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Course Name: EE2170 Digital Systems Laboratory
Project Name: Elevator Control

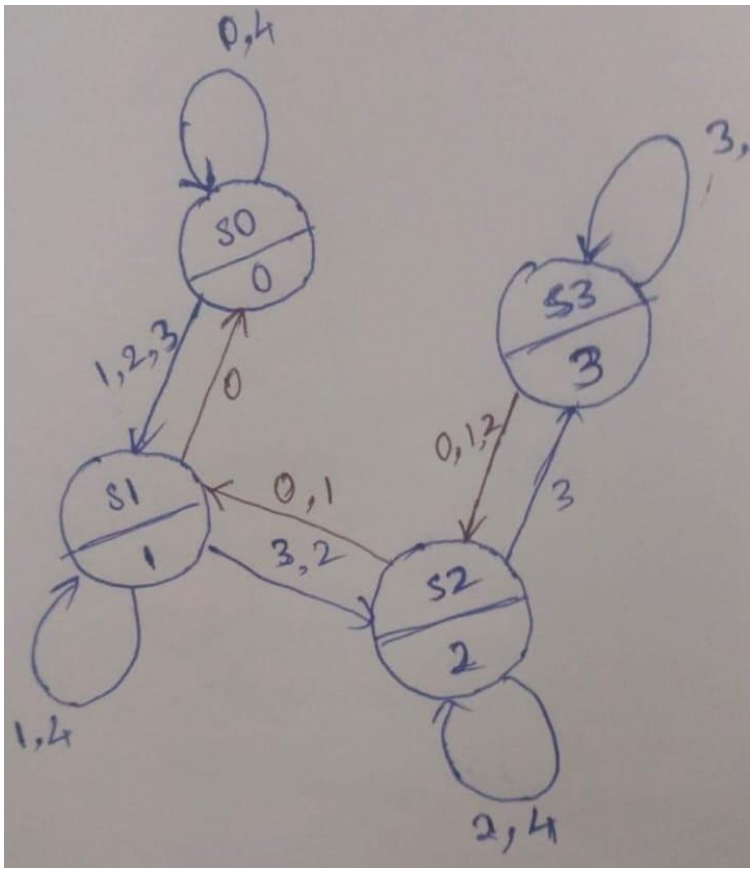
Mini Project: Elevator Control

Objective: To simulate the Elevator controller using Zybo Implementation.

Procedure:

1. The default floor number is 0 (Ground floor).
2. We input the floor number (using the switches).
3. Floor input is only till 3.
4. The counter (shown using a seven-segment display) counts till that floor number.
5. We also have an overweight option (as a push button) which stops the count, and an LED indicates ‘Overweight”. When we stop pushing the button, then the elevator climbs back to the top.
6. We also have a reset button to bring back the elevator to the ground floor.

State Diagram:



We can go up or down a floor as shown in the state diagram.
We go back to 0 (Ground Floor) when we press the reset button.

Circuit Diagram:

elev_control.v × test_elev.v × cons_elev.xdc ×

/home2/student/elevator control/elevator control.srcs/constrs_1/new/cons_elev.xdc

