If a glass break detector attached to the entrance door detects that the entrance door has been damaged, the system shall enter the alarm state and inform the security company.
Exercise: For the given requirement statement (in natural language) create three interrelated representations to capture:

- **Data** (or static or conceptual) model using UML class diagrams
- **Behavioural** model using UML state diagrams
- **Functional** model using UML sequence diagrams
GlassBreakDetector

detects ()

* changesStatus

1

System

mode: AlarmMode

putAlarm ()

1

EntranceDoor

status: DoorStatus

SecurityCompany

informs

1

<<Enumeration>>

DoorStatus

UNBROKEN
DAMAGED

<<Enumeration>>

AlarmMode

OFF
ON_DUTY
ALARM
Behavourial model

: System
mode: AlarmMode
putAlarm() switchOn() switchOff()
**Behavioural model**

**:System**
- mode: AlarmMode
  - putAlarm()
  - switchOn()
  - switchOff()

**:EntranceDoor**
- status: DoorStatus
  - break()
  - fix()

Diagram:
- **OFF**
  - switchOn()
- **ON_DUTY**
  - putAlarm()
- **ALARM**
  - switchOff()
  - switchOn()
- **OFF**

Transition:
- from **UNBROKEN** to **DAMAGED**
- from **DAMAGED** to **UNBROKEN**
GlassBreakDetector

- detects ()
- changesStatus

1

EntranceDoor

- status: DoorStatus
  - break()
  - fix()

System

- mode: AlarmMode
  - putAlarm()
  - switchOn()
  - switchOff()

SecurityCompany

1

<<Enumeration>>

DoorStatus

- UNBROKEN
- DAMAGED

<<Enumeration>>

AlarmMode

- OFF
- ON_DUTY
- ALARM

Static model:

Updated after Behavioural analysis
Functional model

:GlassBreakDetector

:SecurityCompany

:EntranceDoor

:System

[EntranceDoor.status=DAMAGED]
changesStatus()

[mode=ALARM] informs()

[System.mode=ALARM]
manages()

[EntranceDoor.status=UNBROKEN]
manages()

repairs()
Static model:
Updated after **Functional** analysis

- **GlassBreakDetector**
  - `detections()`
  - `changesStatus`

- **EntranceDoor**
  - `status: DoorStatus`
  - `break()`
  - `fix()`

- **System**
  - `mode: AlarmMode`
  - `putAlarm()`
  - `switchOn()`
  - `switchOff()`

- **SecurityCompany**

<<Enumeration>>
- **DoorStatus**
  - UNBROKEN
  - DAMAGED

<<Enumeration>>
- **AlarmMode**
  - OFF
  - ON_DUTY
  - ALARM