

JAVA I

Lab Assignment-V

1. Define a class circle with instance variables radius and area and Member methods getdata(), calcarea() and display(). Create some instances of circle and display the calculated area.
2. Define a class triangle with instance variables base, height and area. Similarly, define Member methods getdata(), calcarea() and display(). Create the objects of class triangle and display the height, base and the area.
3. Write a program introducing a class named rectangle with two **instance variables** of type integers to represent length and breadth of a rectangle and four methods as listed below to carry out the respective tasks as specified and display it in proper format.
 - Readdata(): to ask user for inputting length and breadth of a rectangle
 - Area(): to calculate area of rectangle
 - Perimeter(): to calculate perimeter of the rectangle
 - Display(): to display area and perimeter
4. Define a class named Box which has three attributes width, height and depth, and two methods area() and volume() to compute and return an area and volume respectively. Read values from user in main method using scanner class and set the values with reference to object.
5. Design a class named sphere with three **instance variables** i.e. r,a,v (type double) and the following **Member methods** to carry out the specified tasks as listed below:
 - Getdata(): to ask the user input radius of sphere
 - Area(): to calculate the area of sphere
 - Volume(): to calculate volume of the sphere
 - Dispdata(): to display all the calculated values with the input data
6. Write a program as per the given instruction: make three Member methods in public part as input (), display () and largest (). Input method takes input from the user, largest method should identify which number is largest number supplied by the user and display method should display the final result.
7. Define a class named Calculator that has two instance variables (a and b) and five methods named addition(), subtraction(), multiplication() and division() to compute and return the sum, difference, product and division respectively.
8. Write a program to demonstrate parameterized constructors. Define a class named Box which has three attributes width, height and depth, and two methods area() and volume() to compute and return an area and volume respectively {Use Parameterized constructor as Box(double w, double h, double b)}.
9. Construct a class named intamount with the following members to calculate interest and amount separately on the basis of given principle, rate of interest and time period.

Instance variables: principle (double), rate (float), time (int)

Member methods:

 - Getdata(): to ask user input principle, rate and time period
 - Interest(): to calculate interest on the given data
 - Amount(): to calculate amount
10. Write a program according to the following specification:
 - a) Create a class student with **instance variables** id and marks.
 - b) Create a default constructor that initializes id and marks to fix values
 - c) Create parameterized constructor to initialize the objects
 - d) Create another constructor which will hold object as its parameter
11. Write a program to compute square of a number using class named Square that contains a method named square() with a parameter.
12. Construct a class named discount with the following members:

Instance variables:

 - Purchase amount
 - Discount rate
 - Discount amount

Member methods:

- Getdata(): to ask user proper input purchase amount
- Discountrate(): to fix discount rate on the basis of the criteria given below:

Purchase amount	Discount rate (in %)
Up to 10000	10% of the purchase amount
10001-25000	12%
25001-50000	15%
50001-75000	20%

- Calcdiscout(): to calculate discount amount
- Dispdata(): to display the input purchase amount, discount rate fixed and discount amount calculate.

13. Write a program to calculate commission amount earned by a salesman on his monthly sales with the construction of a class name commission with the following members:

Instance variables: sales amount (long integer)

Member methods:

- Getdata(): to ask user input purchase amount
- Commission_rate(): to fix discount rate on the basis of the criteria given as below:

Purchase amount	Discount rate (in %)
Up to 100000	10% of the purchase amount
100001-250000	12%
250001-500000	15%
500001-750000	18%
Above 750000	20%

- Calc_commission: to calculate discount amount

14. Construct a class named sort with an array and n as **Instance variables** (type integers) and methods detail like follows to sort the given number in ascending order.

- Getdata(): to ask user to input any n different integer values
- Sorting(): to sort all the numbers given in ascending order
- Dispdata(): to display all sorted data

15. Construct a class named commission with the introduction of suitable constructor and other **Member methods** and **Instance variables** to calculate total commission earned on 10 different sales. For each sales the commission is awarded on the basis of the following criteria:

Sales amount	Commission rate (in %)
Up to 20000	10% of the sales amount
20001-50000	15%
Above 50000	20%

16. Imagine a ticket selling booth at a fair. People passing by are requested to purchase a ticket. A ticket is priced at Rs. 2.50. The booth keeps track of the number of people that have visited the booth, and of the total amount of money collected.

Model this ticket selling booth with a class called ticketbooth including following members:

Instance variables: no. of people visited, total amount of money collected

Member methods:

- Default constructor
- To increment only people total in case ticket is not sold
- To increment both people total as amount of money collected in case ticket is sold
- To display all data
- To display number of ticket sold and its amount

17. Create a class time with **instance variables** hour and minute. Other specifications are:
 - a) Define a default constructor that initializes time object to zero
 - b) Define a parameterized constructor that initializes time object to fix the value
 - c) Define a **Member method** that adds two time objects and return the resultant time objects
 - d) Main method should create two object t1 and t2 initialized to fix value and third non initialized time object t3 and perform $t3=t1+t2$.
18. Write a program in java to demonstrate method overloading. (Define the class named Methodoverloading by overloading the method add() with parameters's of different types and also as per the number of parameters).
19. Write a program in java to demonstrate constructors overloading. Define three constructors of class named Box and define a method volume() that return the volume of the Box.
20. Write a program to demonstrate call by value (passing variable of primitive data type) and call by reference (passing reference).
21. Write a program to demonstrate passing object as parameter to a method.
22. Write a program to demonstrate passing object as parameter to a constructor.
23. Write a program to demonstrate returning of an object from a method.
24. Write a program to demonstrate **static** variables, **static** methods and **static** blocks.
25. Write a program to demonstrate the uses of '**final**' keyword.
26. Write a program to demonstrate the use of '**this**' keyword.
27. Write a program to demonstrate the use of **foreach** loop.
28. Write a program to demonstrate **commnd line argument**.
29. Write a program to demonstrate the concept and usage of **variable length argument**
30. Write a program to demonstrate variable length argument method overloading.
31. Write a program to demonstrate the concept of nested and inner class.
32. Write a program to find factorial of a number using recursion.
33. Write a program to find fibonacci series using recursion.
34. Write a program to find x raised to power y using recursion.