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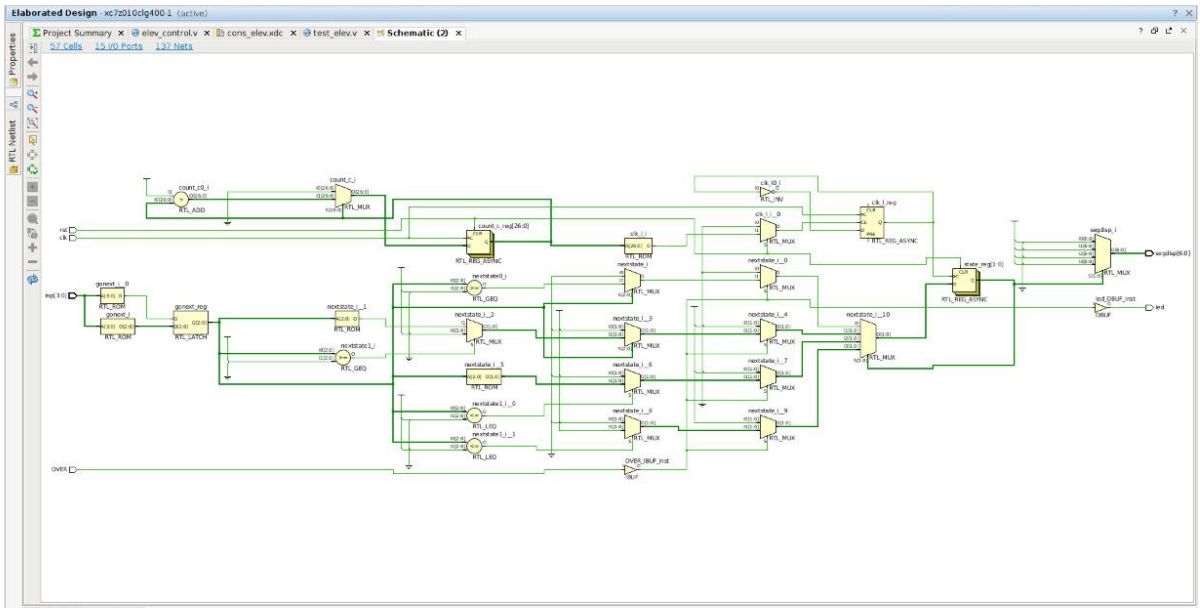
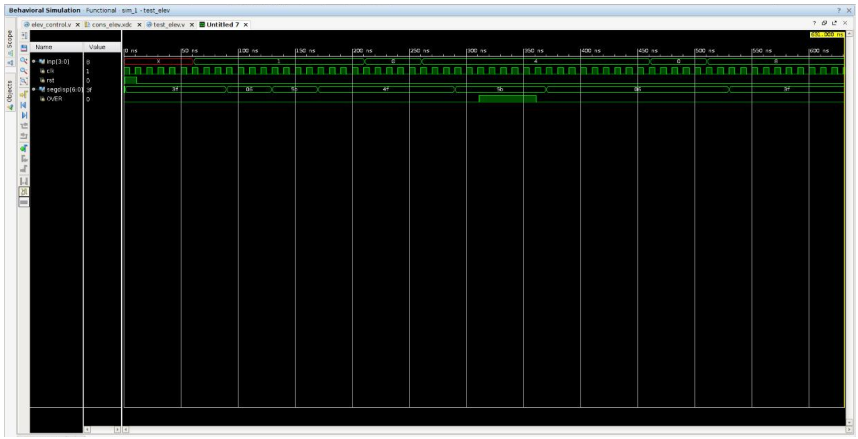
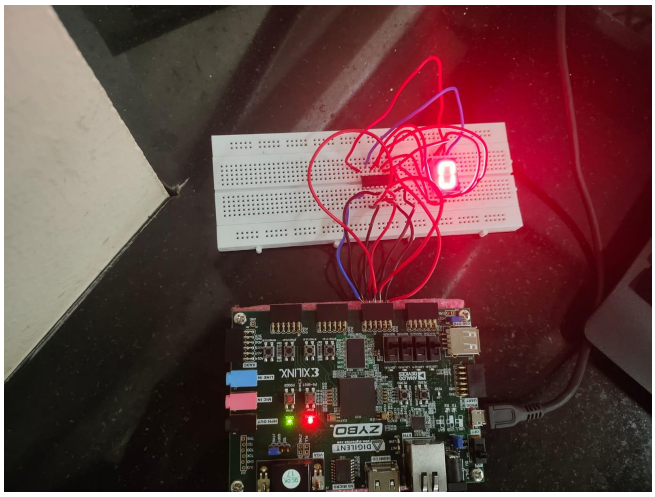
1 set_property -dict {PACKAGE_PIN T16 IOSTANDARD LVCMOS33 } [get_ports {inp[0]}];
2 set_property -dict {PACKAGE_PIN W13 IOSTANDARD LVCMOS33 } [get_ports {inp[1]}];
3 set_property -dict {PACKAGE_PIN P15 IOSTANDARD LVCMOS33 } [get_ports {inp[2]}];
4 set_property -dict {PACKAGE_PIN G15 IOSTANDARD LVCMOS33 } [get_ports {inp[3]}];
5
6 set_property -dict {PACKAGE_PIN P16 IOSTANDARD LVCMOS33 } [get_ports {OVER}];
7 set_property -dict {PACKAGE_PIN D18 IOSTANDARD LVCMOS33 } [get_ports {led}];
8
9 set_property -dict {PACKAGE_PIN T14 IOSTANDARD LVCMOS33 } [get_ports {segdisp[0]}];
10 set_property -dict {PACKAGE_PIN T15 IOSTANDARD LVCMOS33 } [get_ports {segdisp[1]}];
11 set_property -dict {PACKAGE_PIN P14 IOSTANDARD LVCMOS33 } [get_ports {segdisp[2]}];
12 set_property -dict {PACKAGE_PIN R14 IOSTANDARD LVCMOS33 } [get_ports {segdisp[3]}];
13 set_property -dict {PACKAGE_PIN U14 IOSTANDARD LVCMOS33 } [get_ports {segdisp[4]}];
14 set_property -dict {PACKAGE_PIN U15 IOSTANDARD LVCMOS33 } [get_ports {segdisp[5]}];
15 set_property -dict {PACKAGE_PIN V17 IOSTANDARD LVCMOS33 } [get_ports {segdisp[6]}];
16
17 set_property -dict {PACKAGE_PIN Y16 IOSTANDARD LVCMOS33 } [get_ports {rst}];
18 set_property -dict {PACKAGE_PIN L16 IOSTANDARD LVCMOS33 } [get_ports {clk}];
```



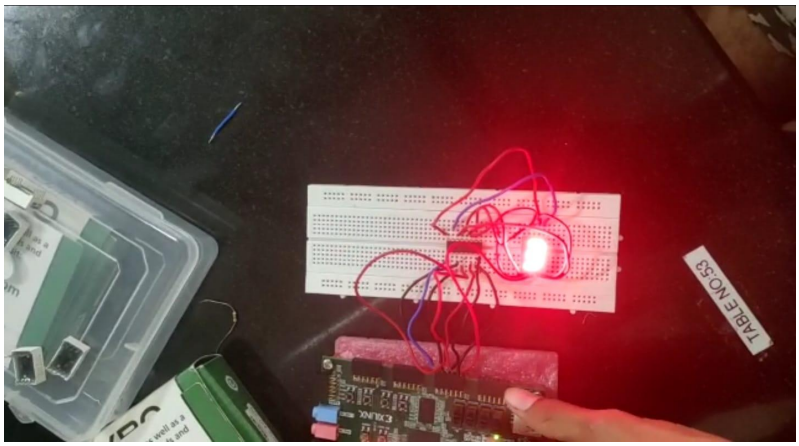
Simulation:



Main Result:



Initial Condition: Elevator on Ground floor



Final Condition: Elevator on 3rd Floor