Peer Assisted Study Session

FIT2099 - Week 11

Monash University

Objectives

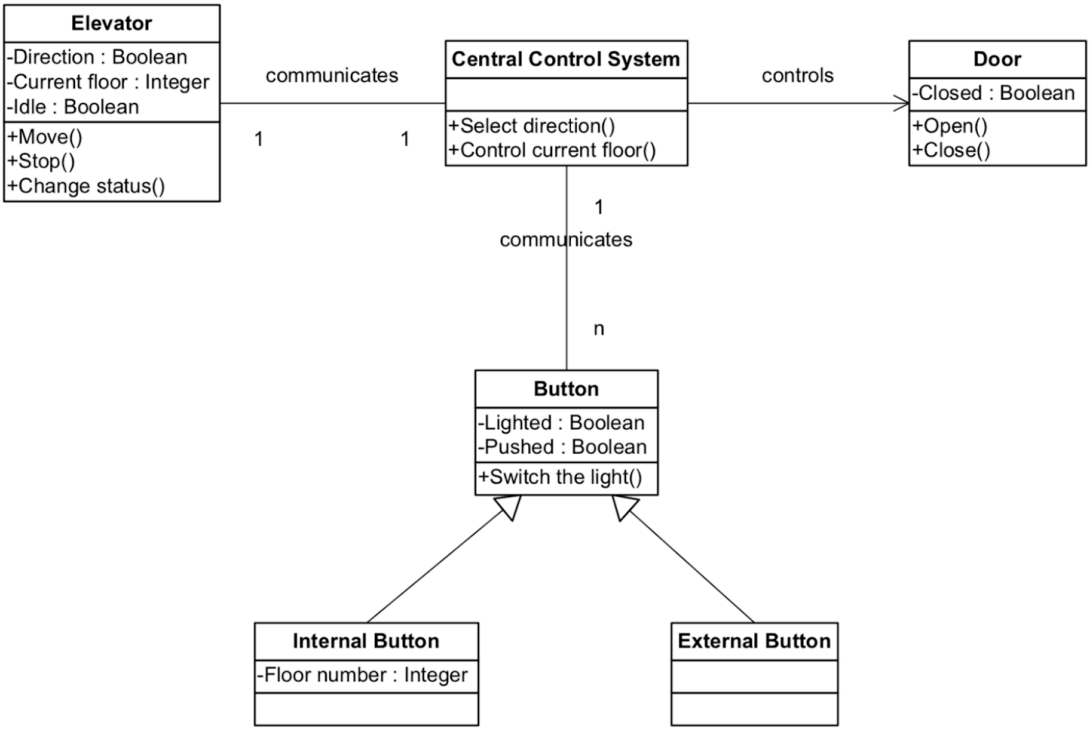
- Creating a Class and Sequence Diagram given a case study
- Explore code smells

