



Computer Science Department

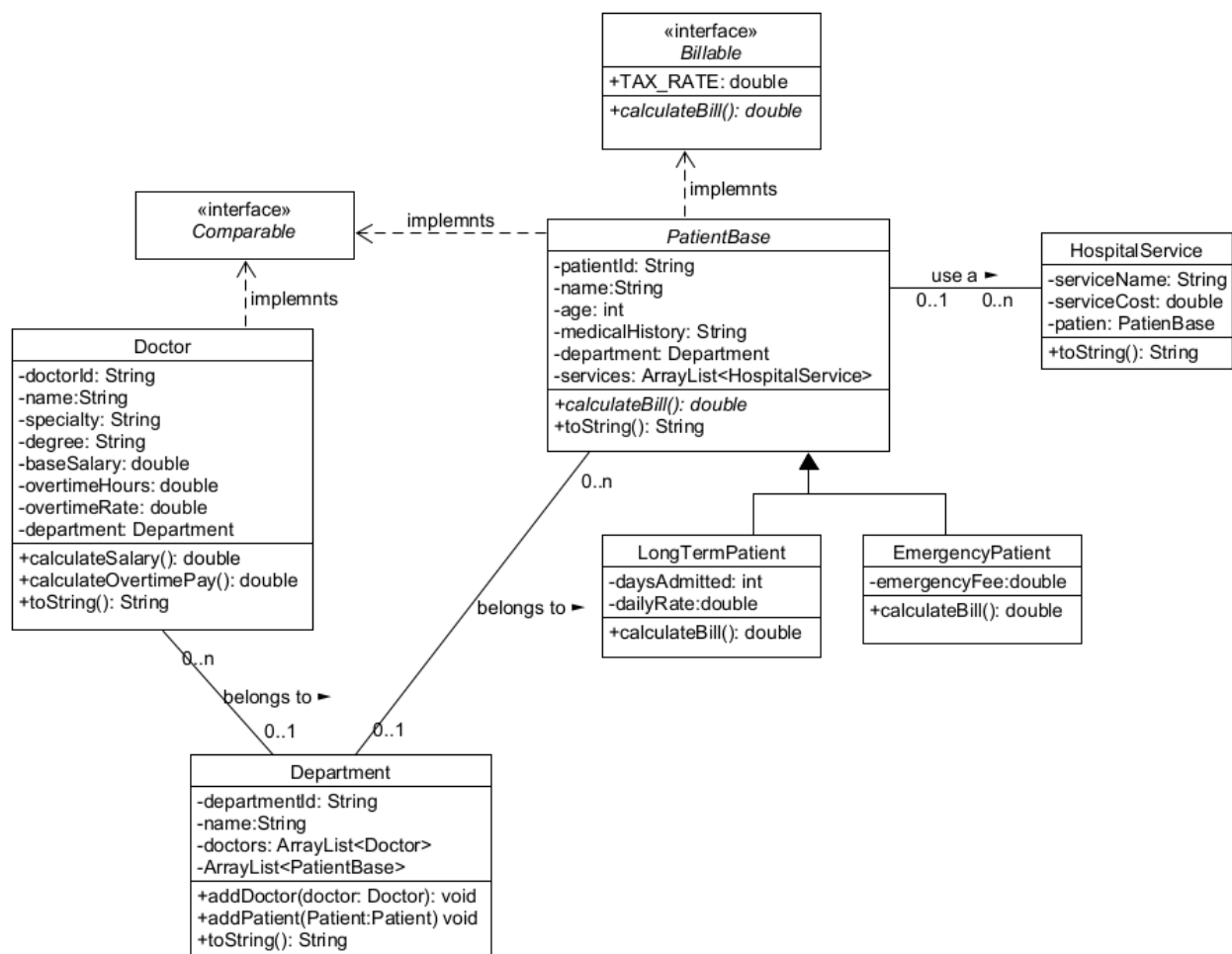
COMP2310 (Fall 2024/2025)

Project

Notes:

1. The project should be submitted **by Tuesday 07/01/2025 by 11:59 pm on ITC (Late Projects will not be accepted for any reason).**
2. The project is **individual** effort and copying the project will be treated as a cheating attempt, which may lead to **FAILING** the course.

Using ONLY eclipse IDE, write a complete Java program that first creates the following Hospital Patient Management System:



Class Descriptions:

For all classes create appropriate constructors (default and non-default) and setter/getter methods.

➤ EmergencyPatient Class Method:

- `calculateBill()`: Calculates the bill as `emergencyFee + total service Costs * (1 + TAX_RATE)`.

➤ LongTermPatient Class Method:

- `calculateBill()`: Calculates the bill as `(daysAdmitted * dailyRate + total service Costs) * (1 + TAX_RATE)`.

➤ Doctor Class Method:

- `calculateSalary()`:
 - Calculates the salary based on the degree:
 - Bachelor: Base salary + 10% of base salary.
 - Master: Base salary + 20% of base salary.
 - PhD: Base salary + 30% of base salary.Also, add `OvertimePay`.
- `calculateOvertimePay()`: Calculates the total overtime pay as `overtimeHours * overtimeRate`.

➤ Department Class Method:

- `addDoctor(doctor: Doctor)`: Adds a doctor to the department.
- `addPatient(patient: Patient)`: Adds a patient to the department.

Driver class which includes the following methods:

- main method that does the following:
 - Create an `ArrayList` of patients with three predefined patients (two `EmergencyPatient`, and one `LongTermPatient`).
 - Create three `Department` objects.
 - Create an `ArrayList` of doctors with two predefined doctors.
 - Create an `ArrayList` of hospital services and assign some services to patients.
(*Examples of hospital services: X-ray, MRI, lab tests*).

You must NOT ask the user to enter the attributes but you should fill them up directly in the main method. Using the following constructors:

`PatientBase(String patientId, String name, int age, String medicalHistory, Department department)`

`EmergencyPatient(String patientId, String name, int age, String medicalHistory, Department department, double emergencyFee)`

`LongTermPatient(String patientId, String name, int age, String medicalHistory, Department department, int daysAdmitted, double dailyRate)`

`Doctor(String doctorId, String name, String specialty, String degree, double baseSalary, double overtimeHours, double overtimeRate, Department department)`

`Department(String departmentId, String name)`

`HospitalService(String serviceName, double serviceCost, PatientBase patient)`

- Generate and display the third patient bill.
- Sorting patients by bill amount.
- Sorting doctors by salary.

- Prints the sorted Doctors department's names and salaries.
- Prints the sorted Patient names and age.
- Prints the total sum of all patients Bill.

Static Methods:

- Method **sortDoctorsBySalary** which takes an ArrayList of type **Doctors** as an argument and sorts it. You may use the **java.util.Collections.sort** method to do the actual sorting.
- Method **calculateTotalpatientsBill** that takes an ArrayList of type **patients** as an argument and returns the total Bill of all the patients in that ArrayList.
- Method **generateBill** that takes a **patient** as an argument and Displays the patient's ID, name, and total bill amount in a formatted manner.

VERY IMPORTANT:

1. Your project folder (containing all your .java project files) should be compressed (.rar) and saved as **proj_youridnumber_yourLabsectionnumber.rar**. your compressed folder should be submitted on **Moodle ITC COMP2310 - Meta** "Project"
2. Ensure that each class file begins with a comment including your full name, student ID number, and both your lecture and lab section numbers.
3. Any late or incorrect submissions (**even by one minute**) or submissions do not follow EXACTLY as instructed will not be graded and will result in a zero. **NO EXCEPTIONS for ANY REASON.**