Charotar University of Science and Technology [CHARUSAT]
Faculty of Technology and Engineering
Devang Patel Institute of Advance Technology and Research
Department of CE/CSE

Subject: CE251 Java Programming

Unit Test- II

Semester: 3rd Sem B. Tech. (CE/CSE) **Maximum Marks: 16**

Date: 03/10/2019 Thursday **Time: 1 Hour**

Problem-1 (4 Marks)

Create a class **JavaPackageArrayList** having main method. Performing following functionality:

- Create a **generic** ArrayList having all 14 java package name of type **String**.
- Store all package name and also add duplicate package names.
- Print all package names.
- Create another ArrayList of java **Data Types** and add into the package list
- Print the size of new ArrayList
- Remove a particular package name and data types from new ArrayList and print the size of ArrayList again.

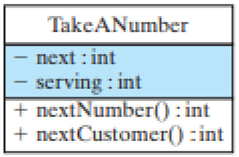
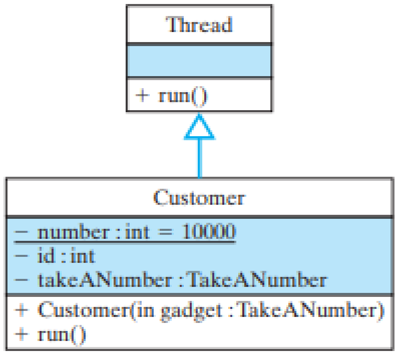
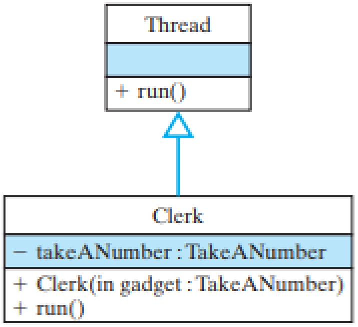
Problem-2 (6 Marks)

In an Engineering College, there are 5 subject in first semester and 5 subject in second semester. Faculty has evaluated the result and stored in a text files named "**FirstSemesterResult.txt**" and "**SecondSemesterResult.txt**" respectively. A University has applied new criteria for student. According to criteria a student can't promote to next academic year if he/she have less than **4.5 CGPA**. A developer is trying to implement this situation using user define exception named as "**LowCGPIException**". Write a Java program to publish the result in another text file named "**Result.txt**", it will contain the student CGPA if it fulfills the University criteria otherwise not.

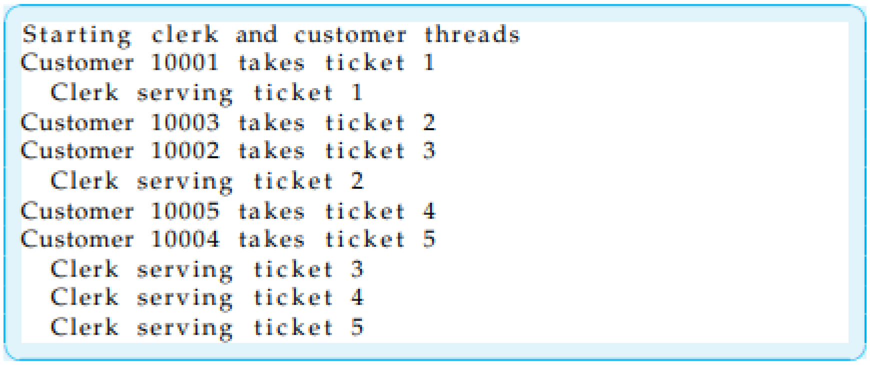
Note- You can assume there is only one student enrolled in engineering and above text file contain 5 subject marks out of **100** and separated by new line. For Calculating CGPA, just do the average of both the semesters marks and compare with **4.5**.

Problem-3 (6 Marks)

Let's simulate **take-a-number** devices that are used in **bakeries** to manage a **waiting line**. Customers take a number when they arrive, and the clerk announces who's next by looking at the device. As customers are called, the clerk increments the "next customer" counter by one. Your task is to build a multithreaded simulation that uses a model of a take-a-number device to coordinate the behavior of customers and a (single) clerk in a bakery waiting line. Write a Java program to simulate the all below classes and get the result.

 TakeANumber − next : int − serving : int + nextNumber() : int + nextCustomer() : int Figure 1: The TakeANumber object keeps track of numbers and customers.	 Thread + run() Customer − number : int = 10000 − id : int − takeANumber : TakeANumber + Customer(in gadget : TakeANumber) + run() Figure 2: The Customer thread.	 Thread + run() Clerk − takeANumber : TakeANumber + Clerk(in gadget : TakeANumber) + run() Figure 3: The Clerk thread.	The Bakery Class contain main method

Output-



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Starting clerk and customer threads
Customer 10001 takes ticket 1
  Clerk serving ticket 1
Customer 10003 takes ticket 2
Customer 10002 takes ticket 3
  Clerk serving ticket 2
Customer 10005 takes ticket 4
Customer 10004 takes ticket 5
  Clerk serving ticket 3
  Clerk serving ticket 4
  Clerk serving ticket 5
```