Estimated Time

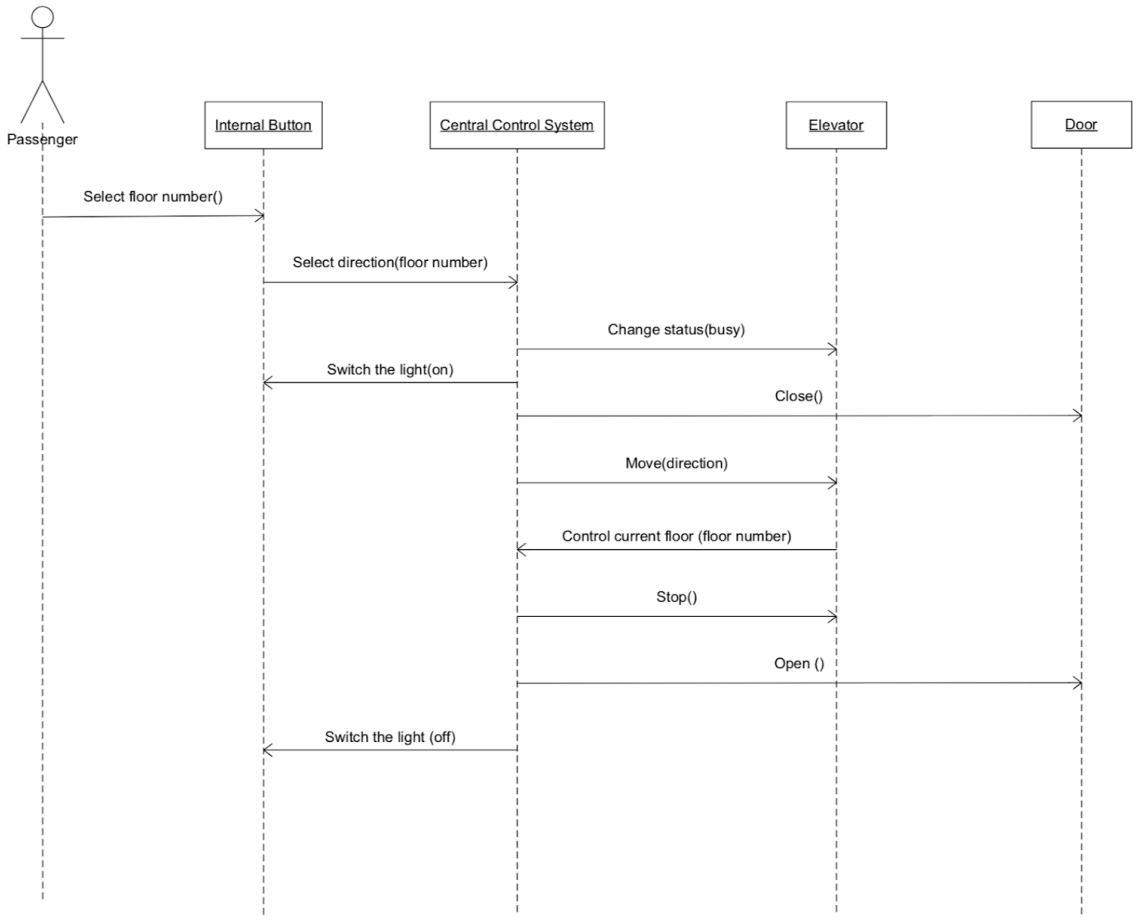
Question 1 (20 Minutes)
Question 2 (20 Minutes)
Question 3 (5 Minutes)

Questions

1. Create the Class diagram according to the functional requirements of the following elevator control system:
    a. The elevator control system shall allow the passenger to call the elevator and to select the destination floor;
    b. When the passenger pushes the external button (to call the elevator), or the internal button (to select the destination floor), the central control system switches the button light on;
    c. When the passenger calls the elevator or selects the destination floor, the central control system opens/closes the elevator door;
    d. When the passenger calls the elevator or selects the destination floor, the central control system moves/stops the elevator to/at the passenger call floor or to/at the passenger destination floor.
    e. When the passenger leaves the elevator, the central control system switches the button light off.



2. According to the following description draw the Sequence Diagram
    a. The passenger pushes the destination floor button (internal button);
    b. The internal button sends the system the order to select the direction (up/down);
    c. The system changes the elevator status (from idle to busy);
    d. The system switches the floor button (internal button) light on;
    e. The system closes the elevator door;
    f. The system moves the elevator according to the destination floor direction (up/down);
    g. The elevator sends the system the order to control if the floor that the elevator is going to get through is the destination one;
    h. The system stops the elevator at the destination floor; 9. The system opens the door at the destination floor; 10. The passenger moves outside the elevator;
    i. The system switches the internal button off.



3. State which code smells are described by the following definitions
    a. A method accesses the data of another object more than its own data - Feature Envy
    b. A class contains many fields/methods/lines of code - Large Class
    c. When a single change is made to multiple classes simultaneously - Shotgun Surgery
    d. One class uses the internal fields and methods of another class - Inappropriate Intimacy
    e. If a class performs only one action, delegating work to another class - Middle Man
    f. Two code fragments look almost identical - Duplicate Code
    g. More than three or four parameters for a method - Long Parameter List

    h. A class that contains only fields and crude methods for accessing them (getters and setters) - Data Class
    i. When many changes are made to a single class - Divergent Change
4. Read this article (https://scotch.io/bar-talk/s-o-l-i-d-the-first-five-principles-of-object-oriented-design) and write down two points for each of the S.O.L.I.D principles.