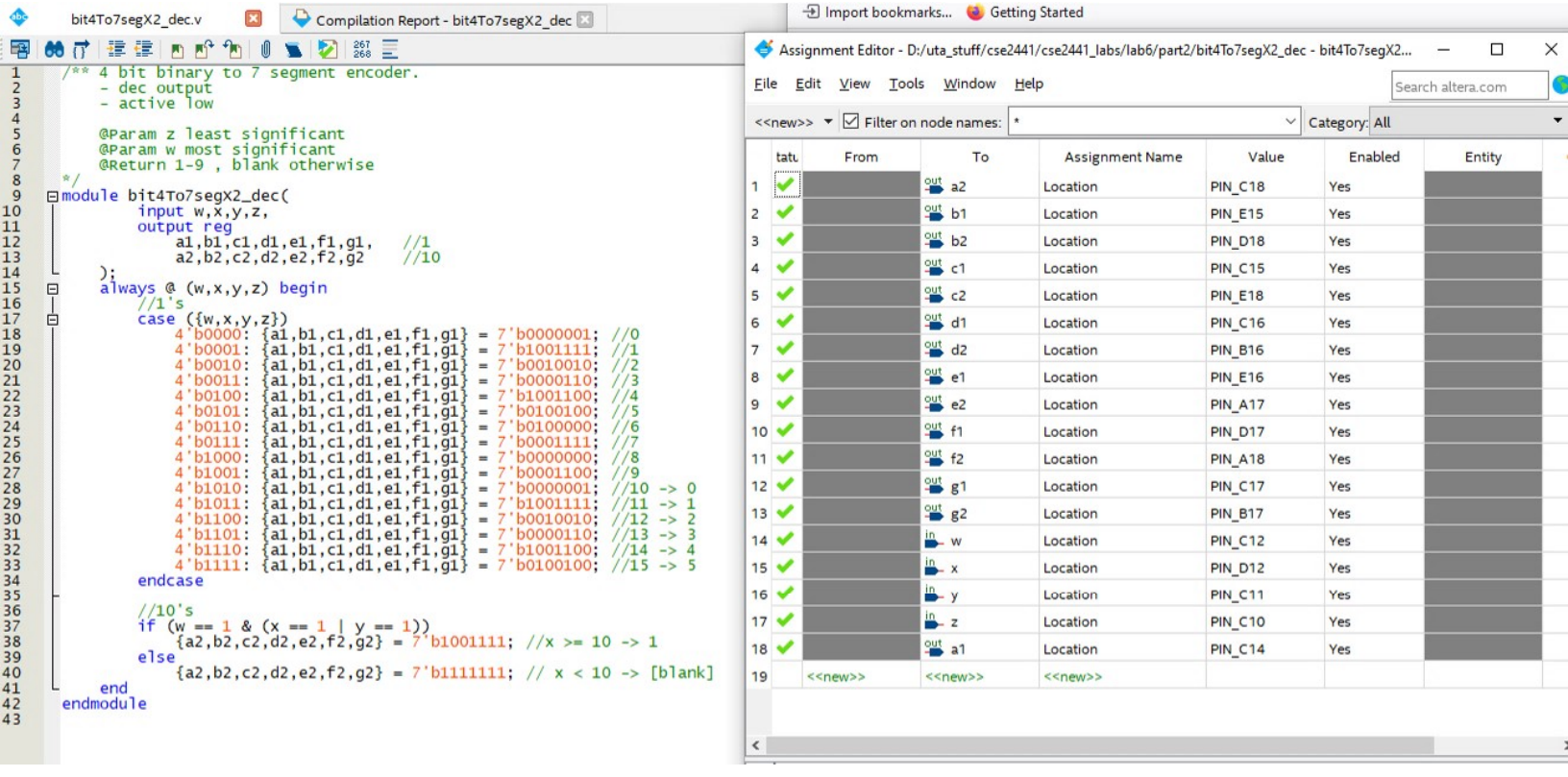


```
1  /** 4 bit binary to 7 segment encoder.
2      - dec output
3      - active low
4
5      @Param z least significant
6      @Param w most significant
7      @Return 1-9 , blank otherwise
8  */
9  module bit4To7segX2_dec(
10         input w,x,y,z,
11         output reg
12             a1,b1,c1,d1,e1,f1,g1,   //1
13             a2,b2,c2,d2,e2,f2,g2    //10
14     );
15     always @ (w,x,y,z) begin
16         //1's
17         case ({w,x,y,z})
18             4'b0000: {a1,b1,c1,d1,e1,f1,g1} = 7'b0000001; //0
19             4'b0001: {a1,b1,c1,d1,e1,f1,g1} = 7'b1001111; //1
20             4'b0010: {a1,b1,c1,d1,e1,f1,g1} = 7'b0010010; //2
21             4'b0011: {a1,b1,c1,d1,e1,f1,g1} = 7'b0000110; //3
22             4'b0100: {a1,b1,c1,d1,e1,f1,g1} = 7'b1001100; //4
23             4'b0101: {a1,b1,c1,d1,e1,f1,g1} = 7'b0100100; //5
24             4'b0110: {a1,b1,c1,d1,e1,f1,g1} = 7'b0100000; //6
25             4'b0111: {a1,b1,c1,d1,e1,f1,g1} = 7'b0001111; //7
26             4'b1000: {a1,b1,c1,d1,e1,f1,g1} = 7'b0000000; //8
27             4'b1001: {a1,b1,c1,d1,e1,f1,g1} = 7'b0001100; //9
28             4'b1010: {a1,b1,c1,d1,e1,f1,g1} = 7'b0000001; //10 -> 0
29             4'b1011: {a1,b1,c1,d1,e1,f1,g1} = 7'b1001111; //11 -> 1
30             4'b1100: {a1,b1,c1,d1,e1,f1,g1} = 7'b0010010; //12 -> 2
31             4'b1101: {a1,b1,c1,d1,e1,f1,g1} = 7'b0000110; //13 -> 3
32             4'b1110: {a1,b1,c1,d1,e1,f1,g1} = 7'b1001100; //14 -> 4
33             4'b1111: {a1,b1,c1,d1,e1,f1,g1} = 7'b0100100; //15 -> 5
34         endcase
35
36         //10's
37         if (w == 1 & (x == 1 | y == 1))
38             {a2,b2,c2,d2,e2,f2,g2} = 7'b1001111; //x >= 10 -> 1
39         else
40             {a2,b2,c2,d2,e2,f2,g2} = 7'b1111111; // x < 10 -> [blank]
41     end
42 endmodule
43
```