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Lift Case
Use Case Specification: Change Floor

Version 1.1

Revision History

Date	Version	Description	Author
29-05-00	1.0	Initial Document	Onno van Roosmalen
13-06-00	1.1	Minor textual modifications	Onno van Roosmalen

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1. Use Case: Change Floor

1.1 Brief Description

This is a Use Case pertaining to general, non-specific use of the lift system. It describes the situation in which a person using the lift system intends to travel from a departure to a destination floor.

Actor: Person (P)

Scope: Lift System (LS)

2. Flow of Events

2.1 Basic Flow

Main success scenario of "Change Floor"

1. P: places a lift request
   1.1 P: presses the button at his departure floor
   1.2 LS: the button lights up
2. LS: a lift cage arrives at the departure floor
   2.1 LS: the lift cage decelerates and stops
   2.2 LS: the chime sounds and the button light extinguishes.
   2.3 LS: the door opens.
3. P: enters the lift cage
4. P: the person places a floor request
   4.1 P: presses the button for his destination floor
   4.2 LS: the button lights up
5. LS: the lift cage departs.
   5.1 LS: the door closes
   5.2 LS: the lift accelerates and cruises
6. LS: lift cage arrives at the destination floor
7. P: exits the lift cage.

Pre-condition: the lift system is in operation and there are no prohibiting circumstances (fire).
Minimal post-condition: person is outside the lift cage
Success post-condition: person is outside the lift cage on his target floor

2.2 Alternative Flows

2.2.1 Lift already available

Lifts may already be available due to other people present who requested the lift earlier or accidental availability at his floor. Steps 1 and 2 are omitted.

2.2.2 Lift request button has already been pushed

If a lift request button in the proper direction has already been pushed step 1 may be omitted.

2.2.3 Desired floor request button has already been pushed

If the floor request button of the target floor has already been pushed by other persons step 4 may be omitted.

