```
1   `timescale 1ns / 1ps
2   //////////////////////////////////////////////////////////////////////////////////
3   // Company:
4   // Engineer:
5   //
6   // Create Date:    18:15:00 04/30/2016
7   // Design Name:
8   // Module Name:    FSM
9   // Project Name:
10  // Target Devices:
11  // Tool versions:
12  // Description:
13  //
14  // Dependencies:
15  //
16  // Revision:
17  // Revision 0.01 - File Created
18  // Additional Comments:
19  //
20  //////////////////////////////////////////////////////////////////////////////////
21  module FSM(Q,D,sec2,sec8,pb1,pb0,Match,swoff, resetTimer, LEDcontrols, Inc, Dec, Flash,
     Load, sec12, FlashLED, start, Vsec2, undertime, check);
22  input [6:0] Q;
23  input sec2;
24  input sec8;
25  input pb1;
26  input pb0;
27  input Match;
28  input swoff;
29  input sec12;
30  input Vsec2;
31
32  output [6:0] D;
33  output resetTimer;
34  output [1:0] LEDcontrols;
35  output Dec;
36  output Inc;
37  output Flash;
38  output Load;
39  output FlashLED;
40  output start;
41  output undertime;
42  output check;
43
44
45  assign D[0] = Q[0]&(~swoff | ~pb0) | Q[4]&Vsec2;
46  assign D[1] = Q[0]&pb0&swoff | ~sec2&Q[1]&swoff&~Match | pb0&swoff&Q[6] | pb0&swoff&Q[4
    ] | pb0&swoff&Q[3]| pb0&swoff&Q[5]; // | pb0&swoff&Q[5]
47  assign D[2] = ~pb1&~sec8&Q[2] | sec2&swoff&Q[1]&~Match;
48  assign D[3] = (Q[1]&~swoff&~sec2) | (Q[3]&~swoff | Q[3]&swoff&~pb0) ;// EDIT LOGIC
49  assign D[4] = Q[2]&pb1&Match&~sec8 | Q[4]&~pb0 | Q[4]&~swoff | Q[4]&~Vsec2;
50  assign D[5] = Q[2]&~Match&pb1 | Q[5]&~swoff | Q[5]&~Match&~pb0;
51  assign D[6] = sec8&Q[2] | Q[6]&sec8;
52
53  assign resetTimer = pb0&swoff&Q[6] | pb0&swoff&Q[5] | pb0&swoff&Q[4] | pb0&swoff&Q[3] |
     Q[2]&~Match&pb1 | Q[0]&pb0&swoff | Q[1]&~swoff&~sec2;
54  assign LEDcontrols [0] = Q[0] | Q[2] | Q[4];
55  assign LEDcontrols [1] = Q[5] | Q[6] | Q[0] | Q[2];
```

```
56   assign Dec = Q[2]&~Match&pb1 | Q[1]&~swoff&~sec2 | sec8&Q[2];
57   assign Inc = Q[2]&pb1&Match&~sec8;
58   assign Flash = Q[3]&~sec2; //| Q[5]&~sec2;
59   assign FlashLED =  Q[5]&~Match&~sec2 | Q[6]&~sec12;
60   assign Load = (pb0&swoff)&(Q[6] | Q[5] | Q[4] | Q[3] | Q[0] | Q[4]) ;// add q[0] to
     whiteboard
61   assign start = Q[2];
62   assign undertime = Q[3];
63   assign check = Q[4];
64   endmodule
```