Darshan UNIVERSITY

DIETDS-CE
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Lab Manual

2302CS304 – Object Oriented Programming with JAVA

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Lab No.	Practical Description
1	**Demonstrate of Basics of C programming** 1) Write a program to find whether a number is Positive or Negative. (A) 2) Write a program to find maximum number from given three numbers. (A) 3) Write a program to Print day name of week using switch. (A) 4) Write a program to print 1 to N number using for, while and do…while loop. (A) 5) Write a program to check the given number is Prime or not. (B) 6) Write a program to Check whether the given number is Palindrome or not. (C) 7) Write a program to Check whether the given number is Armstrong or not. (C)
2	**Array & String in C programming** 1) Write a program to read N numbers from user and print in normal and reverse order. (A) 2) Write a program to calculate Sum and Average of given N numbers using Array. (A) 3) Write a program to perform multiplication of two matrixes. (A) 4) Write a program to find length of given string without using built-in function. (A) 5) Write a program to Find Max and Min of given N numbers from an array. (B) 6) Write a program to Copy given string into another string without using built-in function. (C)
3	**Demonstrate of Basics of Java programming** 1) Introduction to JDK (Java Development Kit) and path setting. (A) 2) Write a program to print “Welcome to Java”. (A) 3) Write a program to print your address i) using single print ii) using multiple println. (A) 4) Write a program to calculate Area of Circle. (area = pie*r*r) (B) 5) Write a program to calculate simple interest ((principal*roi*time period)/100). (C)
4	**Implementation of Scanner class and other Basic Java program** 1) Write a program to print addition of 2 numbers (with Scanner). (A) 2) Write a program to convert temperature from Fahrenheit to Celsius. (°C = [(°F - 32) * 5] / 9). (A) 3) Write a program that reads a number in meters, converts it to feet, and displays the result. (Feet = Meters * 3.28084)(A) 4) Body Mass Index (BMI) is a measure of health on weight. It can be calculated by taking your weight in kilograms and dividing by the square of your height in meters. Write a program that prompts the user to enter a weight in pounds and height in inches and displays the BMI. (Note: - 1 pound=.45359237 Kg and 1 inch=.0254 meters) (B)
5	**Implementation of Operators and Type Casting** 1) Write a program to check if given number is Positive or Negative using the ternary operator. (A) 2) Write a program in to find maximum number from given three numbers using conditional

	operator. (A) 3) Write a program to demonstrates Widening and Narrowing type casting. (A) 4) Write a program to demonstrate the usage of bitwise operator. (A) 5) Write a program to check if given number is Odd or Even using the ternary operator. (B)
6	**Implementation of Control Structure – Selection statement** 1) Write a program to check whether a letter is a vowel or consonants. (A) 2) Write a program to determine grade based on marks. Read marks of five subjects. Calculate percentage and print class accordingly. Fail below 35, Pass Class between 35 to 45, Second Class between 45 to 60, First Class between 60 to 70, Distinction if more than 70. (A) 3) Write a program to make a Simple Calculator using switch...case. (A) 4) Write a program to find out largest number from given three numbers using nested if and if-else-if ladder. (B) 5) Write a program to check whether a year is a leap year. (C)
7	**Implementation of Control Structure – Looping statement** 1) Write a program to print numbers from 1 to 10 using a for, while and do…while loop. (A) 2) Write a program to print sum of N numbers using for and while loop. (A) 3) Write a program to find factorial of the given number. (A) 4) Write a program to check whether the given number is prime or not without using function. (B) 5) Write a program to print given number in reverse order. (C) 6) Write a program to print following pattern using java. (C) i) * ** *** **** ***** ii) 12345 1234 123 12 1 iii) 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 iv) 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
8	**break and continue statement** 1) Write a program to print numbers from 1 to 10, but stop when it reaches 5 using break. (A) 2) Write a program to print numbers from 1 to 10, but skip 5 using continue. (A) 3) Write a program to print numbers from 1 to 10, but skip 5 and 8 using continue. (A) 4) Write a program to Stop a loop when number is divisible by 7. (B)

