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COMP3004
Assignment 3

Traceability Matrix

ID	Requirement	Related Use Case	Design Element	Implementation Element	Test
1	The administrator must have the ability to configure the number of floors, elevators, and passengers in the system.	Elevator System Simulation Step 1.1	GUI	Main Window	Validate by using the settings panel to adjust the simulation parameters.
2	The administrator should be able to define how passengers behave within the simulation.	Elevator System Simulation Step 1.2	GUI	Main Window - Passenger Settings	Verify by adjusting passenger behaviors in the GUI settings.
3	The administrator must be able to specify safety triggers and their corresponding timestamps.	Elevator System Simulation Step 1.3	GUI	Main Window	Initiate the simulation and observe the right-side panel for safety event settings.
4	During the simulation, a log console	Elevator System Simulation	GUI	Main Window	Start the simulation and ensure

	should capture and present passenger actions and system feedback.	Step 2.1			that logs update as expected.
5	The administrator must be able to pause, resume, or stop the simulation as needed. The simulation should also run continuously until all elevators are idle.	Elevator System Simulation Step 2.2	GUI	Main Window	Begin the simulation and interact with the control buttons to confirm their functionality.
6	The active simulation must display the current time step for tracking purposes.	Elevator System Simulation Step 2.1	GUI	Main Window	Start the simulation and confirm that the time step updates correctly below the logs.
7	The simulation must visually indicate each elevator’s location and movement state (moving or idle).	Elevator System Simulation Step 2.1	GUI	Main Window - Elevator	Run the simulation and confirm that elevators' positions and states update dynamically.
8	Safety conditions currently affecting the system should be displayed	Elevator System Simulation Step 2.1	GUI	Main Window	Activate various safety conditions and confirm that alerts appear in the

	while the simulation is running.				logs.
9	Every floor should have a pair of call buttons labeled "Up" and "Down."	Elevator System Simulation Step 3.1	GUI	Main Window	Request an elevator from different floors and verify log entries for responses.
10	Elevators must ring a bell and keep doors open for a fixed duration (10 seconds) when arriving at a floor.	Elevator System Simulation Step 4,5,6	Elevator, Passenger, GUI	Main Window	Request an elevator and confirm it pauses with doors open before proceeding.
11	Passengers must be able to select destination floors using the elevator control panel.	Elevator System Simulation Step 7	Passenger	Passenger	Set a passenger's destination and check if the elevator correctly follows the request.
12	The elevator must have a display showing its current floor.	Elevator System Simulation Step 8.1	GUI	Main Window	Run the simulation and verify that the log displays each elevator's current floor.
13	Elevator control panels must include "Open Door" and "Close Door" buttons for passengers to override automatic	Elevator System Simulation Extensions 6a	GUI	Main Window	Adjust passenger settings to trigger door overrides and check behavior.

	door timing.				
14	Each elevator must feature a visual and audio notification system.	Elevator System Simulation Step 8, Extensions ex. 5a	GUI	Main Window	Check logs to confirm elevator display updates and audio event logs.
15	A "Help" alarm button must be available to connect passengers to safety personnel and return to the first floor.	Elevator System Simulation Extension 7a	Elevator, GUI	Main Window	Trigger the help signal from the right-side panel and verify log entries, and the elevator returns to the first floor.
16	Elevators should not close their doors if an obstruction is detected. If repeated, a warning should be issued.	Elevator System Simulation Extension 6b	GUI, Passenger	Main Window	Simulate a door blockage scenario and confirm warning messages appear in the logs.
17	If a fire emergency is detected, elevators must move to the nearest safe floor and alert passengers.	Elevator System Simulation Extension 8a	GUI, Elevator, Passenger	Main Window	Trigger a fire emergency and check if elevators correctly move to a safe floor.
18	During a power outage, elevators should relocate to the nearest safe floor and	Elevator System Simulation Extension 8b	GUI, Elevator, Passenger	Main Window	Activate the power outage setting and confirm safe floor movements in logs.

	issue alerts.				
19	Elevators should restrict movement if overloaded and notify passengers to reduce weight.	Elevator System Simulation Extension 5a	Elevator	Main Window	Overload an elevator by adding excessive passengers and observe the system’s response.