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The Assam Royal Global University, Guwahati
Royal School of Information Technology
BCA/B.Sc. IT 3rd Semester/ MCA Integrated/M.Sc. IT Integrated
Special Supplementary Examination, August 2024
Course Title: JAVA Programming
Course Code : CAP052C301/ INT052C301

Time: 3 Hours

Maximum Marks: 70

Note: Attempt all questions as per instructions given.

The figures in the right-hand margin indicate marks.

Section – A

1. Attempt **all** questions. (Maximum word limit 50) **2 x 8**
- a. Explain primitive type conversion and casting in java.
 - b. Explain the use of break and continue in loops in java.
 - c. Can we access the private data of a class in a non member function? If yes , how?
 - d. Write two important points about static member functions and static data members.
 - e. How do we start a thread?
 - f. Define interface. Give an example.
 - g. What are the interfaces available in applet class?
 - h. Are getCodeBase() and getDocumentBase() the same? Explain.

Section – B

2. Attempt **any two** of the following: **7x 2**
- a. Discuss the need of object-oriented programming.
 - b. You are tasked with creating a program that calculates a student's final grade based on their scores in three different subjects: Math, Science, and English. The grading system is as follows:
Each subject is scored out of 100 points.
To pass a subject, a student must score 50 or higher.
To obtain an "A" in a subject, a student must score 90 or higher.
To obtain a "B" in a subject, a student must score 80 or higher.
To obtain a "C" in a subject, a student must score 70 or higher.
To obtain a "D" in a subject, a student must score 60 or higher.
Anything below 60 in a subject results in an "F" (Fail).
Write a program that takes the scores in Math, Science, and English as input and calculates the student's final grade, considering the following rules:
If the student fails any subject (score below 50), they receive an overall grade of "Fail."
If the student passes all subjects but gets at least one "D" and no higher grades, their overall grade is "Poor."
If the student passes all subjects, gets at least one "C" but no higher grades, their overall grade is "Satisfactory."
If the student passes all subjects, gets at least one "B" but no higher grades, their overall grade is "Good."
If the student passes all subjects with at least one "A," their overall grade is "Excellent."
Your program should display the student's final grade based on the input scores.

- c. Display the following pattern using nested for loop.

```
1
123
12345
1234567
123456789
1234567
12345
123
1
```

3. Attempt **any two** of the following:

7 x 2

- A class "Calculator" has performs the four basic operations through the member functions "add()", "subtract()", "multiply()" and "divide()". The functions should take two objects as parameters and return the result as an object. Use proper documentation and necessary programming techniques to make it more user friendly.
- Write a note on constructors which must include its need, type and various important points.
- Write a note on inheritance which must include its need, type and various important points.

4. Attempt **any two** of the following:

7 x 2

- What is the difference between implicit and explicit import statement? Which one takes less time for compilation? Justify.
- Explain the role of an interface in multiple inheritance. Write a java program in support of your explanation.
- Write program to print the name, priority and thread group of the thread . Also change the name of the current thread to "Java" and display the details of the current thread.

5. Attempt **any two** of the following:

7 x 2

- Explain the order of method invocation in an Applet.
- Describe the arguments used in the drawRect() and drawRoundedRect().
- Write a program to check whether the file is readable, writable, or hidden.