Elevator Control System

Use Case: Using an elevator to travel from floor A to floor B.

Primary Actor: Passenger

Actor(s): Passenger

Precondition: There is at least one working/operating Elevator in the group of M elevators in the building. A fire hasn't occurred. A power outage hasn't occurred. A crisis hasn't occurred.

Goal/Postcondition: The Passenger arrives safely at floor B using an elevator.

Main success scenario:

1. On floor A, passenger walks up and presses an elevator button.
    a. If floor B is below floor A, then press the down button.
    b. If floor B is above floor A, then press the up button.
2. Once the elevator arrives.
3. Wait for the doors to open.
4. Board the elevator.
5. Wait for elevator door to fully close in 10 seconds or press the close door button,
6. Press the floor B button on the panel of buttons inside the elevator.
7. Wait till the elevator travels to designated floor B.
8. Once the elevator has arrived at floor B (verified by looking at the display that marks the current floor inside the elevator or listening to the audio message played at the floor).
9. Wait for the doors to open.
10. Exit the elevator onto floor B.

Extensions:

1a. If elevator button doesn't illuminate.
    1a1. Call a different elevator and restart the use case.

4a. If there are passengers.
    4a1. If there is no more room in the elevator as none need to leave, then call a different elevator and restart the use case.
    4a2. If there is room in the elevator as some passengers left, then board the elevator.

4b. The Overload alarm signal activates.
    4b1. Exit the elevator as the load is too much for the elevator to handle and call a different elevator to restart the use case.

5a. A light sensor picks up any obstacle that blocks the door closing and cause it to open again.

5a1. The passenger may wait for the door to close again in 10 seconds once the obstacle is cleared.

5a2. The passenger may press on the close door button once the obstacle cleared.

5a3. If the sensor picks up the obstacle repeatedly to which a warning is played. Clear the obstacle if there is any and wait for the doors to close or exit the elevator to call a different elevator and restart the use case.

6a. If floor B button is already illuminated

6a1. Passenger may choose to not press floor B button or press floor B button. (Assuming that this elevator buttons illuminate as well.)

7a. A fire has occurred during elevator travel and the control system receives a fire alarm signal; thus, the fire safety feature is enabled.

7a1. Once the elevator arrives to a safe floor, follow the informed message of the elevator to exit the elevator, and take the stairs if needed to exit out of the building.

7b. A power out has occurred during elevator travel and the control system receives a power out alarm signal; thus, the power out safety feature is enabled.

7b1. Once the elevator arrives to a safe floor, follow the informed message of the elevator to exit the elevator.

7c. An unexpected crisis occurs that's not detected by the control system.

7c1. A passenger is in crisis, press the help button which sends an alarm signal to the control system. Await response from building safety within 5 seconds. If there is no response from a passenger, await a response from 911.

7c2. The elevator gets stuck, press the help button which sends an alarm signal to the control system. Await response from building safety within 5 seconds. If there is no response from a passenger, await a response from 911.

7d. The elevator arrives at a floor and the doors opens at a floor that isn't floor B.

7d1. Stay inside the elevator and press the close door button or let the door close in 10 seconds.

Use case Diagram: