

**CSE 108**  
**Online on Java Inheritance and Interfaces**  
**Section: B1+B2**  
**Date: June 23, 2025**  
**Time: 40 Minutes**

Design an object-oriented system in Java for managing patients, doctors, medications, and medical procedures in a hospital environment.

**Workflow:**

1. Doctors can prescribe medications to patients if the medication suits that patient.
2. Doctors specialized in relevant fields can perform medical procedures on a patient.

**Classes to implement:**

**1. Medication**

- Includes:
  - Medication name
  - List of allergens for that medication

**2. Person**

- Define an **abstract** class `Person` with attributes: `name`, `age`, `gender`, and `contactInfo(email)`
- Include an abstract method `showInfo()`

**3. Patient**

- Extends `Person` and includes:
  - `patientId`,
  - `allergies` ( a list of strings)
  - `medications` ( a list of `Medication` objects )
  - `medicalProcedures` ( a list of `MedicalProcedure` objects )

**4. Doctor**

- Extends `Person` and includes:
  - `doctorId`, an integer.
  - `List of Specialization`, a list of strings
- Methods:
  - `boolean isCertifiedFor(String procedureName) // check if procedure matches any specialization`

## 5. MedicalProcedure

- Abstract class with fields: `procedureId`, `procedureName`, `scheduledTime`, `performedBy` (a doctor object)
- Abstract method: `validate()`
- Subclasses:
  - `Surgery` // valid surgery if anesthesia is given (keep a boolean field to track) and done by a certified doctor.
  - `LabTest` // valid if done by "clinic" or "hospitalPremise"

## 6. Prescribable Interface

It will be implemented by the doctor.

- Method: `void prescribe(Patient, Medication)` //check for the allergies.
- Keep in mind to throw an exception in case of validation failure.

## Submission Guidelines

- Create a folder named after your ID.
- Move all .java files in the folder.
- Zip the folder and submit the zip file.