The George Washington University
Depart of Electrical and Computer Engineering

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Project 3: Elevator Controller FSM Test Cases

Below are a list of the specific test cases that you should simulate in your elevator controller FSM testbench. These testcases can also be helpful as you are designing your FMS because they are decent examples of "plain English descriptions" of the FMS functionality

Test Cases:

1. Floor 1 -> Floor 2: Passenger hits "floor 1 up" button. Elevator opens doors on floor one and "floor 1 up" button clears. The door closes and the passenger hits the "floor 2" button. The elevator travels to floor two, opens its doors, and clears the "floor 2" button
2. Floor 1 -> Floor 3: Passenger hits "floor 1 up" button. Elevator opens doors on floor one and "floor 1 up" button clears. The door closes and the passenger hits the "floor 3" button. The elevator travels to floor two and keeps its doors closed. It then proceeds to floorthree, opens its doors, and clears the "floor 3" button
3. Floor 2 -> Floor 3: Passenger hits "floor 2 up" button. Elevator opens doors on floor two and "floor 2 up" button clears. The door closes and the passenger hits the "floor 3" button. The elevator travels to floor three, opens its doors, and clears the "floor 3" button
4. Floor 2 -> Floor 1: Passenger hits "floor 2 down" button. Elevator opens doors on floor two and "floor 2 down" button clears. The door closes and the passenger hits the "floor 1" button. The elevator travels to floor one, opens its doors, and clears the "floor 1" button
5. Floor 3 -> Floor 2: Passenger hits "floor 3 down" button. Elevator opens doors on floor three and "floor 3 down" button clears. The door closes and the passenger hits the "floor 2" button. The elevator travels to floor two, opens its doors, and clears the "floor 2" button
6. Floor 3 -> Floor 1: Passenger hits "floor3 down" button. Elevator opens doors on floor three and "floor 3 down" button clears. The door closes and the passenger hits the "floor 1" button. The elevator travels to floor two and keeps its doors closed. It then proceeds to floor one, opens its doors, and clears the "floor 1" button
7. Floor 1 -> Floor 3 w/ pickup on Floor 2: Passenger hits "floor 1 up" button. Elevator opens doors on floor one and "floor 1 up" button clears. The door closes and the passenger hits the "floor 3" button. There is also a passenger on floor two that hits the "floor 2 up" button. The elevator travels to floor two and opens its doors. The passenger gets on, the "floor 2 up" button clears, and the doors close. It then proceeds to floor three, opens its doors, and clears the "floor 3" button.

8. Floor 3 -> Floor 1 w/ pickup on Floor 2: Passenger hits “floor 3 down” button. Elevator opens doors on floor three and “floor 3 down” button clears. The door closes and the passenger hits the “floor 1” button. There is also a passenger on floor two that hits the “floor 2 down” button. The elevator travels to floor two and opens its doors. The passenger gets on, the “floor 2 up” button clears, and the doors close. It then proceeds to floor one, opens its doors, and clears the “floor 1” button
9. No passengers stuck: If a passenger inside the elevator hits any of the “floor 1”, floor 2”, or “floor 3” buttons, the elevator should eventually get to that floor and let the passenger out. For example with test case #2, if the passenger that gets in on floor two hits the “floor 1” button (even though the elevator is going up), after dropping off the first passenger on floor three the elevator should travel from floor three to floor one as described in test case #6.