



# INTERVIEW GUIDE

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## Java Interview Programs:

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## Basic Programs

1. Write a java program to find out greatest of two numbers?

```
package com.ihub.www;
import java.util.Scanner;
class GreatestOfTwo
{
    //asking inputs
    Scanner sc=new Scanner(System.in);
    System.out.println("Enter the First Number :");
    int a = sc.nextInt();
    System.out.println("Enter the Second Number :");
    int b = sc.nextInt();
    //logic
    int max=(a>b)?a:b;
    System.out.println(max+" is greatest");
}
```

Inputs:

Enter the First Number:	10
Enter the Second Number:	15

Output:

15 is greatest

2. Write a java program to find out greatest of three numbers?

```
package com.ihub.www;
import java.util.Scanner;
class GreatestOfThree
{
    //asking inputs
    Scanner sc=new Scanner(System.in);
    System.out.println("Enter the First Number :");
    int a = sc.nextInt();
    System.out.println("Enter the Second Number :");
    int b = sc.nextInt();
    System.out.println("Enter the Third Number :");
    int c = sc.nextInt();

    //logic
    int max=(a>b)?((a>c)?a:c):((b>c)?b:c);
    System.out.println(max+" is greatest");
}
```

Inputs:

Enter the First Number:	25
Enter the Second Number:	12
Enter the Third Number:	5

**Output:**

25 is greatest

3. Write a java program to find out swapping of two numbers?

```
package com.ihub.www;
import java.util.Scanner;
class SwappingOfTwo
{
    //asking inputs
    Scanner sc=new Scanner(System.in);
    System.out.println("Enter the First Number :");
    int a = sc.nextInt();
    System.out.println("Enter the Second Number :");
    int b = sc.nextInt();
    System.out.println("Before swapping a="+a+ " and b="+b);
    //logic
    a = a + b;
    b = a - b;
    a = a - b;
    System.out.println("After swapping a="+a+ " and b="+b);
}
```

**Inputs:**

Enter the First Number: 10  
Enter the Second Number: 20

**Output:**

Before swapping a=10 and b=20  
After swapping a=10 and b=20

4. Write a java program to find out given number even or odd without using modules operator?

```
package com.ihub.www;
import java.util.Scanner;
class EvenOrOdd
{
    //asking inputs
    Scanner sc=new Scanner(System.in);
    System.out.println("Enter the Number :");
    int n = sc.nextInt();
    //logic
    If((n&1)==0)
        System.out.println("It is even number");
    else
        System.out.println("It is odd number");
}
```

**Inputs:**

Enter the Number: 6

**Output:**

It is even number

5. Write a java program to find out given year is a leap year or not?

```
package com.ihub.www;
import java.util.Scanner;
class LeapYear
{
    //asking inputs
    Scanner sc=new Scanner(System.in);
    System.out.println("Enter the Year :");
    int year = sc.nextInt();
    //logic
    If((year%4==0 && year%100 != 0) || (year%400==0))
        System.out.println("It is leap number");
    else
        System.out.println("It is not number");
}
```

Inputs:

Enter the Number: 2024

Output:

It is a leap year

6. Write a java program to find out given alphabet is a vowel or consonant?

```
package com.ihub.www;
import java.util.Scanner;
class VowelOrNot
{
    //asking inputs
    Scanner sc=new Scanner(System.in);
    System.out.println("Enter the Alphabet :");
    char ch = sc.next().charAt(0);
    //logic
    If(ch=='a' || ch=='e' || ch=='i' || ch=='o' || ch=='u')
        System.out.println("It is a vowel");
    else
        System.out.println("It is not a vowel");
}
```

Inputs:

Enter the Alphabet: a

Output:

It is a vowel

7. Write a java program to find out given number is positive or negative?

```
package com.ihub.www;
import java.util.Scanner;
class PositiveOrNegative
{
    //asking inputs
    Scanner sc=new Scanner(System.in);
    System.out.println("Enter the Number :");
    int n = sc.nextInt();
    //logic
    If(n!=0)
    {
        if(n>0)
        {
            System.out.println("It is positive number");
            System.exit(0);
        }
        System.out.println("It is negative number");
    }
}
```

Inputs:

Enter the Number: 10

Output:

