



COMSATS University Islamabad
Department of Computer Science
Midterm Examination - FALL 2025

Class: BCS/BSE/BAI/BDS/BCT.

Subject: CSC103-Programming Fundamentals

Instructor: Prof. Dr. Manzoor Ilahi Tamimy

Marks: 25

Time allowed: 90 Min

Date: 30-10-2025

[CLO-1]-Demonstrate the fundamental concepts of programming.

Question# 1: Show the output/error of the following code snippets.

(5 marks)

i	<pre>public class TestErrors{ public static void main(String[] args) { int final = 30; double value = 35.5; int index-value = 10; System.out.println(total); } }</pre>	ii	<pre>public class Test5 { public static void main(String[] args) { int x = 9, y = 5, z = 10; boolean result = (x > y) && (z < x + y) (y % 2 == 0); System.out.println(result); } }</pre>
iii	<pre>public class IncrementTest { public static void main(String[] args) { int a = 4; int b = ++a + a++; int c = --b + a; System.out.println("a = " + a + ", b = " + b + ", c = " + c); } }</pre>	iv	<pre>public class IfElseCheck { public static void main(String[] args) { int num = 21; if (num % 2 == 0) System.out.println("Even Number"); else if (num % 3 == 0) System.out.println("Divisible by 3"); else System.out.println("Other case"); } }</pre>
v	<pre>public class Mystery{ public static void main(String[] args){ int y; int x = 1; int total = 0; while (x <= 10){ y = x * x; System.out.println(y); total += y; ++x; } // end while System.out.printf("Total is %d\n", total); } // end main } // end class Mystery</pre>	vi	<pre>public class Mystery2 { public static void main(String[] args) { int count = 1; while (count <= 10) { System.out.println(count % 2 == 1 ? "*****" : "+++++++"); ++count; } // end while } // end main } // end class Mystery2</pre>

[CLO-2]- Employ programming constructs using a programming language.

Question# 2:

(5 marks)

Mr. Ali, a mathematician, is studying a unique sequence of integer numbers. The sequence is generated by a special process, and it ends with the number 0. Mr. Ali is interested in finding the three highest numbers in sequence he encounters. These numbers are crucial for his research, representing significant values within the sequence. To assist Mr. Ali, you are required to write a Java program that reads a sequence of integer numbers and determines the three highest numbers in the sequence. **Do not use Arrays to solve this problem.**

Sample Run

Input: 3 5 1 8 9 5 6 50 43 0

Output: Three highest Numbers: 50 > 43 > 9

Question# 3:**(5 marks)**

Sales Commission Tracker: A company has 3 salesmen, and each sells 4 products. The commission of salesman is 10% of the total sale value.

Write a program that:

- Takes input for sales value of 4 products per salesman.
- Calculates and prints total sales and commission for each salesman.

Note: You are required to solve this question using nested loops for salesman and products.

Sample Run

Enter sales for Salesman 1:

Product 1: 1000

Product 2: 1200

Product 3: 800

Product 4: 1500

Total = 4500, Commission = 450

Enter sales for Salesman 2:

Question# 4:**(7+3 Marks)**

Given the following *Shape* class with an incomplete definition:

```
public class Shape {  
    public static void main(String[]  
args){  
        double area = Shape.calculateArea(4.5);  
        System.out.println("Area of the circle with a radius of 4.5 is: " + area);  
        area = calculateArea(9.8, 6.5);  
        System.out.println("Area of the rectangle with side lengths 9.8 and 6.5 is: " + area);  
        area = Shape.calculateArea(3.1, 2.3, 3.5);  
        System.out.println("Area of the trapezoid with bases 3.1 and 2.3 and a height of 3.5 is: " +  
area);  
    }  
}
```

Question: a) Complete the class so that it executes without any error and correctly displays the areas of circle, rectangle, and trapezoid. b) Additionally, show the complete working of the call stack during method execution.

For your information:

$$\text{Area of circle} = \pi \times r a d i u s ^2$$

$$\text{Area of rectangle} = w i d t h \times h e i g h t$$

$$\text{Area of trapezoid} = \frac{(base1+base2)}{2} \times h e i g h t$$

*****Good Luck*****