```
1   /*
2      Caitlin DeShazo-Couchot and Ashley Guillard
3      EE 271 Au23: Professor Hussein
4      November 9, 2023
5      Lab 4: Player 1 and 2
6   */
7
8   // Handles the user input for key and moving the LED to the right or left in the game of
    tug-of-war.
9   // Inputs: CLOCK, Reset, and the Key assigned to player 1 or 2.
10  // Outputs: Handles whether or not the button was properly pressed, only one press per
    button hold.
11  module player (CLOCK, Reset, KEY, out);
12
13      // INPUT LOGIC
14      input logic CLOCK, Reset, KEY;
15
16      // OUTPUT LOGIC
17      output logic out;
18
19      // State Variables
20      enum logic [1:0] { ON, OFF } ps, ns;
21
22
23      // Next State Logic
24      always_comb
25      begin
26          case (ps)
27              OFF:
28                  if (KEY)
29                      ns = ON;
30                  else
31                      ns = OFF;
32              ON:
33                  if (KEY)
34                      ns = ON;
35                  else
36                      ns = OFF;
37          endcase
38      end
39
40      // Output Logic
41     always_comb begin
42        case (ps)
43           OFF:
44              out = 1'b0;
45           ON:
46              out = 1'b1;
47        endcase
48     end
49
50      // Sequential Logic
51      always_ff @(posedge CLOCK, posedge Reset) begin
52          if (Reset)
53              ps <= OFF;
54          else
55              ps <= ns;
56      end
57
58  endmodule
59
```