

BACS2023 Object-Oriented Programming

Practical #7A

Question 1

A. The patients of a hospital are categorized as either inpatient or outpatient. An inpatient is someone who is hospitalized for at least one night whereas an outpatient does not require a hospital stay. The hospital offers 2 types of rooms:

- 'S': A *Standard* room which has 4 beds and the room rate is RM100.00 per night, and
- 'P': A *Private* room which has 1 bed and the room rate is RM200.00 per night.

You are required to create classes to be used in a patient billing application. The data to be stored and the calculation of charges for each type of patient are shown below:

Patient Type	Data	Calculation of Total Charges
Outpatient	visit id, name, registration fees, consultation fees	total charges = registration fees (RM30.00) + consultation fees
Inpatient	visit id, name, specialist charges, lab charges, room type, duration of stay	total charges = specialist charges + lab charges + room charges <i>where</i> room charges = duration of stay * room rate

Write the following classes:

- An *abstract class* named **PatientBill**
- The class **OutpatientBill** which is derived from the **PatientBill** class
- The class **InpatientBill** which is derived from the **PatientBill** class

Requirements:

- Define and use *static variables* to represent the registration fees and room rates in the appropriate classes.
- Provide a method to calculate the total charges for the patient bill.
- For the abstract class, define the data fields as protected and declare *abstract method(s)* where appropriate.

B. Write a test program that creates an array of 4 **PatientBill** objects. For each object, display the bill information and also the total charges.

C. Add a method to your test program named **computeTotalCollection** that takes an array of **PatientBill** objects as parameter and then computes and returns the sum of all the bills.