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Lab No	Practical
1	**Introduction to java and elementary programming** 1. Introduction to JDK(Java development kit) and Sublime text editor. 2. WAP to print "Welcome to Java, Learning Java Now and Programming is fun". 3. WAP to print your address i) using single print ii) using multiple println
2	**Introduction to java and elementary programming** 1. WAP to print addition of 2 numbers (with Scanner) 2. WAP to calculate Area of Circle. 3. WAP to convert temperature from Fahrenheit to Celsius. 4. WAP to find percentage of 5 subjects. 5. WAP that reads a number in meters, converts it to feet, and displays the result. 6. 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.
3	**Selections** 1. WAP to check whether the given number is positive or negative. 2. WAP that prompts the user to enter a letter and check whether a letter is a vowel or consonants. 3. WAP to find out largest number from given three numbers without using Logical Operator. 4. WAP to 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. 5. WAP to find out largest number from given 3 numbers using conditional operator. 6. WAP to make a Simple Calculator using switch...case 7. Three sides of a triangle are entered through the keyboard. WAP to check whether the triangle is isosceles, equilateral, scalene or right angled triangle. 8. WAP that prompts the user to input number of calls and calculate the monthly telephone bills as per the following rule: Minimum Rs. 200 for up to 100 calls. Plus Rs. 0.60 per call for next 50 calls. Plus Rs. 0.50 per call for next 50 calls. Plus Rs. 0.40 per call for any call beyond 200 calls.
4	**Loop** 1. WAP to print numbers between two given numbers which is divisible by 2 but not divisible by 3. 2. WAP to find factorial of the given number. 3. WAP to find whether the given number is prime or not. 4. WAP to print sum of series 1+1/2+1/3+1/4+.....+1/n 5. WAP to print given number in reverse order. 6. WAP program to calculate the sum of all positive even numbers and the sum of all negative odd numbers from a set of numbers. you can enter 0 (zero) to quit the program and thus it displays the result.

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5	**Methods** 1. WAP to calculate simple interest using method. 2. WAP to find maximum number from given two numbers using method. 3. WAP to generate Fibonacci series of N given number using method. 4. WAP 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. 5. WAP that calculates area of circle, triangle and square using method overloading. 6. Write a method with following method header: public int gcd (int num1, int num2). Write a program that prompts the user to enter two integers and compute the gcd of two integers. [Note:The greatest common divisor (GCD) of two numbers is the largest number that divides them both.]
6	**Arrays** 1. WAP to count number of even or odd number from an array of n numbers. 2. WAP to accept n numbers in an array. Display the sum of all the numbers which are divisible by either 3 or 5. 3. WAP to accept n numbers in an array. Now, enter a number and search whether the number is present or not in the list of array elements by using linear search. 4. WAP to accept 10 numbers in an array. Pass this array to a function name bubble_sort (int m []). Arrange all the numbers in ascending order using bubble sort and display them. 5. WAP to read values in two-dimensional array and print them in matrix form. 6. WAP to read two matrices of size n X n, perform multiplication operation and store result in third matrix and print it. 7. WAP to accept n numbers in an array. Pass this array to a function name selection_sort (int m []). Arrange all the numbers in ascending order using selection sort and display them. 8. WAP to store numbers in 4 X 4 matrix in a two-dimensional array. Find the sum of the numbers of each row and the sum of numbers of each column of the matrix.
7	**Objects and Classes** 1. 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. 2. 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. 3. WAP with following specifications: Class Name: Employee Data Members: Employee_ID, Employee_Name, Designation, Age, Salary Member Functions: GetEmployeeDetails () and DisplayEmpolyeeDetails (). 4. Write a class program with following specifications: Class Name: Student Data Members: Enrollment_No, Student_Name, Semester, CPI and SPI Member Functions: GetStudentDetails () and DisplayStudentDetails ().
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	1. WAP to create Circle class with area and perimeter function to find area and perimeter of circle. 2. Define Time class with hour and minute as data member. Also define addition method to add two time objects. 3. Define class for Complex number with real and imaginary part. Describe its constructor, overload the constructors and instantiate its object. Also define addition method to add two Complex objects.
9	**Objects and Classes** 1. Create first class with following specifications: Class Name: Student Data Members: Enrollment_No, Student_Name, Semester Member Functions: GetStudentDetails () Create second class with following specifications: Class Name: Result Data Members: Enrollment_No, CPI and SPI Member Functions: GetResultDetails () and DisplayResult () DisplayResult method header must be: public void DisplayResult (Student s). 2. Create array of object for Student_Detail (Enrollment_no, Name, Sem, CPI) class for 5 students, read their information and print it. 3. WAP that counts the number of objects created by using static variable.
10	**Object oriented thinking** 1. Create a class named 'Member' having the following members: 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. 2. Design a class named MyPoint to represent a point with x- and y-coordinates. The class contains: The data fields x and y that represent the coordinates with getter methods. o a no-arg constructor that creates a point (0, 0). o a constructor that constructs a point with specified coordinates. o a method named distance that returns the distance from this point to a specified point of the MyPoint type. o a method named distance that returns the distance from this point to another point with specified x- and y-coordinates. Create a class named ThreeDPoint to model a point in a three-dimensional space. Let ThreeDPoint be derived from MyPoint with following additional features:

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	o A data fields named z that represents the z-coordinate. o A no-arg constructor that creates a point (0, 0, 0). o A constructor that constructs a point with three specified coordinates. o A get method that returns the z value. o Override the distance method to return the distance between two points in the three-dimensional space. Write a program that creates two points (0, 0, 0) and (10, 30, 25.5) and display the distance between the two points.
11	**String** 1. WAP to find length of a string without using built-in function. 2. WAP that checks whether a given string is a palindrome or not. 3. WAP to accept a string and display all the vowels present in the word. 4. WAP that prompts the user to enter a decimal number and displays the number in a fraction. Hint: Read the decimal number as a string, extract the integer part and fractional part from the string.
12	**ArrayList** 1. WAP that prompts the user to enter 5 numbers, stores them in an ArrayList, and displays them in increasing order. 2. WAP that creates ArrayList with following value: “Delhi”, “Mumbai”, “Bangalore”, “Hyderabad” and “Ahmedabad” Replace “Ahmedabad” with “Surat” in above ArrayList. 3. WAP that creates ArrayList with following value: “Aarav”, “Kabir”, “Vivaan”, “Ayaan” and “Aditya” Create a sublist with string from above ArrayList which strart with ‘A’. 4. WAP that creates an Array List and adds a Loan object , a Date object , a string, and a Circle object to the list, and use a loop to display all elements in the list by invoking the object’s toString() method.
13	**Exception** 1. WAP to develop a simple command-line calculator which takes operand and operator as a command-line argument, here program terminates if any operand is nonnumeric. Add exception handler to achieve the exception handling with nonnumeric operand and display a message that informs the user of the wrong operand type before exiting. 2. WAP to accept N integer numbers from the command line. Raise and handle exceptions for following cases : - 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. 3. WAP 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 InSufficientFundException to handle above situation and display proper error message.

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14	**Abstract, Interface** 1. The 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. 2. Create interface EventListener with performEvent() method. Create MouseListener interface which inherits EventListener along with mouseClicked(), mousePressed(), mouseReleased(), mouseMoved(), mouseDragged() methods. Also create KeyListener interface which inherits EventListener along with keyPressed(), keyReleased() methods. WAP to create EventDemo class which implements MouseListener and KeyListener and demonstrate all the methods of the interfaces. 3. 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. 4. 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.
15	**JAVAFX** 1. Write a GUI program that display flag of Country of equal size. 2. Write a GUI program that display picture of each player of team.
16	**JAVAFX** 1. WAP that displays the color of a circle as red when the mouse button is pressed and as blue when the mouse button is released. 2. WAP that moves a circle up, down, left or right using arrow keys.
17	**JAVAFX UI Controls and multimedia** 1. Write a GUI program as directed in the lab.
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19	**Binary I/O ,Recursion** 1. WAP that counts number of characters, words, and lines in a file. Use exceptions to check whether the file that is read exists or not. 2. WAP to replace all “word1” by “word2” from a file1, and output is written to file2 file and display the no. of replacement. 3. WAP to find factorial of given number using recursion 4. WAP to print Fibonacci for given number of terms using recursion 5. WAP that reads a file and counts the number of occurrences of digit enter by user. Supply the file name as a command-line argument.

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	6. WAP to check that whether the name given from command line is file or not? If it is a file then print the size of file and if it is directory then it should display the name of all files in it
20	**Generic** 1. Define generic class WildCard with method sum which add two generic values. Create class NumberDemo to demonstrate WildCard class. 2. Implement the following method using linear search. Public static <E extends Comparable<E>> Int binarySearch(E[] list, E key)
21	**List, Stacks, Queues and Priority Queues** 1. Define MYPriorityQueue class that extends Priority Queue to implement the Cloneable interface and implement the clone() method to clone a priority queue. 2. WAP to evaluate post-fix expression enter by command line arguments.
22	**Sets and Maps** 1. WAP to Create Set with following value: {"London","New York","San Francisco","Beijing","New York"} Perform following operation on above Set - add new element - get Set size - remove element - Contains element? - addAll - removeAll - retainAll 2. WAP to create Map<String, Integer> with following value {("Smith",30),("Anderson",31),("Lewise",29),("Cook",29)} Perform following operation on above Map - Display entries in ascending order of key. - Display age of person entered by user.
23	**Concurrency** 1. WAP to create two threads, one thread will print odd numbers and second thread will print even numbers between 1 to 1000 numbers. 2. WAP to implement producer consumer problem.