1. Write a program to display any message:
2. Write a Java program to display default value of all primitive data types of Java.
3. Write a program check two strings are equal or not.
4. Write a program to give the examples of operators.

   - Increment and decrement operators.
   - Bitwise Complement Operator.
   - Arithmetic operator.
   - Relational Operator
   - Bitwise operator.
   - Conditional Operator.
5. Write a program to give the example of control statements.

   - If statements.
   - Switch Statements.
   - For loop.
   - While Statements.
   - Do statements
6. Write a program to calculate the following
   - Find the length of array.
   - Demonstrate a one-dimensional array.
   - Demonstrate a two-dimensional array.
   - Demonstrate a multi-dimensional array.

7. Write a program to print the following triangle of binary digits.

```
    1                          5
   1 0 1                      4 5
  1 0 0 0 1                   3 4 5
 1 0 0 0 0 0 1                2 3 4 5
1 0 0 0 0 0 0 0 1             1 2 3 4 5
                             0 1 2 3 4 5

    1
   1 2
   1 2 3
   1 2 3 4
   1   2 3 4 5
```
8. Write a program to the find the following

   - Prime number checking

   - Sum of digit
9. Write a program to calculate the roots of Quadratic equations
10. Write a program for calculating Matrix Operations.

i. Addition.

　　　　ii. Multiplication.

11. 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.

12. Write a program for the following
    - Example for call by value.
    - Example for call by reference.

13. Write a class called ColourChecking. Define a color with red = 193, green =255 and blue = 183. No separate the rgb values. Find the Hue, saturation and brightness of this color.

14. Find the maximum of an array. Let a[] be an array of integers. if n= 1,a[0] is the only number in the array and so, maximum = a[0]. if n > 1 ,then do the following: find the maximum of n-1 entries of the array.Compare this maximum with the last entry a[n-1] and finalize.

15. Find the Fibonacci numbers are defined as $F_0=1, F_1=1$ and $F_i=F_{i-1}+F_{i-2}$ for i >2.

16. Write a Java Program to find the frequency of characters in given sentence
    India is my country and VIT is my institute.

17. Write a java program to determine whether a given string is palindrome or not
    Example: Madam- Palindrome, MALAYALAM- Palindrome and India – Not palindrome.

18. Java Program to swap two string variables without using third or temp variable.

19. Given the volume at a pressure, write a program **to get the volume at a different pressure**. According to the Boyle's law, the pressure of a gas is inversely proportional to the volume.

Input (double, double, double)	Output (Double)
20.0, 10.0, 14.0	28.0
200.0, 100.0, 180.0	360.0
65.2, 39.2, 39.4	65.2
111.0, 122.0, 133.0	121.0082
28.0, 0.0, 44.0	null

20. Write a program **to print truth table for the given degree**.

Input (int)	Printed Output
2	TT TF FT FF
3	TTT TTF TFT TFF FTT FTF FFT FFF
1	T F

21. Write a program using **if condition to print whether the person is Man, Boy, Woman or Girl depending upon the gender and age**. Note if the age is greater than 25 boy will become man and if the age is greater than 20 girl will become woman.

Input (Integer, Character)	Output (String)
40, 'M'	Man
15, 'M'	Boy
25, 'M'	Boy
35, 'F'	Woman
12, 'F'	Girl
20, 'F'	Girl

22. Write a program to **print the factors of the given number**. The numbers should be separated by comma.

Input (Integer)	Printed Output (Commas are also important and there are no spaces in output)
3	1,3,
8	1,2,4,8,
24	1,2,3,4,6,8,12,24,

23. Write a program to **print the multiplication table of the given number**. Use System.out.println or System.out.print for printing.

Input (Integer)	Output to be printed (Spaces before and after 'x' and '=' are

| 4 | ```
4 x 1 = 4
4 x 2 = 8
4 x 3 = 12
4 x 4 = 16
4 x 5 = 20
4 x 6 = 24
4 x 7 = 28
4 x 8 = 32
4 x 9 = 36
4 x 10 = 40
``` |
| 5 | ```
5 x 1 = 5
5 x 2 = 10
5 x 3 = 15
5 x 4 = 20
5 x 5 = 25
5 x 6 = 30
5 x 7 = 35
5 x 8 = 40
5 x 9 = 45
5 x 10 = 50
``` |

24. Write a program to **print the following formation depending upon size** of the matrix. Spaces at the beginning of each line are important. Use System.out.println or System.out.print for printing.

Input (Integer)	Printed Output
| 4 | ```
      *
    # #
  *   *   *
# # # #
``` |

25. Write a program to **print the following formation depending upon the size**. Use System.out.println or System.out.print for printing.

Input (Integer)	Output
| 5 | ```
\ ‾ ‾ ‾ ‾ /
 \       /
  \     /
   \   /
    \/
``` |

Input (Integer)	Print Formation
| 3 | ```
      *
    *  *  *
  *  *  *  *  *
``` |

| 26. Write **print** | ```
            * * *
             *
``` | a program to **the diamond** |

shape using asterisk (star)(*). The size should be dependent on the input number. Use System.out.println or System.out.print for printing.

---

27. Write a java program that illustrates the following:
(a) Creation of simple package.(b) Accessing a package.
(c) Implementing interfaces

---

28. The Citizen class should have following attributes name, id, country, sex, maritalStatus, anualIncome, and economyStatus. Validate the fields if the age is below 18 && country is not 'India' throw NonEligibleException and give proper message. Use toString method to display the citizen object in proper format. Use separate packages for Exception and application classes.

---

29. Write a Java program that displays the number of characters, lines and words in a text file.

---

30. Write a program to generate Harmonic Series
Input - 5
Output - 1 + 1/2 + 1/3 + 1/4 + 1/5 = 2.28 (Approximately)

---

31. Write a Java program that illustrates how run time polymorphism is achieved

---

32. Write a Java program to multiply two given matrices

---

33. Write a Java program which creates a class named 'Employee' having the following members: Name, Age, Phone number, Address, Salary. It also has a method named 'printSalary( )' which prints the salary of the Employee. Two classes 'Officer' and 'Manager' inherits the 'Employee' class. The 'Officer' and 'Manager' classes have data members 'specialization' and 'department' respectively. Now, assign name, age, phone number, address and salary to an officer and a manager by making an object of both of these classes and print the same. (based on inheritance)

---

34. Write a java program to create an abstract class named Shape that contains an empty method named numberOfSides( ). Provide three classes named Rectangle, Triangle and Hexagon such that each one of the classes extends the class Shape. Each one of the classes contains only the method numberOfSides( ) that shows the number of sides in the given geometrical structures.

---

35. Write a Java program that works as a simple calculator. Arrange Buttons for digits and the + - * % operations properly. Add a text field to display the result. Handle any possible exceptions like divide by zero.

---

36. Write a Java program that simulates a traffic light. The program lets the user select one of three lights: red, yellow, or green. When a radio button is selected, the light is turned on, and only one light can be on at a time. No light is on when the program starts.

37.	Write two Java classes Employee and Engineer. Engineer should inherit from Employee class. Employee class to have two methods display() and calcSalary(). Write a program to display the engineer salary and to display from Employee class using a single object instantiation (i.e., only one object creation is allowed). ● display() only prints the name of the class and does not return any value. Ex. " Name of class is Employee." ● calcSalary() in Employee displays "Salary of employee is 10000" and calcSalary() in Engineer displays "Salary of employee is 20000."
38.	Write a Java program to calculate the area of different shapes namely circle, rectangle, and triangle using the concept of method overloading.
39.	Write a Java program that shows how to create a user-defined exception.
40.	Write a Java program that shows the usage of try, catch, throws and finally
41.	Write a Java program that read from a file and write to file by handling all file related exceptions.
42.	Write a Java program which creates a class named 'Employee' having the following members: Name, Age, Phone number, Address, Salary. It also has a method named 'printSalary( )' which prints the salary of the Employee. Two classes 'Officer' and 'Manager' inherits the 'Employee' class. The 'Officer' and 'Manager' classes have data members 'specialization' and 'department' respectively. Now, assign name, age, phone number, address and salary to an officer and a manager by making an object of both of these classes and print the same.
43.	Write a Java program that reads a file and displays the file on the screen, with a line number before each line.
44.	Define two different classes namely, Student and Employee. These classes are derived from a base class Person. Define other two classes Staff and Faculty. Staff and Faculty classes are derived from Employee class. The Person class has name and age data and display method to display the name and age of a person. The Student class has data like rollNo and branch and display method to display name, age, rollNo and branch of the student. Stuff has ecNo and doj(date of joining) data and display method to display name, age, ecNo, doj of the stuff. Faculty has designation data (Assistant Professor, Associate Professor and Professor) and display method to display the name, age, ecNo, doj and designation of the Faculty. Staff has designation data (Technical and Clerical) and display method to display the name, age, ecNo, doj and designation of the Staff. Each class have their own constructor to initialize the value of each data field. Finally create MainDemoClass and create an object of each class. Print the values of all objects in the MainDemoClass.
45.	Write a java program to create a file and write the text in it and save the file.
46.	Write a java program in which data is read from one file and should be written in another file.name of both file is given through command line arguments

47. Write a program to demonstrate the implementation of class, object and constructor.
48. Write a program to demonstrate how to access instance variables and methods of a class
49. Convert the content of a given file into the uppercase content of the same file.
50. Write a java package to show dynamic polymorphism and interfaces.