

An Elevator System – Scenarios

Thai Son Hoang

ECS, University of Southampton, Southampton, U.K.
{t.s.hoang}@ecs.soton.ac.uk

This document presents some scenarios of an elevator system as showed in Figure 1. We assume that the building have 4 floors: Floor 0 up to Floor 3.

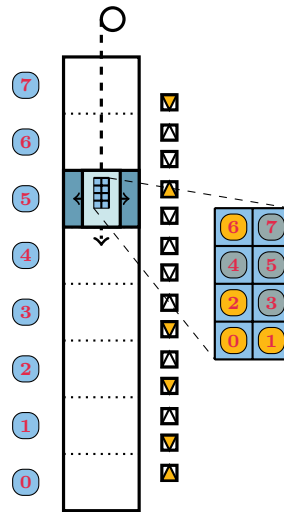


Fig. 1. An Elevator System

Scenario 1 . Intial state: Cabin is at Floor 0, the door is closed, the motor is stopped, the moving direction is up.

- User 1 arrives at Floor 0 and presses the up button
- The cabin door opens (closed to half then to fully open)
- The up button on Floor 0 is clear (e.g., no longer lit up)
- User 1 enters the cabin and presses the Floor 2
- The door closes (open to half then to closed)
- The motor starts winding
- User 2 arrives at Floor 1 and presses the up button
- The cabin moves from Floor 0 to Floor 1
- The motor stops (hence the cabin stops at Floor 1)
- The door opens (closed to half then to fully open)
- The up button on Floor 1 is clear (e.g., no longer lit up)

- The door closes (open to half then to closed)
- The motor starts winding
- The cabin moves from Floor 1 to Floor 2
- The motor stops (hence the cabin stops at Floor 2)
- The door opens (closed to half then to fully open)
- The button for Floor 2 (inside the cabin) is clear (e.g., no longer lit up)
- The door closes (open to half then to closed)

Scenario 2 . Intial state: Cabin is at Floor 0, the door is closed, the motor is stopped, the moving direction is up.

- User 1 arrives at Floor 0 and presses the up button
- The cabin door opens (closed to half then to fully open)
- The up button on Floor 0 is clear (e.g., no longer lit up)
- User 1 enters the cabin and presses the Floor 2
- The door closes (open to half then to closed)
- The motor starts winding
- User 2 arrives at Floor 1 and presses the down button
- The cabin moves from Floor 0 to Floor 1
- The cabin moves from Floor 1 to Floor 2 (note that the elevator ignores the move down request at Floor 1 for the moment)
- The motor stops (hence the cabin stops at Floor 2)
- The door opens (closed to half then to fully open)
- The button for Floor 2 (inside the cabin) is clear (e.g., no longer lit up)
- The door closes (open to half then to closed)
- The direction is changed to down
- The motor starts unwinding
- The cabin moves from Floor 2 to Floor 1
- The motor stops (hence the cabin stops at Floor 1)
- The door opens (closed to half then to fully open)
- The down button on Floor 1 is clear (e.g., no longer lit up)
- The door closes (open to half then to closed)

Scenario 3 . Intial state: Cabin is at Floor 0, the door is closed, the motor is stopped, the moving direction is up.

- User 1 arrives at Floor 0 and presses the up button
- The cabin door opens (closed to half then to fully open)
- The up button on Floor 0 is clear (e.g., no longer lit up)
- User 1 enters the cabin and presses the Floor 2
- The door closes (open to half then to closed)
- The motor starts winding
- User 2 arrives at Floor 2 and presses the down button
- The cabin moves from Floor 0 to Floor 1
- The cabin moves from Floor 1 to Floor 2
- The motor stops (hence the cabin stops at Floor 2)
- The door opens (closed to half then to fully open)

- The button for Floor 2 (inside the cabin) is clear (e.g., no longer lit up)
- The door closes (open to half then to closed)
- The direction is changed to down
- The door opens (closed to half then to fully open)
- The down button at Floor 2 is clear (e.g., no longer lit up)
- User 2 presses Floor 1
- The door closes (open to half then to closed)
- The motor starts unwinding (note that the motor only starts when there is a request)
- The cabin moves from Floor 2 to Floor 1
- The motor stops (hence the cabin stops at Floor 1)
- The door opens (closed to half then to fully open)
- The button for Floor 1 is clear (e.g., no longer lit up)
- The door closes (open to half then to closed)

Scenario 4 . Initial state: Cabin is at Floor 0, the door is closed, the motor is stopped, the moving direction is up.

- User 1 arrives at Floor 0 and presses the up button
- The cabin door opens (closed to half then to fully open)
- The up button on Floor 0 is clear (e.g., no longer lit up)
- User 1 enters the cabin and presses the Floor 2
- The door closes from open to half
- User 2 arrives at Floor 0 and presses the up button
- The door opens from half to open
- The up button on Floor 0 is clear (e.g., no longer lit up)
- ...