Fundamentals of Programming

Model Paper

1. .

    1.1. What is Java virtual machine?

    1.2. List three features of Java Programming Language.

    1.3. Derive the answer of followings.

        1.3.1. 10 / 5 * 2 - 3 % 2;

        1.3.2. int a = 10;

              int b = 5;

              System.out.println(++a * 2 + b-- % 3);

    1.4. Write a Java program that takes a value in millimeters (mm) from the user and converts it to centimeters (cm).

2. .

    2.1. Write the syntax of switch case control structure.

    2.2. What is the output of following code segment?

```
public class AndOperatorExample {
   public static void main(String[] args) {
      boolean isSunny = true;
      boolean isWarm = false;

      boolean isPerfectWeather = isSunny && isWarm;

      System.out.println("Is it sunny? " + isSunny);
      System.out.println("Is it warm? " + isWarm);
      System.out.println("Is it perfect weather? " + isPerfectWeather);
   }
}
```

    2.3. Write a java program to get a letter from the user and check whether it is a vowel or consonant using switch case?

3. .

    3.1. Compare and contrast the for loop, while loop, and do-while loop in Java. Discuss their similarities and differences in terms of syntax, execution flow, and typical use cases.

    3.2. Write a Java program to print the following number series.

        25, 16, 9, 4, 1

4. .

    4.1. Write a Java program that takes an array of integers as input and finds the sum and average of all the numbers in the array.

    4.2. What is exceptions handling in Java? Explain your answer with a coding example.

5. .

    5.1. Briefly explain the four main object oriented concepts.

    5.2. Write a java class Circle including suitable variables and at least two methods.
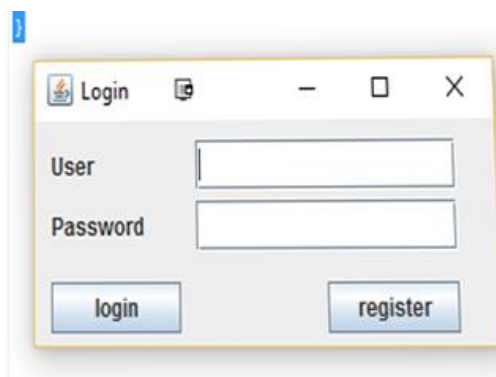
    5.3. Write DemoCircle Class with main method.

        5.3.1. Create an object of the Circle class created above.

        5.3.2. Call the methods you created in above Circle class.

6. .

    6.1. Write the java code segment to generate the following GUI using Java Swing.

    6.2. When the user clicks on the login button, if the entered username is "SLIATE" and the entered password is "1234", display the message "Successful login". Otherwise, display the message "Invalid login". Write the code segment that captures the username and password from the user and checks for successful login or invalid login.