It is a positive number

8. Write a java program to find out given alphabet is a uppercase letter, lowercase letter, digit or special symbol?

```
package com.ihub.www;
import java.util.Scanner;
class FindOutAlphabet
{
    //asking inputs
    Scanner sc=new Scanner(System.in);
    System.out.println("Enter the Alphabet :");
    char ch = sc.next().charAt(0);
    //logic
    If(ch>='A' && ch<='z')
        System.out.println("It is uppercase letter");
    else if(ch>='a' && ch<='z')
        System.out.println("It is lowercase letter");
    else if(ch>='0' && ch<='9')
        System.out.println("It is Digit");
    else
        System.out.println("It is special symbol");
}
```

Inputs:

Enter the Alphabet: L

Output:

It is uppercase letter

9. Write a java program to how to call garbage collector in java?

```
package com.ihub.www;
class GarbageCollector
{
    public static void main(String[] args)
    {
        GarbageCollector gc1=new GarbageCollector();
        GarbageCollector gc2=new GarbageCollector();
        //initialize null to make eligible for gc
        gc1=null;
        gc2=null;
        System.gc();
        //Runtime.getRuntime().gc();
    }
    public void finalize()
    {
        System.out.println("garbage collector called");
    }
}
Output:
garbage collector called
```

10. Write a java program to generate random number in java?

```
package com.ihub.www;
import java.util.Random;
class RandomNumber
{
    public static void main(String[] args)
    {
        Random r=new Random();
        //it will generate the number between 0 to 99
        int random_num=r.nextInt(100);
        System.out.println(random_num);
        //System.out.println(Math.random());
    }
}
Output:
(Any random number will come here)
```

11. How can we execute java program without main method?

```
package com.ihub.www;
class ProgramWithoutMain
{
    //static block
    static
    {
        System.out.println("Hello World");
        System.exit(0);
    }
}
Output
```

After Java 7, this code will not execute.

12. How to use static import in java?

```
package com.ihub.www;
import static java.lang.System.*;
class StaticImport
{
    out.println("stmt1");
    exit(0);
    out.println("stmt2");
}
```

**Output:**

```
stmt1
```

13. Write a java program to find out product of two numbers?

```
package com.ihub.www;
import java.util.Scanner;
class ProductOfTwo
{
    Scanner sc = new Scanner(System.in);
    System.out.println("Enter the First Number :");
    int a = sc.nextInt();
    System.out.println("Enter the Second Number :");
    int b = sc.nextInt();
    //logic
    int product= a * b;
    System.out.println("The product of "+a+" and "+b+" is "+c);
}
```

**Input:**

```
6
4
```

**Output:**

```
The product of 6 and 4 is 24
```

## While loop

14. Write a java program to find out sum of digits of a given number?

```
package com.ihub.www;
class SumOfDigits
{
    public static void main(String[] args)
    {
        //asking inputs
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the Number :");
        int n = sc.nextInt();

        //sum of digits logic
        int rem=0,sum=0;
        while(n>0)
        {
            rem = n % 10;
            sum = sum + rem;
            n = n / 10;
        }
    }
}
```

```
        }
        System.out.println("Sum of digits of a given number is =" +sum);
    }
}
```

Input:

123

Output:

Sum of digits of a given number is = 6

Input:

462

Output:

Sum of digits of a given number is = 11

15. Write a java program to find out given number is Armstrong or not?

```
package com.ihub.www;
class ArmstrongOrNot
{
    public static void main(String[] args)
    {
        //asking inputs
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the Number :");
        int n = sc.nextInt();
        int temp = n;

        //Armstrong logic
        int rem=0,sum=0;
        while(n>0)
        {
            rem = n % 10;
            sum = sum + rem * rem * rem;
            n = n / 10;
        }
        If(temp==sum)
            System.out.println("It is an Armstrong number");
        else
            System.out.println("It is not an Armstrong number");
    }
}
```

Input:

121

Output:

It is an Armstrong number

Input:

123

Output:

It is not an Armstrong number

16. Write a java program to display reverse of a given number?

```
package com.ihub.www;
class SumOfDigits
{
    public static void main(String[] args)
    {
        //asking inputs
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the Number :");
        int n = sc.nextInt();

        //reverse logic
        int rem=0,rev=0;
        while(n>0)
        {
            rem = n % 10;
            rev = rev*10 + rem;
            n = n / 10;
        }
        System.out.println("Reverse of a given number is =" +rev);
    }
}
```

