

```
1      /*
2      Caitlin DeShazo-Couchot and Ashley Guillard
3      EE 271 Au23: Professor Hussein
4      November 9, 2023
5      Lab 4: Victory Logic
6  */
7  // Handles the Victory Case for HEX0 where 1 is displayed for Player 1 and 2 for Player 2.
8  // Inputs: CLOCK, Reset, Left Button, Right Button, Left Light, and Right Light.
9  // Outputs: The state of the LED this is referring to, either On or Off.
10 module victory (CLOCK, Reset, L, R, LEDR9, LEDR1, HEX0);
11
12     // INPUT LOGIC
13     input logic CLOCK, Reset, L, R, LEDR9, LEDR1;
14
15     // OUTPUT LOGIC
16     output logic [6:0] HEX0;
17
18     enum { P1, P2, NONE } ps, ns;
19
20     // Combinational Logic
21     always_comb begin
22         case (ps)
23             P1: ns = P1;
24             P2: ns = P2;
25             NONE:
26                 if (L == 1 && R == 0 && LEDR1 == 1)
27                     ns = P1;
28                 else if (L == 0 && R == 1 && LEDR9 == 1)
29                     ns = P2;
30                 else
31                     ns = NONE;
32         endcase
33     end
34
35     // Output Logic
36     always_comb begin
37         case (ps)
38             P1: HEX0 = 7'b0100100;
39             P2: HEX0 = 7'b1111001;
40             NONE: HEX0 = 7'b1111111;
41         endcase
42     end
43
44     // Sequential Logic
45     always_ff @(posedge CLOCK) begin
46         if (Reset)
47             ps <= NONE;
48         else
49             ps <= ns;
50     end
51
52 endmodule
53
```