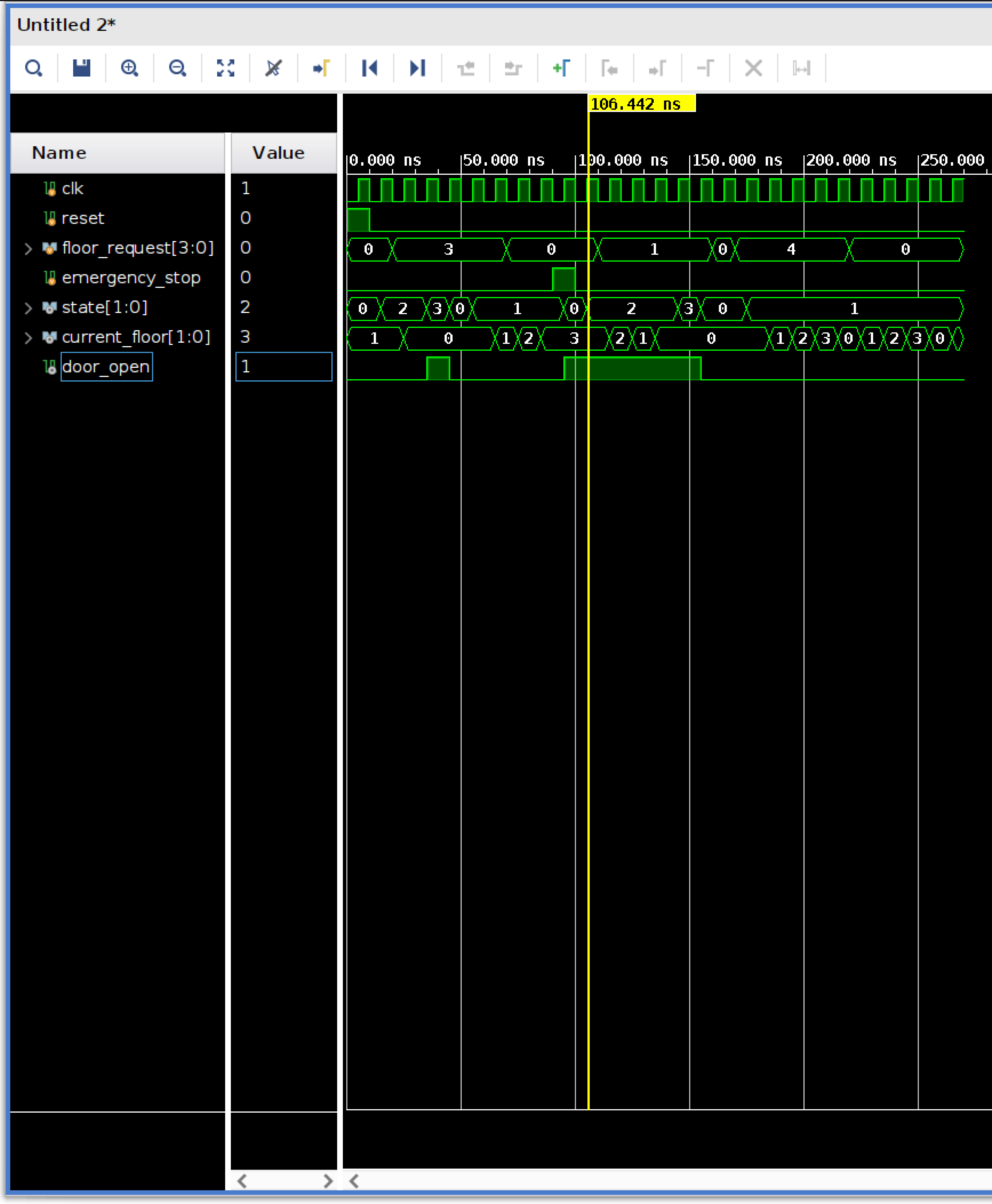
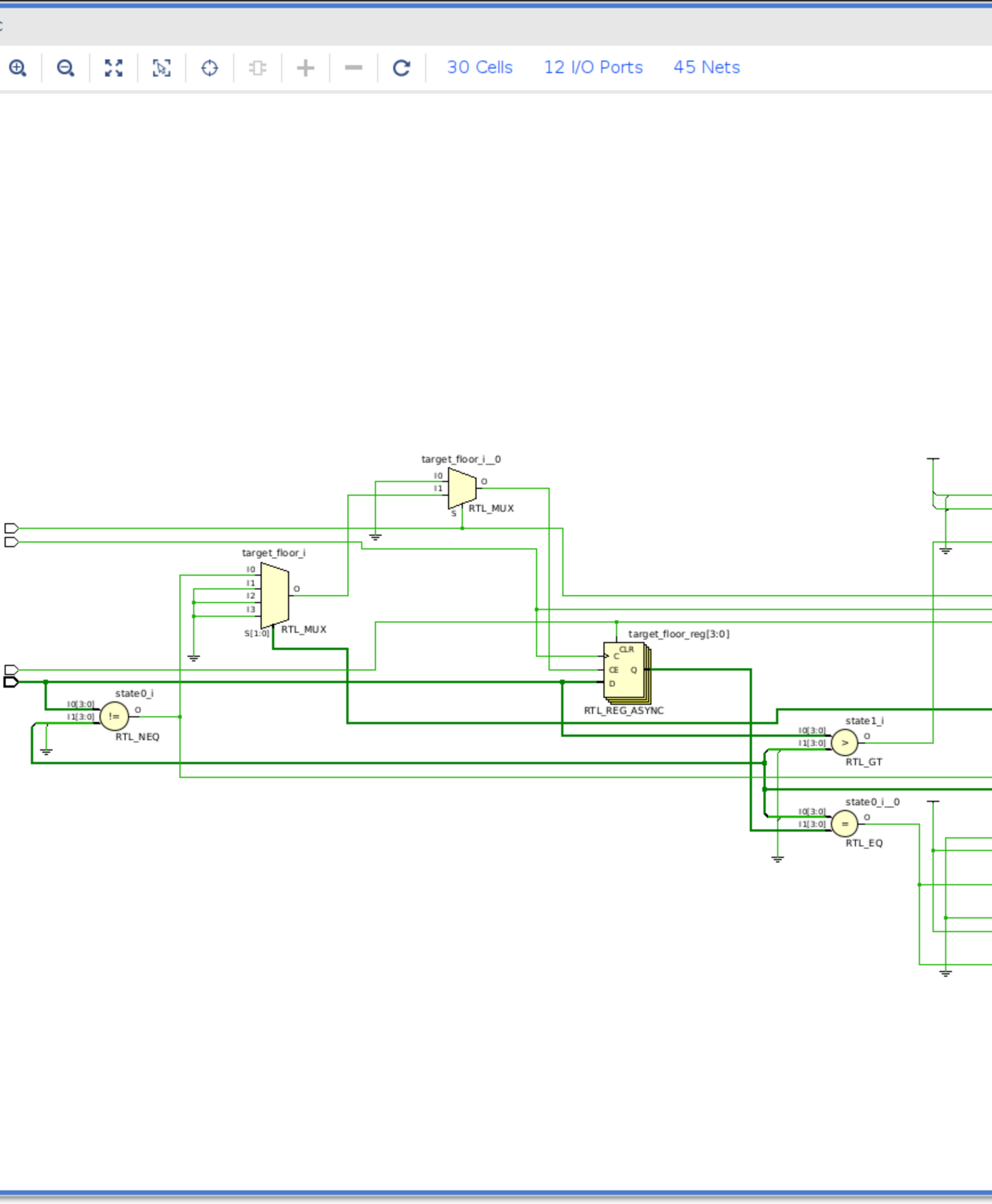