Input:

123

Output:

Reverse of a given number is = 321

Input:

784

Output:

Reverse of a given number is = 487

17. Write a java program to find out given number is palindrome or not?

```
package com.ihub.www;
class PalindromeOrNot
{
    public static void main(String[] args)
    {
        //asking inputs
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the Number :");
        int n = sc.nextInt();

        int temp = n;

        //Palindrome logic
        int rem=0,rev=0;
        while(n>0)
        {
            rem = n % 10;
```

```

        rev = rev * 10 + rem;
        n = n / 10;
    }
    if(temp==rev)
        System.out.println("It is palindrome number");
    else
        System.out.println("It is not a palindrome number");
}
}

Input: 121

```

**Output:**  
It is palindrome number

**Input:** 123

**Output:**  
It is not a palindrome number

18. Write a java program to find out LCM (Least Common Multiple) of Two numbers?

```

package com.ihub.www;
import java.util.Scanner;
class Test
{
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter the First Number :");
        int num1=sc.nextInt();
        System.out.println("Enter the Second Number :");
        int num2=sc.nextInt();
        int lcm=(num1>num2)?num1:num2;
        while(true)
        {
            if(lcm%num1==0 && lcm%num2==0)
            {
                System.out.println("LCM of two numbers is =" +lcm);
                break;
            }
            ++lcm;
        }
    }
}

```

**Input:**  
Enter the First Number: 10  
Enter the Second Number: 25

**Output:**  
LCM of two numbers is = 50

**Input:**  
Enter the First Number: 10  
Enter the Second Number: 20

**Output:**

LCM of two numbers is = 20

19. Write a java program to display reverse of a given number in words?

```
package com.ihub.www;
class SumOfDigits
{
    public static void main(String[] args)
    {
        //asking inputs
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the Number :");
        int n = sc.nextInt();

        //reverse logic
        while(n>0)
        {
            switch( n % 10 )
            {
                case 0 : System.out.println("Zero"); break;
                case 1 : System.out.println("One"); break;
                case 2 : System.out.println("Two"); break;
                case 3 : System.out.println("Three"); break;
                case 4 : System.out.println("Four"); break;
                case 5 : System.out.println("Five"); break;
                case 6 : System.out.println("Six"); break;
                case 7 : System.out.println("Seven"); break;
                case 8 : System.out.println("Eight"); break;
                case 9 : System.out.println("Nine"); break;
            }
            n = n / 10;
        }
    }
}
```

**Input:**

123

**Output:**

ThreeTwoOne

**Input:**

784

**Output:**

FourEightSeven

## For loop

20. Write a java program to display 10 natural numbers?

```
package com.ihub.www;
class NaturalNumbers
{
    public static void main(String[] args)
    {
        for(int i=1;i<=10;i++)
        {
            System.out.print(i+" ");
        }
    }
}
```

**Output:**

```
1 2 3 4 5 6 7 8 9 10
```

21. Write a java program to perform sum of 10 natural numbers?

```
package com.ihub.www;
class SumOfNatural
{
    public static void main(String[] args)
    {
        int sum = 0;
        for(int i=1;i<=10;i++)
        {
            sum+=i;
        }
        System.out.println("sum of 10 natural numbers is =" +sum);
    }
}
```

**Output:**

```
55
```

22. Write a java program to display number of even and odd numbers from 1 to 10?

```
package com.ihub.www;
class SumOfNatural
{
    public static void main(String[] args)
    {
        int even = 0, odd = 0;
        for(int i=1;i<=10;i++)
        {
            if(i%2==0)
                even++;
            else
                odd++;
        }
        System.out.println("No of even numbers are =" +even);
        System.out.println("No of odd numbers are =" +odd);
    }
}
```

}

**Output:**

No of even numbers are = 5  
No of odd numbers are = 5

23. Write a java program to find out factorial of a given number?

```
package com.ihub.www;
import java.util.Scanner;
class FactorialApp
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number :");
        int n = sc.nextInt();
        int fact=1;
        for(int i=n;i>=1;i--)
        {
            fact *= i;
        }
        System.out.println("Factorial of a given number is =" +fact);
    }
}
```

**Input:**

Enter the Number: 5

**Output:**

Factorial of a give number is = 120

24. Write a java program to check given number is prime or not?

```
package com.ihub.www;
import java.util.Scanner;
class PrimeNumber
{
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter the number :");
        int n=sc.nextInt();
        boolean flag=true;
        for(int i=2;i<=n/2;i++)
        {
            if(n%i==0)
            {
                flag=false;
                break;
            }
        }
        if(flag==true)
            System.out.println("It is prime number");
        else
            System.out.println("It is not prime number");
    }
}
```

**Input:**  
Enter the number: 5

**Output:**  
It is a prime number

**Input:**  
Enter the number: 5

**Output:**  
It is a prime number

25. Write a java program to display prime numbers from 1 to 100?

```
package com.ihub.www;
class Test
{
    public static void main(String[] args)
    {
        for(int n=2;n<=100;n++)
        {
            boolean flag=true;
            for(int i=2;i<=n/2;i++)
            {
                if(n%i==0)
                {
                    flag=false;
                    break;
                }
            }
            if(flag==true)
                System.out.print(n+" ");
        }
    }
}
```

**Output:**  
1 2 3 5 7 11 13 17 19 23 29 31 37 41 43 47 53 59 61 67 71 73 79 83 89 97

26. Write a java program to find out GCD of two numbers?

```
package com.ihub.www;
class GCDApp
{
    public static void main(String[] args)
    {
        int a=12,b=18,gcd=0;

        for(int i=1;i<=12 && i<=18;i++)
        {
            if((a%i==0) && (b%i==0))
            {
                gcd=i;
            }
        }
        System.out.println("GCD of "+a+" and "+b+" is "+gcd);
    }
}
```

```
    }  
}
```

**Output:**

GCD of 12 and 18 is = 6

27. Write a java program to check given number is perfect or not?

```
package com.ihub.www;  
import java.util.Scanner;  
class PerfectNumber  
{  
    public static void main(String[] args)  
    {  
        Scanner sc=new Scanner(System.in);  
        System.out.println("Enter the number :");  
        int n=sc.nextInt();  
        int sum=0;  
        for(int i=1;i<n;i++)  
        {  
            if(n%i==0)  
            {  
                sum+=i;  
            }  
        }  
        if(sum==n)  
            System.out.println("It is a perfect number");  
        else  
            System.out.println("IT is not a perfect number");  
    }  
}
```

**Input:**

Enter the number: 6

**Output:**

It is a perfect number

28. Write a java program to display Fibonacci series of a given number?

```
package com.ihub.www;  
import java.util.Scanner;  
class Test  
{  
    public static void main(String[] args)  
    {  
        Scanner sc=new Scanner(System.in);  
        System.out.println("Enter the number :");  
        int n=sc.nextInt();  
        int a=0,b=1,c;  
        System.out.print(a+" "+b+" ");  
        for(int i=1;i<=n;i++)  
        {  
            c=a+b;  
            System.out.print(c+" ");  
            a=b;  
            b=c;  
        }  
    }  
}
```

**Input:**

Enter the number: 5

**Output:**

0 1 1 2 3 5 8

## Loop Patterns

29. Write a java program to display below loop pattern?

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

package com.ihub.www;
class LoopPattern
{
    public static void main(String[] args)
    {
        //rows
        for(int i=1;i<=4;i++)
        {
            //cols
            for(int j=1;j<=4;j++)
            {
                System.out.print("* ");
            }
            //new line
            System.out.println();
        }
    }
}
```

30. Write a java program to display below loop pattern?

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

package com.ihub.www;
class LoopPattern
{
    public static void main(String[] args)
    {
        //rows
        for(int i=1;i<=5;i++)
        {
            //cols
            for(int j=1;j<=5;j++)
            {
                if(i==j || i+j==6)
                    System.out.print("* ");
                else
                    System.out.print(" ");
            }
        }
    }
}
```

```

        //new line
        System.out.println();
    }
}
}

```

31. Write a java program to display below loop pattern?

```

*
* *
* * *
* * * *

package com.ihub.www;
class LoopPattern
{
    public static void main(String[] args)
    {
        //rows
        for(int i=1;i<=4;i++)
        {
            //cols
            for(int j=1;j<=i;j++)
            {
                System.out.print("* ");
            }
            //new line
            System.out.println();
        }
    }
}

```

32. Write a java program to display below loop pattern?

```

1
2 3
4 5 6
7 8 9 0

```

```

package com.ihub.www;
class Test
{
    public static void main(String[] args)
    {
        int k = 1;
        //rows
        for(int i=1;i<=4;i++)
        {
            //cols
            for(int j=1;j<=i;j++)
            {
                if(k<=9)
                    System.out.print(k++ +" ");
                else
                    System.out.print("0 ");
            }
        }
    }
}

```

```

//new line
System.out.println();
}
}
}
}

```

33. Write a java program to display below loop pattern?

```

*
*
*
*

```

```

package com.ihub.www;
class LoopPattern
{
    public static void main(String[] args)
    {
        //rows
        for(int i=1;i<=4;i++)
        {
            //space
            for(int j=4;j>i;j--)
            {
                System.out.print(" ");
            }
            //right side elements
            for(int j=1;j<=i;j++)
            {
                System.out.print(j+" ");
            }
            //new line
            System.out.println();
        }
    }
}

```

34. Write a java program to display below loop pattern?

```

2
4 6
8 10 12
14 16 18 20

```

```

package com.ihub.www;
class LoopPattern
{
    public static void main(String[] args)
    {
        int even=2;
        //rows
        for (int i = 1; i <= 4; i++)
        {
            //cols
            for (int j = 1; j <= i; j++)
            {
                System.out.print(evenNumber + " ");
            }
        }
    }
}

```

```
even += 2;  
}  
//new line  
System.out.println();  
}  
}  
}
```

35. Write a java program to display below loop pattern?

**2**  
**3 5**  
**7 11 13**  
**17 19 23 29**

```
package com.ihub.www;
class LoopPattern
{
    public static void main(String[] args)
    {
        int num=2;
        //rows
        for(int i=1;i<=4;i++)
        {
            //cols
            for(int j=1;j<=i;j++)
            {
                while(true)
                {
                    boolean flag=true;

                    for(int k=2;k<=num/2;k++)
                    {
                        if(num%k==0)
                        {
                            flag=false;
                            break;
                        }
                    }
                    if(flag)
                    {
                        System.out.print(num+" ");
                        num++;
                        break;
                    }
                    num++;
                }
            }
        }
        //new line
        System.out.println();
    }
}
```

36. Write a java program to display below loop pattern?

```
*  
* * *  
* * * * *  
* * * * * *  
  
package com.ihub.www;  
class LoopPattern  
{  
    public static void main(String[] args)  
    {  
        //rows  
        for(int i=1;i<=4;i++)  
        {  
            //space  
            for(int j=4;j>i;j--)  
            {  
                System.out.print(" ");  
            }  
            //left side elements  
            for(int j=1;j<=i;j++)  
            {  
                System.out.print(j+" ");  
            }  
            //right side elements  
            for(int j=i-1;j>=1;j--)  
            {  
                System.out.print(j+" ");  
            }  
  
            //new line  
            System.out.println();  
        }  
    }  
}
```

37. Write a java program to display below loop pattern?

```
1      1  
1 2    2 1  
1 2 3  3 2 1  
1 2 3 4 4 3 2 1
```

```
package com.ihub.www;  
class LoopPattern  
{  
    public static void main(String[] args)  
    {  
        int rows=4;
```

```

        for(int i=1;i<=rows;i++)
        {
            //left side elements
            for(int j=1;j<=i;j++)
            {
                System.out.print(j+" ");
            }
            //space
            for(int j=1;j<=(rows-i)*2;j++)
            {
                System.out.print(" ");
            }
            //right
            for(int j=i;j>=1;j--)
            {
                System.out.print(j+" ");
            }

            //new line
            System.out.println();
        }

    }
}

```

38. Write a java program to display below loop pattern?

```

*
*
* * * * *
*
*

package com.ihub.www;
class LoopPattern
{
    public static void main(String[] args)
    {
        //rows
        for(int i=1;i<=5;i++)
        {
            //cols
            for(int j=1;j<=5;j++)
            {
                if(i==3 || j==3)
                {
                    System.out.print("* ");
                }
                else
                {
                    System.out.print(" ");
                }
            }
        }
    }
}

```

```
    }  
    //new line  
    System.out.println();  
}  
}  
}
```

## Recursion

39. Write a java program to find out factorial of a given number using recursion?

```
package com.ihub.www;
import java.util.Scanner;
class FactorialApp
{
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter the number :");
        int n=sc.nextInt();
        //caller method
        System.out.println("Factorial of a given number is =" +fact(n));
    }
    //callie method
    public static int fact(int n)
    {
        if(n<0)
            return -1;
        if(n==0)
            return 1;

        return n*fact(n-1);
    }
}
```

## Input:

Enter the Number: 5

## Output:

Factorial of a given number is = 120

40. Write a java program to find out N-th element of Fibonacci series?

```
package com.ihub.www;
import java.util.Scanner;
class FibonacciOfNthEle
{
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter the number :");
```

```

        int n=sc.nextInt();
        //caller method
        System.out.println(fib(n));
    }
    //callie method
    public static int fib(int n)
    {
        if(n == 0 || n==1)
            return 0;
        else if(n==2)
            return 1;
        else
            return fib(n-1)+fib(n-2);
    }
}

```

**Input:**

Enter the Number: 4

**Output:**

2

## Arrays

41. Write a java program to sum of array elements?

**Input:**

4 7 1 3 9 6

**Output:**

30

```

package com.ihub.www;
class SumOfArray
{
    public static void main(String[] args)
    {
        int[] arr={4,7,1,3,9,6};

        //for each loop
        int sum=0;
        for(int i:arr)
        {
            sum+=i;
        }
        System.out.println(sum);
    }
}

```

42. Write a java program to display even elements from positive integer array?

**Input:**

4 7 1 3 2 9 6

**Output:**

4 2 6

```
package com.ihub.www;
class ArrayEvenElements
{
    public static void main(String[] args)
    {
        int[] arr={4,7,1,3,2,9,6};

        //for each loop
        for(int i:arr)
        {
            if(i%2==0)
            {
                System.out.print(i+" ");
            }
        }
    }
}
```

43. Write a java program to display array elements in sorting order without using sort method?

**Input:**

4 7 1 3 9 6

**Output:**

1 3 4 6 7 9

```
package com.ihub.www;
class ArraySorting
{
    public static void main(String[] args)
    {
        int[] arr={4,7,1,3,9,6};
        //ascending logic
        for(int i=0;i<arr.length;i++)
        {
            for(int j=0;j<arr.length;j++)
            {
                if(arr[i]<arr[j])
                {
                    int temp=arr[i];
                    arr[i]=arr[j];
                    arr[j]=temp;
                }
            }
        }
        //reading the elements
        for(int i:arr)
        {
```

```

        System.out.print(i+" ");
    }
}
}

```

44. Write a java program to find out three highest elements from given positive integer array?

**Input:**

6 9 2 3 1 7 8 4 5

**Output:**

9 8 7

```

package com.ihub.www;
class ThreeHighestElements
{
    public static void main(String[] args)
    {
        int[] arr={6,9,2,3,1,7,8,4,5};
        int firstHighest=Integer.MIN_VALUE;
        int secondHighest=Integer.MIN_VALUE;
        int thirdHighest=Integer.MIN_VALUE;
        for(int i:arr)
        {
            if(i>firstHighest)
            {
                thirdHighest=secondHighest;
                secondHighest=firstHighest;
                firstHighest=i;
            }
            else if(i<firstHighest && i>secondHighest)
            {
                thirdHighest=secondHighest;
                secondHighest=i;
            }
        }
        System.out.println(firstHighest+" "+secondHighest+" "+thirdHighest);
    }
}

```

45. Write a java program to display duplicate elements from given array?

**Input:**

5 7 3 2 1 9 3 5 7 4

**Output:**

5 7 3

```

package com.ihub.www;
class DuplicateElements
{
    public static void main(String[] args)
    {
        int[] arr={5,7,3,2,1,9,3,5,7,4};
    }
}

```

```

//duplicates
for(int i=0;i<arr.length;i++)
{
    for(int j=i+1;j<arr.length;j++)
    {
        if(arr[i]==arr[j])
            System.out.print(arr[i]+" ");
    }
}
}

```

46. Write a java program to display unique elements from given array?

**Input:**

5 7 3 2 1 9 3 5 7 4

**Output:**

2 1 9 4

```

package com.ihub.www;
class UniqueElements
{
    public static void main(String[] args)
    {
        int[] arr={5,7,3,2,1,9,3,5,7,4};
        //unique elments
        for(int i=0;i<arr.length;i++)
        {
            int cnt=0;
            for(int j=0;j<arr.length;j++)
            {
                if(arr[i]==arr[j])
                {
                    cnt++;
                }
            }
            if(cnt==1)
                System.out.print(arr[i]+" ");
        }
    }
}

```

47. Write a java program to display prime elements from given array?

**Input:**

12 5 7 9 6 11 17 4

**Output:**

5 7 11 17

```

package com.ihub.www;
class PrimeElements
{
    public static void main(String[] args)
    {
        int[] arr={12,5,7,9,6,11,17,4};
        for(int n:arr)
        {

```

```

        boolean flag=true;
        for(int i=2;i<=n/2;i++)
        {
            if(n%i==0)
            {
                flag=false;
                break;
            }
        }
        if(flag==true)
        System.out.print(n+" ");
    }
}

```

48. Write a java program to display sum of two array elements?

**Input:**

```

arr1 = 2 5 7 9 6
arr2 = 9 3 5 4 2

```

**Output:**

```
11 8 12 13 8
```

```

package com.ihub.www;
class SumOfTwoArrays
{
    public static void main(String[] args)
    {
        int[] arr1 ={2,5,7,9,6};
        int[] arr2 ={9,3,5,4,2};
        int[] resArr=new int[arr1.length];
        for(int i=0;i<arr1.length && i<arr2.length;i++)
        {
            resArr[i]=arr1[i]+arr2[i];
        }
        //display the elements
        for(int i:resArr)
        {
            System.out.print(i+" ");
        }
    }
}

```

49. Write a java program to concatenate two arrays and display them in sorting order?

**Input:**

```

arr1 = 1 5 3 4 2
arr2 = 9 7 6 8 10

```

**Output:**

```
1 2 3 4 5 6 7 8 9 10
```

```

package com.ihub.www;
import java.util.Arrays;
class ConcatinateTwoArrays
{
    public static void main(String[] args)
    {
        int[] arr1 ={1,5,3,4,2};
        int[] arr2 ={9,7,6,8,10};
        int size1=arr1.length;
        int size2=arr2.length;
        arr1=Arrays.copyOf(arr1,size1+size2);
        int j=0;
        for(int i=size1;i<arr1.length;i++)
        {
            arr1[i]=arr2[j++];
        }
        Arrays.sort(arr1);
        //display
        for(int i:arr1)
        {
            System.out.print(i+" ");
        }

    }
}

```

50. Write a java program to find out most repeating element from given array?

**Input:**

2 6 5 9 1 2 6 7 6 5 5 9 1 5

**Output:**

5 is repeating for 4 times

```

package com.ihub.www;
class MostRepeatingElement
{
    public static void main(String[] args)
    {
        int[] arr={2,6,5,9,1,2,6,7,6,5,5,9,1,5};

        int element=0;
        int maxCount=0;

        for(int i=0;i<arr.length;i++)
        {
            int cnt=0;

            for(int j=0;j<arr.length;j++)
            {
                if(arr[i]==arr[j])
                {
                    cnt++;
                }
            }
        }
    }
}

```

```

        }
        if(maxCount<cnt)
        {
            maxCount=cnt;
            element=arr[i];
        }
    }
    System.out.println(element+" is repeating for "+maxCount+" times");
}
}

```

51. Write a java program to find out the pairs whose sum is equals to given number?

**Input:**

```
arr = 4 6 2 8 7 3 9 1
sum = 10
```

**Output:**

```
4 6
2 8
7 3
9 1
```

```

package com.ihub.www;
class Test
{
    public static void main(String[] args)
    {
        int[] arr={4,6,2,8,7,3,9,1};
        int sum=10;

        for(int i=0;i<arr.length;i++)
        {
            for(int j=i+1;j<arr.length;j++)
            {
                if(arr[i]+arr[j]==sum)
                {
                    System.out.println(arr[i]+" "+arr[j]);
                }
            }
        }
    }
}

