```
module HW2Q2(restart,pause, goto_third, out1, out2, odd, even, terminal) ;


input logic restart, pause, goto_third;
output logic [2:0] out1, out2;
output logic odd, even, terminal;


enum {first, second, third, fourth, fifth} state;


always_comb begin

state<= first;
terminal<= 0;
out1 <= 3'd3;
out2 <= 3'd2;
even <= 0;
odd <= 1;



case(state)

first: begin

    if ( restart==1 | pause ==1)begin
    state<= first;
    terminal<= 0;
    out1 <= 3'd3;
    out2 <= 3'd2;
    even <= 0;
    odd <= 1;

    end

    else begin
    state<= second;
    terminal<=0;
    out1 <= 3'd5;
    out2 <= 3'd4;
    even <= 1;
    odd <= 0;

    end

end

second: begin


    if ( restart == 1) begin

    state<= first;
    terminal<= 0;
    out1 <= 3'd3;
    out2 <= 3'd2;
    even <= 0;
    odd <= 1;

    end


    else if ( restart == 0 && pause == 1) begin

    state<= second;
    terminal<=0;
    out1 <= 3'd5;
    out2 <= 3'd4;
```

```
70        even <= 1;
71        odd <= 0;
72
73        end
74
75
76
77        else if ( restart == 0 && pause == 0) begin
78
79        state<= third;
80        terminal <=0;
81        out1 <= 3'd2;
82        out2 <= 3'd7;
83        even<=0;
84        odd<= 1;
85        end
86
87
88    end
89
90    third: begin
91
92        if ( restart == 1) begin
93
94        state<= first;
95        terminal<= 0;
96        out1 <= 3'd3;
97        out2 <= 3'd2;
98        even <= 0;
99        odd <= 1;
100
101       end
102
103
104
105       else if ( restart == 0 && pause == 1) begin
106
107       state<= third;
108       terminal<=0;
109       out1 <= 3'd2;
110       out2 <= 3'd7;
111       even <= 0;
112       odd <= 1;
113
114       end
115
116
117
118       else if ( restart == 0 && pause == 0) begin
119
120       state<= fourth;
121       terminal <=0;
122       out1 <= 3'd6;
123       out2 <= 3'd3;
124       even<=1;
125       odd<= 0;
126       end
127
128
129   end
130
131   fourth: begin
132
133       if ( restart == 1) begin
134
135       state<= first;
136       terminal<= 0;
137       out1 <= 3'd3;
138       out2 <= 3'd2;
```

```
139         even <= 0;
140         odd <= 1;
141 
142         end
143 
144         else if ( restart == 0 && pause == 1) begin
145 
146         state<= fourth;
147         terminal <=0;
148         out1 <= 3'd6;
149         out2 <= 3'd3;
150         even<=1;
151         odd<= 0;
152         end
153 
154         else if ( restart == 0 && pause == 0) begin
155 
156         state<= fifth;
157         terminal <=1;
158         out1 <= 3'd5;
159         out2 <= 3'd2;
160         even<=0;
161         odd<= 1;
162         end
163 
164 
165 
166     end
167 
168     fifth: begin
169 
170         if ( goto_third == 1) begin
171 
172         state<= third;
173         terminal<=0;
174         out1 <= 3'd2;
175         out2 <= 3'd7;
176         even <= 0;
177         odd <= 1;
178 
179         end
180 
181 
182         else if ( restart == 1 && goto_third == 0) begin
183 
184         state<= first;
185         terminal<= 0;
186         out1 <= 3'd3;
187         out2 <= 3'd2;
188         even <= 0;
189         odd <= 1;
190 
191         end
192 
193         else if ( restart == 0 && pause == 1 && goto_third == 0) begin
194 
195         state<= fifth;
196         terminal <=1;
197         out1 <= 3'd5;
198         out2 <= 3'd2;
199         even<=0;
200         odd<= 1;
201         end
202 
203 
204 
205     end
206 
207 
```

```
208   default: state<= first;
209
210   endcase
211
212   //end
213
214
215
216   end
217
218
219   endmodule
```