

```

classDiagram
    class ElevatorSystem {
        +Elevator*
        +UpRequestList*
        +DownRequestList*
    }
    class Elevator {
        +destinationList: List
    }
    class UpRequestList
    class DownRequestList
    class Chime
    class FloorButton {
        +floorNumber: int
    }
    class Floor {
        +floorID: int
    }
    class InnerOrOuterDoor {
        +isOpen: bool
    }
    class CallButton {
        +directionID: int
    }
    class ButtonLight {
        +isLit: bool
    }
    class Person

    ElevatorSystem "1" -- "1" Elevator : Adds-Floors-To
    ElevatorSystem "1" -- "1" UpRequestList : Adds-Floors-To
    ElevatorSystem "1" -- "1" DownRequestList : Adds-Floors-To
    ElevatorSystem "1" -- "1" Elevator : Adds-Dest.-To
    ElevatorSystem "1" -- "1" Floor : Gets-Request-From
    ElevatorSystem "1" -- "1" CallButton : Gets-Request-From
    Elevator "1" -- "1..*" InnerOrOuterDoor : Opens-Inner
    Elevator "1" -- "2..*" InnerOrOuterDoor : Opens-Outer
    Elevator "1" -- "1..*" Floor : Is-On
    Elevator "1" -- "1..*" FloorButton : Gets-Destination-Request-From
    Elevator "1" -- "1" Chime : Plays
    UpRequestList "1" -- "1" Chime : Adds-Floors-To
    DownRequestList "1" -- "1" Chime : Adds-Floors-To
    Chime "1" -- "1" FloorButton : Is-Added-To
    FloorButton "1" -- "1" Person : Is-Pressed-By
    FloorButton "1" -- "1" ButtonLight : Lights
    Floor "1" -- "1..2" CallButton : Contains
    CallButton "1" -- "1" ButtonLight : Lights
    CallButton "1" -- "1" Person : Is-Pressed-By
  
```

The diagram illustrates the following relationships:

- Elevator System** (1) is associated with **Elevator** (1) via **Adds-Floors-To**.
- Elevator System** (1) is associated with **Up Request List** (1) via **Adds-Floors-To**.
- Elevator System** (1) is associated with **Down Request List** (1) via **Adds-Floors-To**.
- Elevator System** (1) is associated with **Elevator** (1) via **Adds-Dest.-To**.
- Elevator System** (1) is associated with **Floor** (1) via **Gets-Request-From**.
- Elevator System** (1) is associated with **Call Button** (1) via **Gets-Request-From**.
- Elevator** (1) is associated with **Inner or Outer Door** (1) via **Opens-Inner**.
- Elevator** (1) is associated with **Inner or Outer Door** (2..*) via **Opens-Outer**.
- Elevator** (1) is associated with **Floor** (1..*) via **Is-On**.
- Elevator** (1) is associated with **Floor Button** (1..*) via **Gets-Destination-Request-From**.
- Elevator** (1) is associated with **Chime** (1) via **Plays**.
- Up Request List** (1) is associated with **Chime** (1) via **Adds-Floors-To**.
- Down Request List** (1) is associated with **Chime** (1) via **Adds-Floors-To**.
- Chime** (1) is associated with **Floor Button** (1) via **Is-Added-To**.
- Floor Button** (1) is associated with **Person** (1) via **Is-Pressed-By**.
- Floor Button** (1) is associated with **Button Light** (1) via **Lights**.
- Floor** (1) is associated with **Call Button** (1..2) via **Contains**.
- Call Button** (1) is associated with **Button Light** (1) via **Lights**.
- Call Button** (1) is associated with **Person** (1) via **Is-Pressed-By**.

Contracts

Operation: callElevator()

- Pre: A person is on a Floor
- Post:
 - An association was formed between a Floor f and the Up Request List ul or the Down Request List dl .
 - A Call Button cb 's Button Light b 's *isLit* attribute was set to True

Operation: getNextFloor()

- Pre: N/A
- Post:
 - A destination was added to an Elevator $e[i]$'s *destinationList*
 - An association was destroyed between a Floor f and the Up Request List ul or the Down Request List dl .

Operation: arrivedAtFloor()

- Pre: An Elevator $e[i]$ has a floor in its *destinationList*
- Post:
 - A Floor was removed from an Elevator $e[i]$'s *destinationList*
 - A Call Button cb 's Button Light bl 's *isLit* attribute was set to False
 - A Floor Button fb 's Button Light bl 's *isLit* attribute was set to False
 - The Elevator System set the Outer Door $od[j][k]$'s *isOpen* attribute to True
 - An Elevator $e[i]$ set the Inner Door id 's *isOpen* attribute to True

Operation: selectFloor()

- Pre: A person has entered an elevator
- Post:
 - A Floor Button fb 's Button Light bl 's *isLit* attribute was set to True
 - A floor was added to an Elevator $e[i]$'s *destinationList*

Operation: addFloor()

- Pre: N/A
- Post:
 - A floor was added to an Elevator $e[i]$'s *destinationList*
 - An association was destroyed between a Floor f and the Up Request List ul or the Down Request List dl .