9	**Demonstration of Function** 1) Write a program to calculate simple interest using method. (A) 2) Write a program to find maximum number from given three numbers using method. (A) 3) Write a program to find the factorial of given number using recursion. (A) 4) Write a program to generate Fibonacci series of N given number using method. (B) 5) Write a program to accept a number and check whether the number is prime or not. Use method name check (int n). The method returns 1, if the number is prime otherwise, it returns 0. (C)
10	**Implementation of Single and Multidimensional Array** 1) Write a program that create an array, take the size of array from the user, take the array member from the user and display it using loop. (A) 2) Write a program to count number of even or odd number from an array of N number. (A) 3) Write a program to read values in two-dimensional array and print them in matrix form. (A) 4) Write a program to perform addition of 3*3 matrix. (A) 5) Write a program to perform multiplication of two 3*3 matrix & display it in matrix form. (A) 6) Write a program to remove duplicate elements from an array. (B) 7) Write a program to find the second largest and second smallest number in an array. (C)
11	**Searching and Sorting an array** 1) Write a program to search for an element in an array using linear search**.** (A) 2) Write a program to search for an element in an array using binary search**.** (A) 3) Write a program to sort given N numbers. (B)
12	**Perform programs using object oriented concepts (Part - I)** 1) Write a program in java to use of class, object and method. (A) 2) Create a class named Candidate with Candidate_ID, Candidate_Name, Candidate_Age, Candidate_Weight and Candidate_Height data members. Also create a method GetCandidateDetails() and DisplayCandidateDetails(). Create main method to demonstrate the Candidate class. (B) 3) Create a class named Bank_Account with Account_No, User_Name, Email, Account_Type and Account_Balance data members. Also create a method GetAccountDetails() and DisplayAccountDetails(). Create main method to demonstrate the Bank_Account class. (C)

13	**Perform programs using object oriented concepts (Part - II)** 1) Write a program with following specifications: (A) Class Name: Employee Data Members: Employee_ID, Employee_Name, Designation, Age, Salary. Member Functions: GetEmployeeDetails () and DisplayEmpolyeeDetails (). 2) Write a class program with following specifications: (B) Class Name: Student Data Members: Enrollment_No, Student_Name, Semester, CPI and SPI Member Functions: GetStudentDetails () and DisplayStudentDetails (). 3) Write a program to create Circle class with area and perimeter function to find area and perimeter of circle. (C)
14	**Implementation of built-in function of String & StringBuffer** 1) Write a program to demonstrate the built-in function of String class. (e.g. length(), charAt(), concat(), indexOf(), equals(), valueOf(), toString (), trim(), substring()) (A) 2) Write a program to use of StringBuffer class methods. (e.g. append(), insert(), delete(), reverse(), charAt(), capacity(), toString() and replace()). (A) 3) Write a Java String program to print even length words. (B) 4) Write a program to implement a program to check if a string is a palindrome. (C)
15	**Implementation of built-in function of Math class** 1) Write a program to demonstrate the built-in function of Math class. (e.g. min(), max(), random(), pow(), sqrt(), round(), ceil(), floor(), abs())(A) 2) Write a program to print the largest number from the three given number using Math class function. (A) 3) Write a program to check that whether the given number is Armstrong or not using Math class function. (B)
16	**Implementation of built-in function of Nested class, Inner class and Wrapper class** 1) Write a program to demonstrate concepts of autoboxoing and unboxing using wrapper class. (A) 2) Write a program to demonstrate concept of nested class. (B) 3) Write a program to demonstrate anonymous inner class. (C)
17	**Demonstration of Method overloading and Constructor** 1) Write a program that calculates area of circle, triangle and square using method overloading. (A) 2) Write a program to use of default and parameterized Constructor. (A) 3) Write a program to use of copy Constructor. (B) 4) Write a program to demonstrate constructor overloading by creating multiple constructors with different parameters. (C)

