

# Use Case

## Use Case 1: Using Elevator

### **Primary Actor:**

The Passenger

### **Stakeholders and Interests:**

Passenger - Wants to get to their desired floor

Elevator Control System ("The Elevator") - Wants to control the elevator properly to move Passenger from one floor to another safely

Audio System - Wants to provide audio cues when door opens or closes

Display System - Wants to provide visual text of what floors the elevator is currently on

### **Precondition:**

The Passenger has requested an elevator going in a certain direction.

### **Success Guarantees:**

Passenger arrives at desired floor

### **Main Success Scenario:**

1. The Passenger chooses "up" or "down" button for desired destination floor
2. The Elevator illuminates the button that the Passenger pressed
3. The elevator arrives
4. The Audio System rings a bell
5. The Elevator opens its doors for a fixed time (10 seconds)

6. The Elevator dims out the button that the Passenger previously pressed
7. The Passenger enters the elevator
8. The Audio System rings a bell
9. The Elevator doors close
10. The Passenger chooses the floor button of desired destination floor
11. The Elevator's floor button illuminates
12. The Elevator moves to next floor
13. The Elevator Display updates to destination floor
14. The Elevator stops at destination floor
15. The Elevator's floor button of destination floor dims
16. The Audio System rings a bell
17. The Elevator doors open for a fixed time (10 seconds)
18. The Passenger leaves elevator

**Exceptions:**

- \*a. The Passenger presses the help button (can occur from steps 7-17)
  - \*a1. Send "Help" signal to The Elevator (Use Case 2)
  - \*a2. Cancel Use Case
- \*b. Building fire alarm activates (can occur from steps 7-17)
  - \*b1. Building sends "Fire" signal to the Elevator (Use Case 4)
  - \*b2. Cancel Use Case
- \*c. The Elevator detects a fire (can occur from steps 7-17)
  - \*c1. Send "Fire" signal to the Elevator (Use Case 4)
  - \*c3. Cancel Use Case
- \*d. Building power outage (can occur from steps 7-17)
  - \*d1. Send "Power Out" signal to the Elevator (Use Case 6)

## \*d2. Cancel Use Case

### **Extensions:**

7a. The Passenger does not enter the elevator

7a1. The Passenger is a hooligan or socially anxious. Cancel use case

7b. The Passenger presses button to close doors

7b1. The Elevator's close door button illuminates

7b2. The Elevator doors begin to close before fixed time

7c. The Passenger presses button to open doors

7c1. The Elevator's open door button illuminates

7c2. The Elevator doors stay open

7c3. The Passenger lets go of open door button

7c4. The Elevator's open door button light dims out

7d. The Passenger choose desired destination floor

7d1. The Passenger presses floor button they wish to go to

7d2. The Elevator's floor button they chose illuminates

7g. Overload protocol is triggered

7g1. Send "Overload" signal to the Elevator (Use Case 5)

9a. The Passenger interrupts the light sensor

9a1. The Elevator's safety feature for interrupted door sensor will commence (Use Case 3)

9a2. The Elevator closes the doors after the fixed time

9a2a. The Passenger interrupts the light sensor again

a2a1. The Elevator's safety feature for interrupted door sensor will commence (Use Case 3)

a2a2. Return to step 9a2.

10a. The Passenger does not choose a button and floor button is not illuminating

- 10a1. The Passenger claims elevator has their home. Cancel use case
- 10b. The Passenger does not choose button and floor button is illuminating
  - 10b1. Continue to step 12 in main success scenario
- 12a. The Passenger has not reached desired destination floor
  - 12a1. The Elevator Display updates to current floor
  - 12a2. Return to step 12 in main success scenario
- 12b. The Elevator stops at not desired destination floor (another Customer has requested this floor)
  - 12b1. The Elevator Display updates to current floor
  - 12b2. The Audio System rings a bell
  - 12b3. The Elevator doors open
    - 12b3a. The Elevator floor button of current floor is illuminating
      - 12b3a1. The Elevator floor button dims out
  - 12b4. The Passenger waits
    - 12b4a. The Passenger leaves elevator
      - 12b4a1. Cancel use case
    - 12b4b. Another Passenger has gone into the elevator to trigger the Overload protocol
      - 12b4b1. Send "Overload" signal to the Elevator (Use Case 5)
  - 12b5. The Audio System rings a bell
  - 12b6. The Elevator door closes
  - 12b7. Return to step 12 in main success scenario
- 18a. The Passenger stays in elevator
  - 18a1. Continue to step 10 in main success scenario

