# Model paper of Java

# 1- Explicate Polymorphism, Overloading & Overriding and also provide suitable coding examples.

# 2-Define inheritance. Explain any two types of inheritance supported by java with coding examples.

# 3-What is packages? How packages are created in java? Explain and give example also.

# 4-discuss the any two with suitable example

# A-Super vs final keywords

# B-Default vs parametrized constructor

# C-static methods vs this keyword

# 5 -what is encapsulation in java? Discuss private, public, protected and default access specifiers with suitable example. (Complete a and B part)

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# 6- What is difference between abstract classes and interfaces? Discuss with suitable coding examples. Programmatically implement how to achieve multiple inheritance in java. (Complete a and B part)

# 7-what is functions in java? Describe any two user defined and pre-defined functions in java with coding examples?

8- Describe Multithreading, Multithreading Life Cycle, and different ways to create a Thread Programmatically along with syntax.

# 10- Encapsulation in Java refers to bundling data and code into a single unit. Implement the concept of Encapsulation in a simple Java program in which a class “TriEx” has two private variables “Base” and “Height” to calculate the Area of Triangle. A = (B x H) / 2

11- Implement a program that calculates the square of a number provided by the user without using any built-in function or the \* operator.

For example, if user enters number 4 the output should be

4 ^ 2 = 16

12-Consider the following class

public class Matrix {

private int mRows; // *Number of rows*

private int mCols; // *Number of columns*

private int[][] matrix; // *Data*

}

* Write a constructor that takes arguments specifying the number of rows and columns and initializes the state appropriately.
* Add an overloaded constructor that initializes the state according to the matrix passed as an argument.
* Create a method **int** **get(int r, int c)** and a method **set(int r, int c, int v)**, if  *r* and *c* are within the bounds of the matrix get method retrieves the value at row *r* and column *c* and set method sets the value of element at row *r* and column *c* to *v* otherwise both the methods show “Out of bounds” message and return -1, if required.
* Add another method that displays all the elements of the matrix to the user.

# 13-Create a class named 'Member' having the following members: Data 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.

# 14- Create a class named 'Rectangle' with two data members 'length' and 'breadth' and two methods to print the area and perimeter of the rectangle respectively. Its constructor having parameters for length and breadth is used to initialize length and breadth of the rectangle. Let class 'Square' inherit the 'Rectangle' class with its constructor having a parameter for its side (suppose s) calling the constructor of its parent class as 'super(s,s)'. Print the area and perimeter of a rectangle and a square.