18	**Implementation of this and static keyword** 1) Write a program to demonstrate use of this keyword. (A) 2) Write a program to demonstrate use of static keyword (A) 3) Write a program static block which will be executed before main() method in a class. Also demonstrate the static method. (B) 4) Check whether this can access the Static variables of the class or not. (C)
19	**Implementation of types of inheritance** 1) Write a program to demonstrate single inheritance, multilevel inheritance and hierarchical inheritance. (A) 2) Create a class named shape. In this class, we have three subclasses circle, triangle and square. Write a program to display area of all three classes. (B) 3) Write a program for implementing single inheritance which creates one class account_details for getting account information and another class interest for calculating and displaying total interest from the data inserted from account details. (C)
20	**Implementation of function overriding, super and final keywords** 1) Demonstrate the Method overriding using example. (A) 2) Demonstrate the use of Super Keyword to access constructor, function and variable of immediate parent class from the subclass. (A) 3) Demonstrate the use of Final Keyword to prevent function overriding, variable modification and extraction of a class in sub class. (B) 4) Create a class named 'Member' having the following members: (C) 1 - Name 2 - Age 3 - Phone number 4 - Address 5 – Salary It also has a method named 'printSalary' which prints the salary of the members. Two classes 'Employee' and 'Manager' inherits the 'Member' class. The 'Employee' and 'Manager' classes have data members 'specialization' and 'department' respectively. Now, assign name, age, phone number, address and salary to an employee and a manager by making an object of both of these classes and print the same along with specialization and department respectively.
21	**Implementation of the use of abstract class** 1) Create an abstract class Shape with method area(). Create two class Rectangle and Circle which extend this Shape class and calculate area of Rectangle and Circle. (A) 2) An abstract Vegetable class has three subclasses named Potato, Brinjal and Tomato. Write a program that demonstrates how to establish this class hierarchy. Declare one instance variable of type String that indicates the color of a vegetable. Create and display instances of these objects. Override the toString() method of object to return a string

	with the name of vegetable and its color. (A)
22	**Implementation of the use of interface** 1) Write a program in java to perform multiple inheritances using the interface. (A) 2) The Transport interface declares a deliver() method. The abstract class Animal is the super class of the Tiger, Camel, Deer and Donkey classes. The Transport interface is implemented by the Camel and Donkey classes. Write a test program that initialize an array of four Animal objects. If the object implements the Transport interface, the deliver () method is invoked. (A) 3) Declare a class called book having author_name as private data member. Extend book class to have two sub classes called book_publication & paper_publication. Each of these classes have private member called title. Write a program to show usage of dynamic method dispatch (dynamic polymorphism) to display book or paper publications of given author. Use command line arguments for inputting data. (B)
23	**Implementation of Packages and Access Specifiers** 1) Write a program to demonstrate the use of private, public, protected and default access modifiers using two package. (A) 2) Assume that there are two packages, student and exam. A student package contains Student class and the exam package contains Result class. Write a program that generates mark sheet for students. (A) 3) Create class MathOperation in calculator package contains four methods Addition, Subtraction, Multiplication and Division which accept two numbers and perform respective operation. Create class DemoOperation in demoOperation package and call all the method of MathOperation class and display result. (B) 4) Define a class A in package apack. In class A, three variables are defined of access modifiers protected, private and public. Define class B in package bpack which extends A and write display method which accesses variables of class A. Define class C in package cpack which has one method display() in that create one object of class A and display its variables. Define class ProtectedDemo in package dpack in which write main () method. Create objects of class B and C and class display method for both these objects. (B)
24	**Implementation of exception handling mechanism** 1) Write a program to demonstrate try, catch, and finally blocks. (A) 2) Write a program to handle multiple exceptions. (A) 3) Write a program that uses the throw and throws keyword. (A) 4) Write a program to create and handle a user-defined exception. (A) 5) Write a program to create Account class, which is representing a bank account where we can deposit and withdraw money. if we want to withdraw money which exceed our bank balance? We will not be allowed, create a customize exception to handle above situation and display proper error message. (C) 6) Write a program to accept N integer numbers from the command line. Raise and handle exceptions for following cases: (C) - when a number is – ve.

	- when a number is evenly divisible by 10. - when a number is greater than 1000 and less than 2000. - when a number is greater than 7000 Skip the number if an exception is raised for it, otherwise add it to find total sum.
25	**Implementation of File, FileReader and FileWriter class using java** 1) Write a program to create a file to the specified location. (Use File Class) (A) 2) Write a program to copy the content of one file to another file and console. (Use FileReader and File Writer Class) (A) 3) Write a program to Merge the content of two files into single file. (B) 4) Write a program to Copy the content of one file into multiple file. (C)
26	**Demonstrate of FileInputStream, FileOutputStream class** 1) Write a program to demonstrate FileInputStream and FileOutputStream class. (A) 2) Write a program to demonstrate BufferedReader and BufferedWriter class. (A) 3) Write a program to demonstrate BufferedInputStream and BufferdOutputStream class. (B)