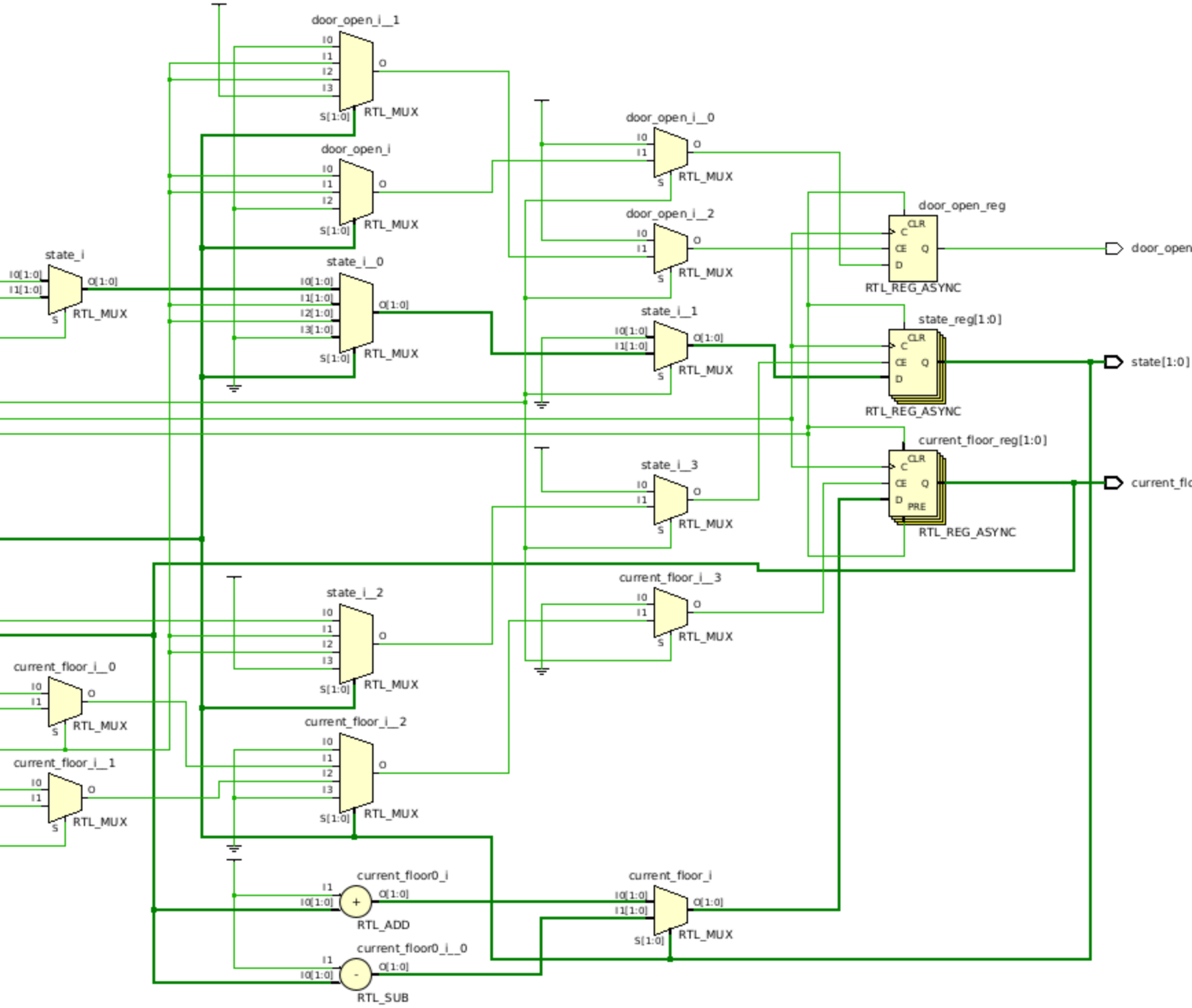