## **Use Case 2: Help Passenger**

### **Primary Actor:**

Elevator Command System ("Elevator")

**Stakeholders and Interests:**

Elevator Control System - To conduct the process of giving Passenger necessary help

Audio System - To provide sound cues and audible voice transmission

Display System - To provide necessary visual cues

Building Safety Service - To provide the Passenger necessary help

Passenger - To get help with any problems

**Precondition:**

The Elevator receives a "Help" signal

**Success Guarantees:**

Passenger receives necessary help

**Main Success Scenario:**

1. The Elevator's help button illuminates
2. The Audio System sounds the "Help" alarm
3. The Elevator connects the Passenger to the building safety service through a voice connection
4. The Building Safety Service responds to help request
5. The Passenger and the building safety service converse

**Extensions:**

- 4a. The Building Safety Service does not respond to help within 5 seconds
  - 4a1. The Elevator places an emergency 911 call

5a. The Passenger does not respond

5a1. The Elevator places an emergency 911 call

## **Use Case 3: Prevent Closing Door**

### **Primary Actor:**

Elevator Control System ("The Elevator")

### **Stakeholders and Interests:**

Elevator Control System - To prevent the elevator door from closing

Audio System - To give necessary audio cues

Display System - To give necessary visual cues

### **Precondition:**

The Light Sensor has been interrupted

### **Success Guarantees:**

Door is kept open

### **Main Success Scenario:**

1. The Elevator stops the door from closing
2. The Elevator opens the door for a fixed time (10 seconds)

### **Extensions:**

1a. The Elevator's light sensor has been interrupted multiple times over a short period of time

1a1. The Audio System sounds a warning

1a2. The Elevator Display displays a text message

## **Use Case 4: Transport Elevator During Fire**

### **Primary Actor:**

Elevator Control System ("The Elevator")

### **Stakeholders and Interests:**

Elevator Control System - To conduct the process of getting the Passenger to safety from the fire

Audio System - To provide necessary warning sound cues

Display System - To provide visual cues to assist Passenger

Passenger - To get to a safe floor

### **Precondition:**

The Elevator receives a "Fire" signal

### **Success Guarantees:**

The elevator transfers Passenger(s) to a safe floor

### **Main Success Scenario:**

1. The Elevator commands the elevator to go to safe floor
2. The Audio System sounds a "Fire" alarm
3. The Elevator Display displays a text message informing any Passenger that are on the elevator of the fire emergency
4. The Elevator will move to a safe floor
5. The Elevator Display displays a text asking them to disembark
6. The passenger disembarks from the elevator

**Extensions:**

- 1a. The Elevator received a "Fire" signal from the building
  - 1a1. The Elevator commands all elevators to go to safe floor

**Use Case 5: Prevent Overloading Elevator****Primary Actor:**

Elevator Control System ("The Elevator")

**Stakeholders and Interests:**

Elevator Control System - To reduce weight for sufficient elevator operation

Audio System - To produce necessary audio cues

Display System - To produce necessary visual cues

Passengers - To reduce number of passengers or cargo

**Precondition:**

The Elevator receives an "Overload" signal from the sensor

**Success Guarantees:**

The elevator load reduces to working weight

**Main Success Scenario:**

1. The Audio System sounds an audio
2. The Elevator Display displays a text message asking for the load to be reduced
3. Other Passenger(s) or cargo load leave until weight is sufficient for operation
4. The Audio System stops sounding the audio



5. The Elevator Display displays current floor number

**Extensions:**

3a. No Passengers leave

3a1. Passengers are stubborn. Cancel current Use Case and Use Case 1

3b. The Passenger leaves

3b1. Cancel current Use Case and Use Case 1

## **Use Case 6: Transport Elevator During Power Outage**

**Primary Actor:**

Elevator Control System ("The Elevator")

**Stakeholders and Interests:**

Elevator Control System - To conduct the process of the Passenger to a safe floor

Audio System - To provide necessary audio cues

Display System - To provide necessary visual cues

Passenger - To get to a safe floor

**Precondition:**

The Elevator has received a "Power Out" signal

**Success Guarantees:**

The elevator transfers Passenger(s) to a safe floor

**Main Success Scenario:**

1. The Audio System sounds an audio informing the Passenger

2. The Elevator Display displays a text message telling the Passenger there is a power outage
3. The Elevator will move to a safe floor
4. The Elevator Display displays a text asking the Passenger(s) to disembark
5. The Passenger disembarks from the elevator