



VIT
Vellore Institute of Technology

Continuous Assessment Test – II

Programme Name & Branch: B.Tech

Course Name & Code: Java Programming – CSE1007

Class Number: 5780, 5876, 5769, 6093, 5773

Slot: D1 + TD1

Exam Duration: 90 Mins

Maximum Marks: 50

Answer ALL Questions (5 * 10 = 50 Marks)

- VIT PAT Office has shortlisted merit students from B.Tech 2016 batch, possessing programming skill in Java for an internship in a partner university abroad. Create a class 'StudentDetails' with instance members – Register Number, Name, Mobile Number, Aadhar Number and Passport Number. Write a program to read the details of the student and validate the Aadhar Number and Passport Number.

A valid Aadhar Number has 14 characters, where the first 4 characters are digits followed by a space, the next 4 characters are digits followed by a space and the last 4 characters are digits. Example – 1234 5678 9123. If the Aadhar number read is not valid throw an user-defined exception "InvalidAadharNumberException".

A valid Passport Number has 8 characters, where the first character is an uppercase alphabet followed by 7 digits. Example – R9719502. If the Passport Number read does not meet the above criteria throw an user-defined exception "InvalidPassportNumberException".

Write a main class that creates an object of type StudentDetails only when the input details are valid.

(10)

- Your Java faculty evaluates Digital Assignment-I and stores the count of students who have scored 1 mark, 2 marks and so on, as follows.

Marks (x_i)	1	2	3	4	5	6	7	8	9	10
Student Count (f_i)	3	4	16	9	11	8	4	6	5	2

She/He wants to calculate the mean of the distribution given by

$$\text{Mean} = \frac{\sum_{i=1}^n f_i x_i}{\sum_{i=1}^n f_i}$$

Assist her/him in completing this task by spawning two threads out of which one works for calculating $\sum_{i=1}^n f_i x_i$ and the other for calculating $\sum_{i=1}^n f_i$. The main thread should calculate mean of the marks.

(10)

- A company desires to shortlist suitable candidates for a particular job vacancy under sports quota. Create a class by name ApplicantDetails with the attributes – Name, Age, Address, Programme, CGPA, University Name, Game Name, a boolean variable 'RepresentedCountry' to hold true or false to indicate whether or not the applicant has represented the country in an international championship, a boolean variable 'RepresentedState' to hold true or false to indicate whether or not the applicant has represented the state in a national championship, an integer variable 'RepresentedStatePosition' to hold the position obtained (1st, 2nd or 3rd) if 'RepresentedState' is true else initialize it to 0 and so on.

4. Create two Hashmaps – one for storing the courses registered by B.Tech students in the current semester and the faculty who handles the course as key-value pairs and the other Hashmap for storing the class time and the course to be handled at that time as key-value pairs. Eg., 8AM=> Maths, 9AM=>Java, 10AM=>OOSE and so on. Write the code to
- add or remove a course from the first Hashmap
 - iterate over the maps and display the key-value pairs stored in them
 - Given a particular timing, display the name of the faculty who will be handling the class at that time.
- (10)

- 5 a) Write a generic function MinMax that takes an array as an argument and displays the maximum and minimum element. Write a main method that invokes the above method for Integer and Float types. (5)

- b) Write the output of the following code snippet when executed with "java Test". (1)

```
class Test
{
    public static void main(String[] args)
    {
        int a = args.length; int b = 20;
        try
        {
            double c = b/a;
        }
        catch(ArithmeticException e)
        {
            e.printStackTrace();
            c = 0;
        }
        System.out.println(c);
    }
}
```

- c) Will the following program compile successfully? Justify your answer. (1)

```
class Test implements Runnable
{
    public void run()
    {
        for(int i=1;i<=5;i++)
        {
            System.out.println("The current value = "+ i);
            Thread.sleep(1000);
        }
    }
}
```

- d) Write a program to read the name of a person in the form First Middle Last. Using the method of PrintWriter print the name in form Last, First M. where 'M' is the person's middle initial. (3)
- Example: Input – William Jefferson Clinton
Output – Clinton, William J.