Untitled 2*
106.442 ns
Name
Value
0.000 ns
50.000 ns
100.000 ns
150.000 ns
200.000 ns
250.000
clk
1
reset
0
floor_request[3:0]
0
emergency_stop
0
state[1:0]
2
current_floor[1:0]
3
door_open
1


30 Cells
12 I/O Ports
45 Nets
target_floor_i__0
I0
I1
O
S
RTL_MUX
target_floor_i
I0
I1
I2
I3
O
S[1:0]
RTL_MUX
target_floor_reg[3:0]
CLR
C
CE
Q
D
RTL_REG_ASYNC
state0_i
I0[3:0]
I1[3:0]
!=
O
RTL_NEQ
state1_i
I0[3:0]
I1[3:0]
>
O
RTL_GT
state0_i__0
I0[3:0]
I1[3:0]
=
O
RTL_EQ


door_open_i__1
I0
I1
I2
I3
O
S[1:0]
RTL_MUX
door_open_i
door_open_i__0
door_open_i__2
state_i
I0[1:0]
I1[1:0]
O[1:0]
state_i__0
I2[1:0]
I3[1:0]
state_i__1
state_i__3
state_i__2
current_floor_i__0
current_floor_i__1
current_floor_i__2
current_floor_i__3
door_open_reg
C
CLR
CE
Q
D
RTL_REG_ASYNC
state_reg[1:0]
state[1:0]
current_floor_reg[1:0]
PRE
current_floor0_i
current_floor0_i__0
current_floor_i
RTL_ADD
RTL_SUB

