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Question Paper Code: U4804

B.E./B.Tech. DEGREE EXAMINATION, NOV 2025

Fourth Semester

Computer Science and Engineering

21UIT404-JAVA PROGRAMMING

(Regulations 2021)

(Common to Information technology & Computer Science and Design Engineering Branches)

Duration: Three hours

Maximum: 100 Marks

PART A - (10 x 2 = 20 Marks)

1. Outline any 3 benefits and applications of JAVA CO1-U
2. Develop a Java Program to find the factorial of a given number CO2-App
3. List out the Access Specifier in Java. CO1-U
4. What is the purpose of using 'this' keyword in Java? Give an example. CO1-U
5. Define Inheritance. Mention the advantage of using it. CO1-U
6. Why do we need super constructors? CO1-U
7. What is Java package and how is it used? CO1-U
8. Which statement can be used to access the classes and interface of a different package from the current package? CO3-Ana
9. Develop a java Program to concatenate two strings "ABC" and "XYZ" using concat() method CO2-App
10. Write the syntax with an example, To create a string object and stores the array of characters in it. CO1-U

PART – B (5 x 16= 80 Marks)

11. (a) (i) Write a Java program to print Floyd's triangle.(8m) CO1-U (16)
(ii) Write a Java program to find and print the duplicate element in an array.(8m)
- Or
- (b) Outline the operators available in java with an example program CO1-U (16)

12. (a) Write a Java program to perform Matrix Addition and subtraction CO2-App (16)
Or
- (b) A book shop maintains the inventory of books that are being sold at the shop. The list includes the details such as author, title, price, publisher and stock position. Whenever a customer wants a book, the sales person inputs the title and author and the system searches the list and displays whether it is available or not. If it is not, an appropriate message is displayed. If it is, then the system displays the book details, and requests for the number of copies required. If the requested copies are available, the total cost of the requested copies is displayed. Otherwise, the message “Required copies not in stock” is displayed. Design a system using a class called books with suitable methods and constructors. CO2-App (16)
13. (a) Create a class Bike that has data members gear, speed and methods apply Brake() to decrease the speed to the given value and speedup() to increase the speed to the given value. Derive a class Mountain Bike from class Bike that has a data member seat Height and a method set Height() to set the seat Height to new value. Provide constructors to initialize the respective data members. Provide to String() to print the respective data members. From main() method, display the members of all the classes. CO2-App (16)
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. CO2-App (16)
14. (a) Develop a java program with package and interface to calculate the area and perimeter of Circle, Rectangle and Ellipse with the following input : CO2-App (16)
- Create a package with name My Interface
 - Interface with name Geo Analyzer with variables pi, area and perimeter
 - Create classes Circle, Ellipse and Rectangle
- Create a Main class as shape
Or

- (b) Write a Java Code with its output as follows: CO2-App (16)
 Create an array list and add the strings such as “C++,Java, C, python” and implement the following operations:
- Retrieve the string at index 2
 - Change the string at index position 2 as “programming”
 - Remove the string at index position 0

15. (a) 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 (6)
- 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”

Or

- (b) Develop the java code for the following method description: CO2-App (8)
Method description
 checkpalindrome(String str)

- Check whether the string passed to the method is palindrome or not
- Return true if the string is palindrome or not

Test the functionalities using main() method of the tester class

Sample Input and Output	
Sample Input	Expected Output
radar	true
apple	false

