VIT®

Vellore Institute of Technology

Continuous Assessment Test (CAT – II) – March 2022

Programme	: B.Tech(CSE)	Semester	: Winter 2021 – 22
Course	: Java Programming	Code	: CSE1007
		Class Nbr	: CH2021225000744
Faculty	: Dr. Pradeep. K	Slot	: D2+TD2
Time	: 1 ½ hours	Max. Marks	: 50

Answer all the Questions

1. Read the **Register Number** and **Mobile Number** of a student.

   - Throw a suitable exception if the Register Number does not contain exactly 9 characters or the Mobile Number does not contain exactly 10 characters.

   - Raise an appropriate exception if the Mobile Number contains any character other than a number.

   - Throw a suitable exception if the Register Number contains any characters other than numerals and alphabets.   **10**

   - In the Register number, first two digits should be numbers, next three characters should be alphabets and last four digits should be numbers. If they are valid, print the message 'valid'; else raise the appropriate exception.

   Write a Java program for the above scenario.

2. Write a Java program to get users first name, last name and Ration card number. Validate the Ration card and display a message that says "Valid Ration card" or display "Invalid Ration Card" by throwing a user-defined exception. Display "Valid Ration card", if the Ration card passes all the following criteria.
   - Number of characters should be 10.
   - Characters should be a combination of Alphabetic (Caps) and Numeric only.
   - First 3 characters should be of alphabets only.   **10**
   - Fourth character should be of any one character of the following set : {A,B,C,F,G,H,J,L,P,T}.
   - 5th character should be first letter of the last name given.
   - 6th to 9th characters should be number ranging from 0001 — 9999.
   - 10th Character should be an alphabet.

3. Akash and Gupta are well settled twin brothers. They lost their parents during their young age. Akash got a request from an old age home called "Anandam Old Age Home" for donation. Akash and Gupta decided to transfer Rs.**10000/-** and Rs.**8000/-** respectively to "**Anandam Old Age Home**" during their birthday. Create two synchronized threads in Java that helps them for money transfer to **Anandam Old Age Home** simultaneously

   - Create 3 account objects namely Akash, Gupta and Anandam Old Age Home with some sufficient initial balance in main method
   - Thread1 should transfer Rs.10,000/- from Akash account to Anandam Old Age Home
   - Thread2 should transfer Rs.8,000/- from Gupta account to Anandam Old Age Home.

   10

4. Assume that there are 2 files namely **Names1.txt** and **Names2.txt** that stores sorted names of the students who would be participating in Activity1 (Basketball event) and Activity2 (Cricket event), respectively. Create a file "Names.txt" which stores the names from both the files. Note that there should not be any repetition of names in "**Names.txt**" and while writing names, make sure the file is also sorted. Also, read "**Names.txt**" and display the stored names in the console. Write a Java program to implement the above scenario.

   10

5. Define a vaccination class for storing the COVID vaccinated (first dose) people in an Institution with the following details: Aadhar number, Name, DOB (as a string or as a date object) and date of vaccination. Create a map with a three-digit vaccination ID as the key and the vaccine objects as the values.

   E.g.:

   101 - 124546657342, Akash, 25/06/1974, 01/04/2020
   102 - 765839030330, Gupta, 23/05/1956, 10/04/2020
   Here 101 and 102 are the keys.

   Write a Java program that performs the following operations:

   a. Print the names of those who were vaccinated in a given month (Accept month from the user)
   b. Print the Aadhar number of the people whose age is below 45 and got vaccinated.
   c. Calculate the second dose date for those who completed the first dosage.

   10