elevator_control.v

/home/itzzinfinity/Cozy Drive/100daysofRTL/day_097/project_1/project_1.srcs/sources_1/new/elevator_control.v

```
1  `timescale 1ns / 1ps
2  //////////////////////////////////////////////////////////////////////////////////
3  // Engineer: Anjan Prasad
4  // Create Date: 12/27/2024 09:40:53 AM
5  // Module Name: elevator_control
6  //////////////////////////////////////////////////////////////////////////////////
7
8  module elevator_control(
9      input clk,
10     input reset,
11     input [3:0] floor_request, // Requested floor (1 to 4)
12     input emergency_stop,
13     output reg [1:0] state,
14     output reg [1:0] current_floor,
15     output reg door_open
16 );
17
18     localparam IDLE       = 2'b00,
19                MOVING_UP  = 2'b01,
20                MOVING_DOWN = 2'b10,
21                DOOR_OPEN  = 2'b11;
22
23     reg [3:0] target_floor; // Holds the requested floor
24
25     always @(posedge clk or posedge reset) begin
26         if (reset) begin
27             state <= IDLE;
28             current_floor <= 2'b01; // Assume starting at floor 1
29             door_open <= 0;
30             target_floor <= 4'b0;
31         end else if (emergency_stop) begin
32             state <= IDLE;
33             door_open <= 1;
34         end else begin
35             case (state)
36                 IDLE: begin
37                     if (floor_request != current_floor) begin
38                         target_floor <= floor_request;
39                         if (floor_request > current_floor)
40                             state <= MOVING_UP;
41                         else
42                             state <= MOVING_DOWN;
43                     end
44                 end
45                 MOVING_UP: begin
46                     if (current_floor == target_floor) begin
47                         state <= DOOR_OPEN;
48                         door_open <= 1;
49                     end else begin
50                         current_floor <= current_floor + 1;
```

elevator_control.v

/home/itzzinfinity/Cozy Drive/100daysofRTL/day_097/project_1/project_1.srcs/sources_1/new/elevator_control.v

```
50                          current_floor <= current_floor + 1;
51                      end
52                  end
53                  MOVING_DOWN: begin
54                      if (current_floor == target_floor) begin
55                          state <= DOOR_OPEN;
56                          door_open <= 1;
57                      end else begin
58                          current_floor <= current_floor - 1;
59                      end
60                  end
61                  DOOR_OPEN: begin
62                      door_open <= 0;
63                      state <= IDLE;
64                  end
65              endcase
66          end
67      end
68  endmodule
69
70
71
72
73
74
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76
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79
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84
85
86
87
88
89
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```

elevator_control_tb.v

/home/itzzinfinity/Cozy Drive/100daysofRTL/day_097/project_1/project_1.srcs/sim_1/new/elevator_control_tb.v

```
1  `timescale 1ns / 1ps
2  //////////////////////////////////////////////////////////////////////////////////
3  // Engineer: Anjan Prasad
4  // Create Date: 12/27/2024 09:42:00 AM
5  // Module Name: elevator_control_tb
6  //////////////////////////////////////////////////////////////////////////////////
7
8  module elevator_control_tb;
9
10     reg clk;
11     reg reset;
12     reg [3:0] floor_request;
13     reg emergency_stop;
14     wire [1:0] state;
15     wire [1:0] current_floor;
16     wire door_open;
17
18     elevator_control DUT (
19         .clk(clk),
20         .reset(reset),
21         .floor_request(floor_request),
22         .emergency_stop(emergency_stop),
23         .state(state),
24         .current_floor(current_floor),
25         .door_open(door_open)
26     );
27
28     always #5 clk = ~clk;
29
30     initial begin
31
32         clk = 0;
33         reset = 1;
34         floor_request = 0;
35         emergency_stop = 0;
36
37         #10 reset = 0;
38
39
40         #10 floor_request = 3;
41         #50 floor_request = 0;
42
43         // Emergency stop
44         #20 emergency_stop = 1;
45         #10 emergency_stop = 0;
46
47         // Request floor 1
48         #10 floor_request = 1;
49         #50 floor_request = 0;
50
```

elevator_control_tb.v

/home/itzzinfinity/Cozy Drive/100daysofRTL/day_097/project_1/project_1.srcs/sim_1/new/elevator_control_tb.v

```
50
51          // Request floor 4
52          #10 floor_request = 4;
53          #50 floor_request = 0;
54
55          #50 $finish;
56      end
57
58      initial begin
59  $monitor("Time: %0t | State: %b | Current Floor: %d | Door Open: %b | Emergency Stop:
60                    $time, state, current_floor, door_open, emergency_stop);
61      end
62  endmodule
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
```