Use Case Diagram for the Elevator System

Learn how to define use cases and create the corresponding use case diagram for the elevator system.

We'll cover the following

Let's build the use case diagram of the elevator system and understand the relationship between its different components.

First, we will define the different elements of our elevator, followed by the complete use case diagram of the system.

System

Our system is an "elevator."

Actors

Next, we will define our elevator system's main actors.

Primary actors

- **Passenger:** This actor is the passenger in an elevator. It can request an elevator, open and close the door of an elevator, move up and down using the elevator, and press the emergency button.

Secondary actors

- **System:** It can open and close the elevator door, display floor level, and move the elevator according to the dispatcher algorithm.

Use Cases

In this section, we will define the use cases for the elevator. We have listed the use cases according to their respective interactions with a particular actor.

> **Note:** You will see some use cases occurring multiple times because they are shared among different actors in the system.

Passenger

- **Press elevator panel button:** To press the button on the elevator panel to select the destination floor, request to open/close the elevator door while it is stopped, or call an emergency
- **Press hall panel button:** To press the button on the hall panel to select the request for the elevator

System

- **Move/stop elevator:** To move up or down or to stop the elevator on a specific floor
- **Dispatcher algorithm:** For proper elevator functionality according to the algorithm
- **Display (inside/outside):** To display the floor number on the screen inside and outside the elevator
- **Open/close door:** To open and close the elevator door

There are some use cases that are not directly related to any actor. These are elaborated below

- **Request for elevator:** To request the elevator
- **Floor request:** To submit a request for the destination floor
- **Door open/close request:** To submit a request to open/close the elevator door
- **Call Emergency:** To call the support team in case of emergency

Relationships

This section describes the relationships between and among actors and their use cases.

Generalization

We can press the elevator panel button to select the destination floor, request to open/close the elevator door while it is stopped, or call an emergency. This demonstrates that the "Press elevator panel button" use case has a generalization relationship with "Floor request," "Door open/close request," and "Call emergency" use cases.

Associations

The table below shows the association relationship between actors and their use cases.

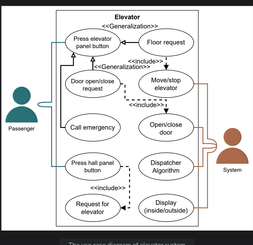
Passenger	System
Press elevator panel button	Dispatcher algorithm
Press hall panel button	Open/close door
	Display (inside/outside)
	Move/stop elevator

Include

- When a floor request is submitted, the system will move the elevator and stop it at the requested floor. Hence, the "Floor request" use case has an include relationship with the "Move/stop elevator" use case.
- When a door open/close request is submitted, the system will open/close the elevator door. Hence, the "Door open/close request" use case has an include relationship with the "Open/close door" use case.
- When any button on the hall panel is pressed, a request for the elevator is submitted. Hence, the "Press hall panel button" use case has an include relationship with the "Request for elevator" use case.

Use case diagram

Here's the use case diagram of the elevator system:



The use case diagram of elevator system

In the next lesson, we will discuss the class diagram with a detailed explanation of all classes and their relationship.