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Question Paper Code: U4804

B.E./B.Tech. DEGREE EXAMINATION, APRIL 2024

Fourth Semester

Computer Science and Engineering

21UIT404 - JAVA PROGRAMMING

(Common to IT,CSD & CSE(AI&ML) Engineering branches)

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Outline the purpose of JIT compiler. CO1-U
2. Develop a Java program to find the area of a circle and display the calculated area. CO2-App
3. Explain the purpose of static keyword in main() method. CO1-U
4. Develop a Java program to interchange the values without using temporary variable. CO2-App
5. Differentiate Method Overloading and Method Overriding with necessary syntax CO1-U
6. Why do we need super constructors? CO1-U
7. Compare Checked Exceptions and Unchecked Exception. CO1-U
8. Consider the following code snippet given below. What will be the output? Explain it. CO2-App

```
import java.util.List;
import java.util.ArrayList;
public class ListTester {
    public static void main(String[] args) {
        List<String>nameList = new ArrayList<>();
        nameList.add(1,"One");
        nameList.add(2,"Two");
        for(String no:nameList){
            System.out.println(no);
        }
    }
}
```

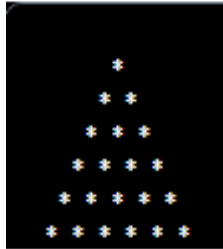
```
}  
}
```

- 9 List and Explain any 5 character extraction method. CO1-U
- 10 Develop a java program to reverse the given string “INFORMATION TECHNOLOGY” using string reverse method CO2-App

PART – B (5 x 16= 80 Marks)

11. (a) (i) Develop a JAVA Program for the following scenario: CO2-App (8)
- The assumption over here is that each food item costs Rs.150. The Regular customers are provided with a 5% discount for their orders whereas the Guests need to pay an additional delivery charge of Rs.5. First, the customer type is checked, If the customer type is Regular or Guest. Also, for regular customers, if the total cost exceeds Rs.300, a special gift voucher will be provided to the customers. If customer type is invalid, a certain code should execute. Find the total cost for an order.

- (ii) Develop a JAVA program to print the following Pyramid pattern CO2-App (8)



Or

- (b) (i) Write a Java program to print Floyd’s triangle. CO2-App (8)
- (ii) Write a Java program to find and print the duplicate element in an array. CO2-App (8)
12. (a) Create a new class Restaurant in the Java project SwiftFood with the instance variables and methods mentioned below. CO2-App (16)

Instance variables	<ul style="list-style-type: none">• restaurantName: String• restaurantContact: long• restaurantAddress: String• rating: float
Methods	<ul style="list-style-type: none">• displayRestaurantDetails(): void

Method Description

displayRestaurantDetails()

- Display the details of the restaurant (the values of the member variables)
- Create an object of the Restaurant class, initialize the instance variables, and invoke the displayRestaurantDetails() method in the main() method of the Tester class

Or

- (b) Problem Description: ABC Confectionary is a chocolate manufacturer. Every chocolate which is manufactured will be with a default weight and cost. The cost and weight might be modified later based on business needs.

Create a class **Chocolate**, with a parameterized constructor and a default constructor. Also, use the "this" keyword while initializing member variables within the parameterized constructor.

Constructor Description:

- Chocolate(int barCode, String name, double weight, double cost):

In the constructor initialize the member variables: bar Code, name, weight, and cost, according to the table given below:

Attributes	Values
barCode	101
name	Cadbury
weight	12
cost	10

13. (a) A class **Shape** is defined with two data members length and breadth and two overloading constructors in it and a method calculate() to find the area of the rectangle. Derive a class **Box** with a data member height and define the constructors using super class constructors chaining in it. Also, override a method calculate() to find the volume of a box. From main() method, Call the appropriate constructors and methods.

Or

- (b) Write a Java program that has a class **Train** with data members no of seats first tier, no of seats second tier, no of seats third tier and methods to set and display data. Derive a class **Reservation** that has data members seats booked first, seats booked second and seats booked third and methods to book and cancel tickets, and display the status.

14. (a) Explain the accessibility of each access modifier inside packages. CO1-U (16)

Or

- (b) Explain the Try, Throw, Catch, Finally blocks in Exception handling mechanism CO1-U (16)

15. (a) Write a java program to find the count of the highest occurring character in the string passed to the method and return the count. CO2-App (16)

Test the functionalities using the main() method of the Tester class.

Sample Input	Expected Output
success	3
associated	2

Or

- (b) Develop the java code to find the following using string methods for the String input s= " GeeksforGeeks ", s1="Geeks", s2="forGeeks", s4 = "Learn Share Learn": CO2-App (16)

- Length
- Find the character at thirds position
- Substring(3)
- Substring(2,5)
- Concatenate s1 & s2
- Compare s1 & s2
- Change the string "forgeeks" to upper case and then to lower case
- Replace the word ' f ' to ' g ' in string "s"