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COMP3004
Assignment 3

Elevator Simulation System: Use Case

Simulation:

- Primary Actors:
  - System Administrator
  - Passenger

- Stakeholders and interests:
  - System Administrator: Wants to manage and observe the system's behaviour
  - Passenger: Wants to use the elevator to get to their destination
  - Building Owner: Wants the elevator to function properly for the end user's satisfaction

- Preconditions:
  - The elevator is full operational
  - The simulation is running, and ready to be used

- Success Guarantee:
  - The admin can set up the simulation as desired and the simulation runs all requests and displays logs for everything that's happening. Simulation can be paused, continued, or stopped by the admin at any point

- Main Success Scenario:
  1. The System Admin sets up simulation
     a. Set the number of floors, elevators and passengers
     b. Define the passenger behaviour
     c. Define safety events with time step

  2. Simulation begins
     a. As the simulation works, processes will be logged and displayed, and the elevators will be monitored
     b. Simulation can be stopped, paused, or continued, or left running until idle by the admin

  3. Passengers call for an elevator with floor buttons
     a. They press the direction button
     b. The button illuminates until the elevator arrives to their floor

4. The elevator arrives, and the door opens

5. Passengers embark/disembark the elevator

6. After 10 seconds, the elevator bell rings and the doors close

7. Passengers press the button on the panel to select their desired floor

8. The elevator moves
    a. The display shows the current floor

Extensions:

5a. The control system receives an “overload” signal and the elevator does not move
    5a1. There is a visual and audio warning
    5a2. The passenger exits the car and waits for the next available car

6a. The open or close door button is pressed
    6a1. The doors will stay open longer than 10 seconds or close prematurely
6b. There is an obstacle preventing the doors from closing
    6b1. The elevator opens the doors and issues a visual and audio warning if it happens repeatedly

7a. The “Help” button is pressed.
    7a1. Connect the passenger to building safety services or if there’s no response from either end within 5 seconds, a call to 911 will be placed. Elevator moves to the safe floor, where emergency services can have access to the passenger.

8a. Fire occurs
    8a1. There is a visual + audio warning
    8a2. Elevator moves to a safe floor and passengers asked to disembark

8b. Power Outage occurs
    8b1. There is a visual + audio warning
    8b2. Passengers are informed of the outage, and the elevator is moved to a save floor, and asked to disembark

Use case diagram below.

Use Case Diagram: