John Kurt Centeno
Prince Alfred DIzon

ACT-C205
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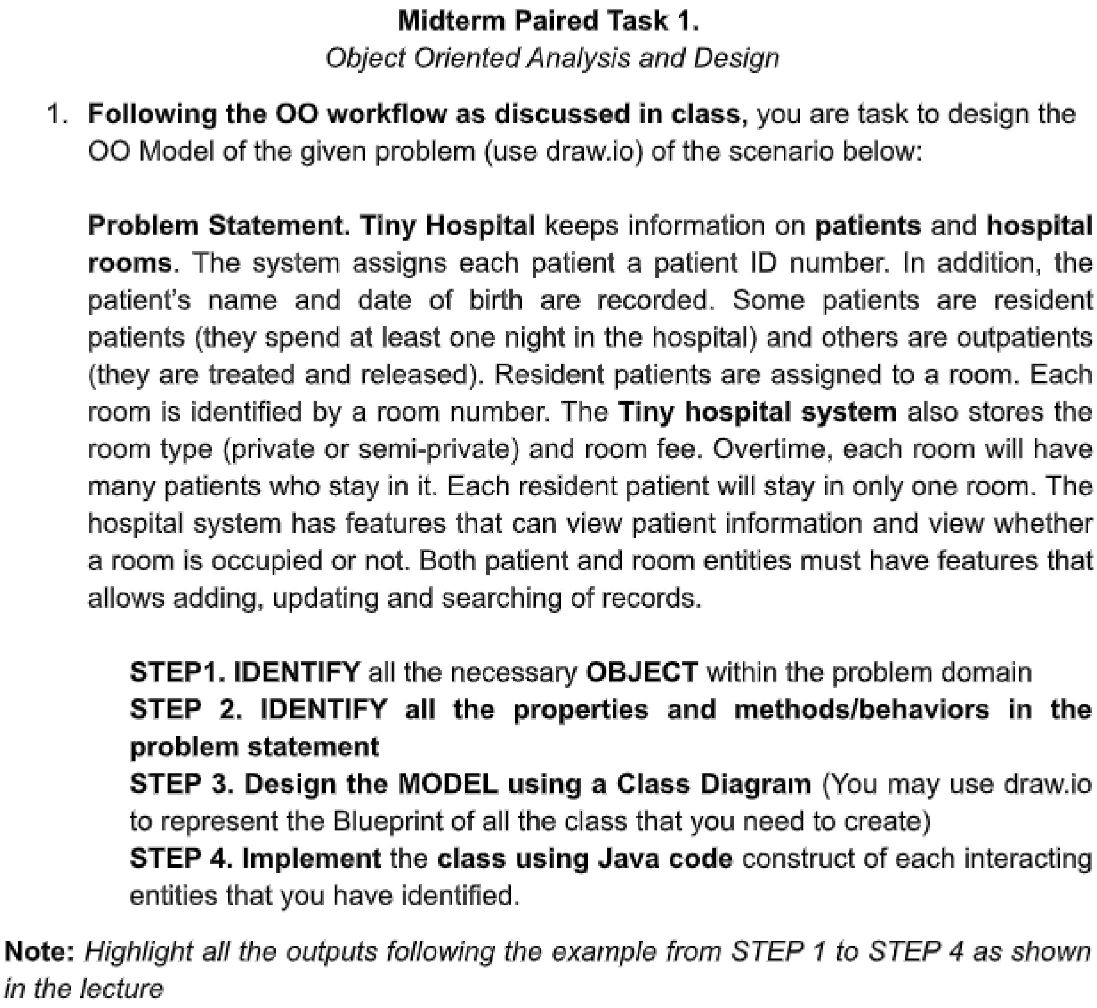


Midterm Paired Task 1.
Object Oriented Analysis and Design

1. **Following the OO workflow as discussed in class,** you are task to design the OO Model of the given problem (use draw.io) of the scenario below:

   Problem Statement. Tiny Hospital keeps information on **patients** and **hospital rooms**. The system assigns each patient a patient ID number. In addition, the patient's name and date of birth are recorded. Some patients are resident patients (they spend at least one night in the hospital) and others are outpatients (they are treated and released). Resident patients are assigned to a room. Each room is identified by a room number. The **Tiny hospital system** also stores the room type (private or semi-private) and room fee. Overtime, each room will have many patients who stay in it. Each resident patient will stay in only one room. The hospital system has features that can view patient information and view whether a room is occupied or not. Both patient and room entities must have features that allows adding, updating and searching of records.

   STEP1. IDENTIFY all the necessary **OBJECT** within the problem domain
   STEP 2. IDENTIFY all the properties and methods/behaviors in the problem statement
   STEP 3. Design the MODEL using a Class Diagram (You may use draw.io to represent the Blueprint of all the class that you need to create)
   STEP 4. Implement the **class using Java code** construct of each interacting entities that you have identified.

Note: *Highlight all the outputs following the example from STEP 1 to STEP 4 as shown in the lecture*

Step 1

1. Patient
2. Room
3. TinyHospitalSystem

Step 2

. Patient

Properties:

- **patientID**
- **name**
- **dateOfBirth**
- **type (resident/outpatient)**

Behaviors:

- **viewInfo()**
- **updateInfo()**

2. Room

Properties:

- **roomNumber**
- **roomType (private/semi-private)**
- **roomFee**
- **isOccupied (true/false)**

Behaviors:

- **viewRoomInfo()**
- **checkOccupancy()**
- **updateRoomInfo()**

3. TinyHospitalSystem

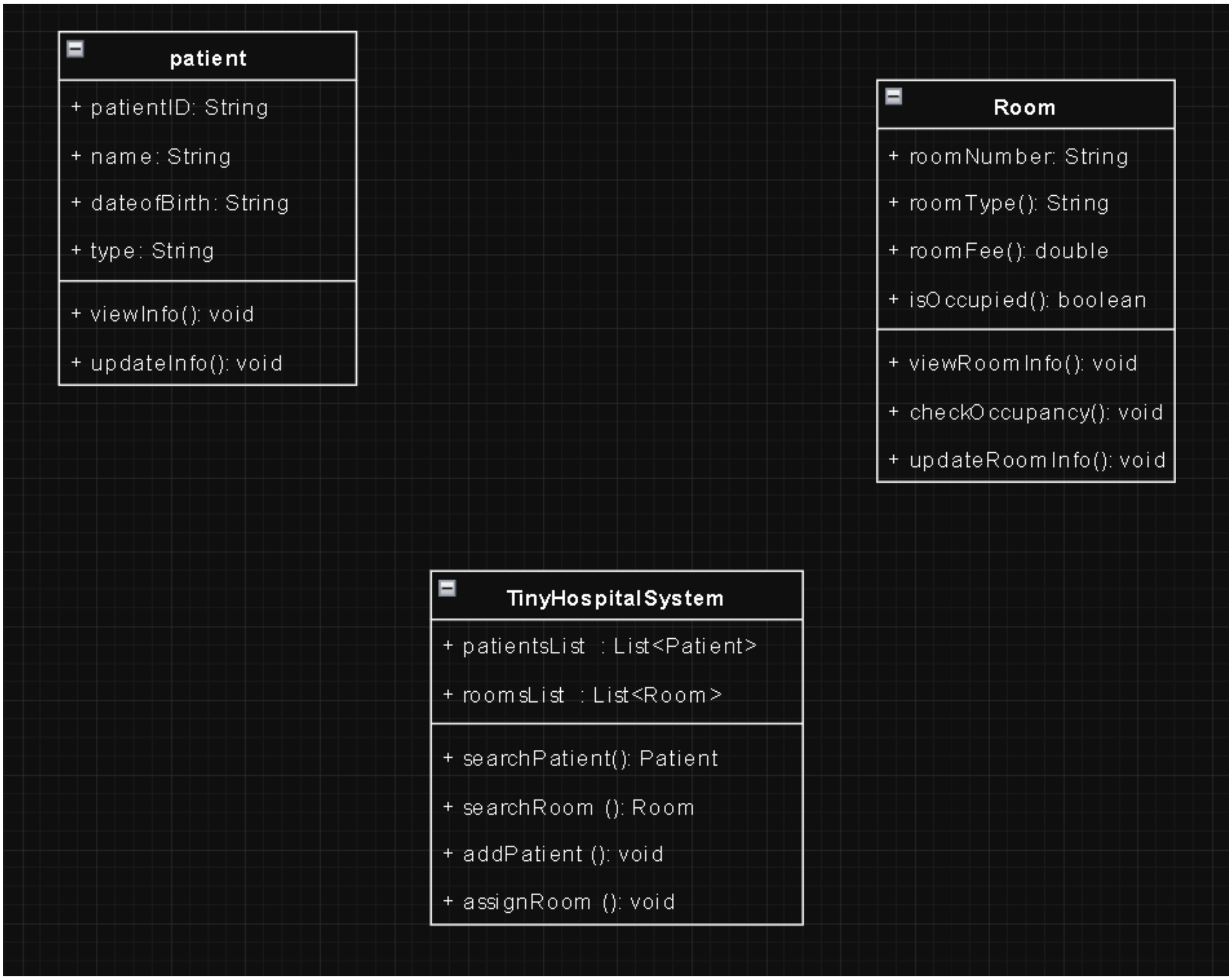
Properties:

- **patientsList**
- **roomsList**

Behaviors:

- **searchPatient()**
- **searchRoom()**
- **addPatient()**
- **assignRoom()**

Step 3



patient

+ patientID: String
+ name: String
+ dateofBirth: String
+ type: String

+ viewInfo(): void
+ updateInfo(): void

Room

+ roomNumber: String
+ roomType(): String
+ roomFee(): double
+ isOccupied(): boolean

+ viewRoomInfo(): void
+ checkOccupancy(): void
+ updateRoomInfo(): void

TinyHospitalSystem

+ patientsList : List<Patient>
+ roomsList : List<Room>

+ searchPatient(): Patient
+ searchRoom (): Room
+ addPatient (): void
+ assignRoom (): void

Step 4

```
public class Patient {
    String patientID;
    String name;
    String dateOfBirth;
    String type;

    public void viewInfo() {
        System.out.println("Patient ID: " + patientID);
        System.out.println("Name: " + name);
        System.out.println("DOB: " + dateOfBirth);
        System.out.println("Type: " + type);
    }

    public void updateInfo(String name, String dob, String type) {
        this.name = name;
        this.dateOfBirth = dob;
        this.type = type;
    }
}

public class Room {
    String roomNumber;
    String roomType;
    double roomFee;
    boolean isOccupied;

    public void viewRoomInfo() {
        System.out.println("Room Number: " + roomNumber);
        System.out.println("Type: " + roomType);
        System.out.println("Fee: $" + roomFee);
    }

    public void checkOccupancy() {
        System.out.println("Room Occupied: " + isOccupied);
    }

    public void updateRoomInfo(String type, double fee, boolean occupied) {
        this.roomType = type;
        this.roomFee = fee;
        this.isOccupied = occupied;
    }
}

public class HospitalTest {
    public static void main(String[] args) {
        Patient p1 = new Patient();
```

```
  p1.patientID = "P001";
  p1.name = "Kurt john";
  p1.dateOfBirth = "2005-19-10";
  p1.type = "resident";
  p1.viewInfo();

 Patient p2 = new Patient();
  p2.patientID = "P002";
  p2.name = "Prince Alfred";
  p2.dateOfBirth = "2005-13-11";
  p2.type = "resident";
  p2.viewInfo();


  Room r1 = new Room();
  r1.roomNumber = "101A";
  r1.roomType = "Private";
  r1.roomFee = 150.0;
  r1.isOccupied = true;
  r1.viewRoomInfo();
  r1.checkOccupancy();

Room r2 = new Room();
  r1.roomNumber = "102A";
```

```
        r2.roomType = "Semi-Private";
        r2.roomFee = 75.0;
        r2.isOccupied = true;
        r2.viewRoomInfo();
        r2.checkOccupancy();

    }
}
```