1. Write a Java program for Sorting elements of an array

2. Write a Java Program for Star Patterns

a.Square Star Pattern

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****
****
****
****
```

b.Triangle Star Pattern

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**
***
****
```

c.Inverted Pyramid

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*******
 *****
  ***
   *
```

3.Write a Java program to Print Right Triangle Number Pattern Type

```
34890
476
34
1
```

4.Write a program to Check if the given string is Palindrome or not .

5. Write a JAVA program for computing sum of two integers and floats using abstract classes.

6.Write a program to give the examples of operators.

1) Increment and decrement operators.
2) Bitwise Complement Operator.

3) Arithmetic operator.
4) Relational Operator
5) Bitwise operator.
6) Conditional Operator

7.Write a JAVA program which computes sum of two objects by accepting the data from command
prompt.

8. Write a JAVA program which illustrates the concept of access specifiers.

9. Write a program to print the array as a string.

10.Write a do-while loop that asks the user to enter two numbers. The numbers should be added and the sum displayed. The loop should ask the user whether he or she wishes to perform the operation again. If so, the loop should repeat; otherwise it should terminate.

11.Write a program to demonstrate static variables, methods, and blocks.

12.Write a program to give the example for method overriding concepts.

13.Write a program to create a class named shape. In this class we have three sub classes circle, triangle and square each class has two member function
named draw () and erase (). Create these using polymorphism concepts.

14. Write a program to create interface named test. In this interface the member function is square. Implement this interface in arithmetic class.
Create one new class called ToTestInt in this class use the object of arithmetic class.

15. Create class Number with only one private instance variable as a double primitive type. To include the following methods (include respective
constructors) isZero( ), isPositive(), isNegative( ), isOdd( ), isEven( ),isPrime(), isAmstrong() the above methods return boolean primitive type.
getFactorial(), getSqrt(), getSqr(), sumDigits(), getReverse() the above methods return double primitive type. void listFactor(), void dispBinary().

16.Create class box and box3d. box3d is extended class of box. The above two classes going to pull fill following requirement
a)Include constructor.
b)set value of length, breadth, height
c)Find out area and volume.

17. Write a program to create a room class, the attributes of this class is roomno, roomtype, roomarea and ACmachine. In this class the member functions are setdata and displaydata.

18.Write a program to give the example for ‘this’ operator. And also use the ‘this’ keyword as return statement.

19.write a program To find the sum of command line arguments and count the invalid integers entered.

20. Demonstrate the use of ‘super’ keyword.
a) To refer to a member of super class.
b) To call super class constructor from sub class constructor.

21. Define a base class person and a derived class employee with single inheritance.
-Define SetData() member functions in each of the class with different signatures to set the data members and demonstrate overloading of member functions.

-Define GetData() member functions in each of the class with same signatures to display data and
demonstrate overriding of member functions.

22. Modify program 21 to define a parametrized constructor and finalizer in each class.
Demonstrate calling the constructor of the base class from the constructor of the derived class.
-Create objects of person and employee classes to show the order of invocation of constructors.

23. Define a class of type Distance that has Feet and Inches as members.
-Define a function that adds two Distances passed as argument and returns the sum as another Distance object.
24.Write a program to calculate the following
1 Find the length of array.
2 Demonstrate a one-dimensional array.
3 Demonstrate a two-dimensional array.
4 Demonstrate a multi-dimensional array.

25.Write a program suppose, it is required to build a project consisting of a number of classes, possibly using a large number of programmers. It is necessary to make sure that every class from which all other classes in the project will be inherited. Since any new classes in the project must inherit from the base class, programmers are not free to create a different interface. Therefore, it can be guaranteed that all the classes in the project will respond to the same debugging commands.

26. Write a user-defined function to find the sum of an array passed as argument.
-Write a program that declares an array of 10 elements and uses this function to

a) Find the sum of all elements.

b) Find the sum of first 5 elements.

c) Find the sum of last 5 elements.

27.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.

28.We have to calculate the percentage of marks obtained in three subjects (each out of 100) by student A and in four subjects (each out of 100) by student B.
Create an abstract class 'Marks' with an abstract method 'getPercentage'. It is inherited by two other classes 'A' and 'B' each having a method with the same name which returns the percentage of the students. The constructor of student A takes the marks in three subjects as its parameters and the marks in four subjects as its parameters for student B.
Create an object for eac of the two classes and print the percentage of marks for both the students.

29.We have to calculate the area of a rectangle, a square and a circle.

Create an abstract class 'Shape' with three abstract methods namely 'RectangleArea' taking two parameters, 'SquareArea' and 'CircleArea' taking one parameter each.
The parameters of 'RectangleArea' are its length and breadth, that of 'SquareArea' is its side and that of 'CircleArea' is its radius.
Now create another class 'Area' containing all the three methods 'RectangleArea', 'SquareArea' and 'CircleArea' for printing the area of rectangle, square and circle respectively.
Create an object of class 'Area' and call all the three methods.

30.Write a program for the following
1. Example for call by value.
2. Example for call by reference.

31. Write a program to demonstrate the use of try, catch, finally throw and throws keywords and demonstrate
the following points in the program.
a) Multiple catch blocks.
b) try-catch-finally combination.
c) try-finally combination.
d) Exception propagation among many methods.
e) Use of getMessage(), printStackTrace() function of Throwable class.
f) Nested try blocks

32.Write a program to throw a checked exception explicitly using 'throw' keyword and
a) Handle the exception in same method.

b) use throws clause and handle the exception in some other method (calling method)
c) Don't either handle or use the throws clause. Observe the result.

33. Repeat program 32 with unchecked Exception and demonstrate the difference in both program.

34. Write a program to give example for multiple inheritance in Java.

35.Write a program to demonstrate the use of equals method of Object class and compare its functionality
with (= =) operator.

36. Build a class which has references to other classes. Instantiate these reference variables and invoke instance methods.

37.Create String Demo class and perform different string manipulation methods

38. Create sample classes to understand boxing & unboxing.

39. Use different methods of java defined wrapper classes.

40. Create a class Employee and encapsulate the data members

41.Implement multilevel inheritance using different packages.

42.Access/invoke protected members/methods of a class outside the package.