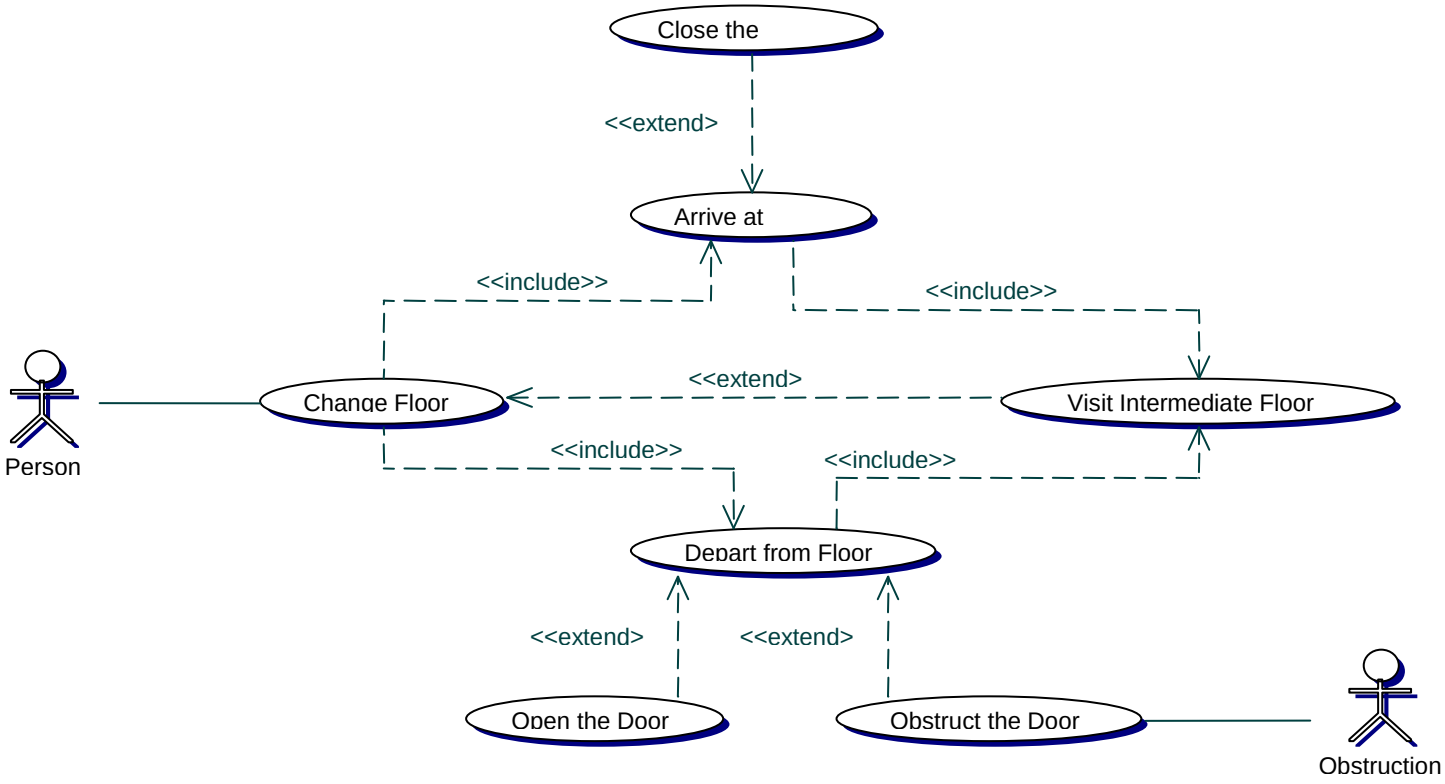

Diagram for the "Change Floor" Use Case

2.3 Exceptional Flows

2.3.1 Fire

People may have to evacuate the lift cage when fire breaks out in the building. Separate extensions must be documented for this exceptional situation.

2.3.2 Lift stops operating

The lift may stop operating because of a technical failure while doors are closed. Separate extensions must be documented for this exceptional situation

3. Special Requirements

3.1 Short waiting times

For each person using the lift, a long waiting time between placing the lift request and the arrival of a lift serving the direction requested is the most disturbing.

3.2 Short trip times

Next to the short waiting time requirement a short trip time is important. The number of stops made by the lift before it reaches the destination floor mainly determines the trip time. This is caused by the relatively long door-closure time-out period. The number of stops of a lift cage should be kept as minimal as possible.

3.3 Feedback from lift system

The user who requests, or intends to request a lift at his floor, may want to have some feedback that helps him determine how or when the lift system will be serving his request. There are several indicators that are useful. First, an indication of the direction of a lift at his floor that must at minimum show a direction when a lift arrives. Second, a floor indicator that shows where a particular lift cage is located. These items where not noticed in the stakeholder request document.

Inside the lift cage an indication of the actual floor at which the lift is about is absolutely required.

4. Extensions

4.1 Request Close

On sub-Use-Case “arrive at floor” (step 2 and 6):

A person inside the lift cage may, if he desires, press the door buttons to influence the opening and closing of the door. This may be done at any time. This does not change the flow of the base use-case, only its duration may be longer.

A person in the lift may push the close door button to speed up servicing the floor

2.3a P: requests the door to close prematurely.
2.3a.1 P: presses the close button
2.3a.2 LS: the door starts closing immediately

Pre-condition: the door is completely open.
Minimal post-condition: nothing happens.
Success post-condition: the door is closed.

4.2 Obstruct Door

On sub-Use-Case “depart from floor**”** **(**step 5**)**:

A person usually enters or exits a lift cage when the door is open or opening. If, however, someone passes through a door when it is closing the door will open again to avoid that the person gets harmed and to avoid that the lift cage starts moving with a person in the doorway.

Actor: Obstruction (OB)

5.1a OB: obstructs the door.
5.1a.1 OB: the obstruction touches the door.
5.1a.2 LS: the door opens completely immediately.

Pre-condition: the door is closing.
Minimal post-condition: the door is open completely.
Success post-condition: the door is open completely.

4.3 Request Open

On sub-Use-Case “depart from floor**”** **(**step 5**)**:

A person my request the door to open while it is closing.

5.1b P: requests the door to open.
5.1b.1 P: presses the “door open” button
5.1b.2 LS: the door opens completely immediately.

Pre-condition: the door is closing.
Minimal post-condition: the door is open completely.
Success post-condition: the door is open completely.

4.4 Make Intermediate Stop

On sub-Use-Case "depart from floor**" (**step 5**)**:

On the basis of other requests directed to a particular lift, the lift cage may make any number of intermediate stops between the departure and destination floors.

5a LS: the lift cage makes an intermediate stops**.**
- *5a.1* LS: the lift cage arrives at floors intermediate to departure and destination.
- *5a.2* LS: lift cage departs from floor.

Minimal post-condition: the lift cage remains at the floor with the door open
Success post-condition: the lift cage cruises to the destination floor.