2'b01)begin
                stateMoore_next = zerocyesC;
                end
    tencnoC:
        if(coins == 2'b10)begin
                    stateMoore_next = zerocyesC;
                    end
                else if(coins == 2'b01)begin
                    stateMoore_next = fivecyesC;
                end
    zerocyesC:
```

```
74          if(coins == 2'b10)begin
75                      stateMoore_next = fivecnoC;
76                      end
77                  else if(coins == 2'b01)begin
78                      stateMoore_next = tencnoC;
79                      end
80                  else begin
81                      stateMoore_next = zerocnoC;
82                  end
83      fivecyesC:
84          if(coins == 2'b10)begin
85                      stateMoore_next = tencnoC;
86                      end
87                  else if(coins == 2'b01)begin
88                      stateMoore_next = zerocyesC;
89                      end
90                  else begin
91                      stateMoore_next = fivecnoC;
92                  end
93      endcase
94  end
95  end
96
97
98
99  assign coffee = coffee_output;
100 assign state_display = stateMoore_next [2:0];
101
102
103 endmodule
104
```