```

52. Write a java program to find out triplets whose sum of equals to given number?

**Input:**

```
arr = 4 6 2 8 7 3 9 1
sum = 10
```

**Output:**

```
6 3 1
```

```

package com.ihub.www;
class TripletElements
{
    public static void main(String[] args)
    {
        int[] arr={4,6,2,8,7,3,9,1};
        int sum=10;

        for(int i=0;i<arr.length;i++)
        {
            for(int j=i+1;j<arr.length;j++)
            {
                for(int k=j+1;k<arr.length;k++)
                {
                    if(arr[i]+arr[j]+arr[k]==sum)
                    {
                        System.out.println(arr[i]+" "+arr[j]+" "+arr[k]);
                    }
                }
            }
        }
    }
}

```

53. Write a java program to display array elements in spiral form?

**Input:**

```

1 2 3
4 5 6
7 8 9

```

**Output:**

```
1 2 3 6 9 8 7 4 5
```

```

package com.ihub.www;
class SpiralForm
{
    public static void main(String[] args)
    {
        int[][] matrix = {
            {1, 2, 3},
            {4, 5, 6},
            {7, 8, 9}
        };

        int rows = matrix.length;
        int cols = matrix[0].length;

        int top = 0;
        int bottom = rows - 1;
        int left = 0;
        int right = cols - 1;

        while (true)
        {

```

```

        if (left > right)
        {
            break;
        }

        // Print top row
        for (int i = left; i <= right; i++)
        {
            System.out.print(matrix[top][i] + " ");
        }
        top++;

        if (top > bottom)
        {
            break;
        }

        // Print right column
        for (int i = top; i <= bottom; i++)
        {
            System.out.print(matrix[i][right] + " ");
        }
        right--;
    }

    if (left > right)
    {
        break;
    }

    // Print bottom row
    for (int i = right; i >= left; i--)
    {
        System.out.print(matrix[bottom][i] + " ");
    }
    bottom--;

    if (top > bottom)
    {
        break;
    }

    // Print left column
    for (int i = bottom; i >= top; i--)
    {
        System.out.print(matrix[i][left] + " ");
    }
    left++;
}

}//while loop
}
}

```

## OOPS

54. Write a java program on encapsulation?

```
class Student
{
    private int studId;
    private String studName;
    private double studFee;

    //setter methods
    public void setStudId(int studId)
    {
        this.studId=studId;
    }
    public void setStudName(String studName)
    {
        this.studName=studName;
    }
    public void setStudFee(double studFee)
    {
        this.studFee=studFee;
    }

    //getter methods
    public int getStudId()
    {
        return studId;
    }
    public String getStudName()
    {
        return studName;
    }
    public double getStudFee()
    {
        return studFee;
    }
}
class EncapsulationApp
{
    public static void main(String[] args)
    {
        Student s=new Student();
        s.setStudId(101);
        s.setStudName("Alan");
        s.setStudFee(1000d);

        System.out.println("Student Id :" + s.getStudId());
        System.out.println("Student Name :" + s.getStudName());
        System.out.println("Student Fee :" + s.getStudFee());
    }
}
```

55. Write a java program on singleton class?

```
class Singleton
{
    static Singleton singleton=null;

    private Singleton()
    {
    }

    public static Singleton getInstance()
    {
        if(singleton==null)
        {
            singleton=new Singleton();
        }
        return singleton;
    }
}

class MainApp
{
    public static void main(String[] args)
    {
        Singleton s1=Singleton.getInstance();
        Singleton s2=Singleton.getInstance();

        System.out.println(s1.hashCode());
        System.out.println(s2.hashCode());
    }
}
```

56. Write a java program on method overloading?

```
class MeeSeva
{
    //overloaded methods
    public void search(int voterIdNo)
    {
        System.out.println("Voter Details Found via voterIdNo");
    }
    public void search(String houseNo)
    {
        System.out.println("Voter Details Found via houseNo");
    }
    public void search(long aadharCardNo)
    {
        System.out.println("Voter Details Found via aadharCardNo");
    }
}

class OverloadingApp
{
    public static void main(String[] args)
    {
        MeeSeva ms=new MeeSeva();
        ms.search(101);
        ms.search("1-4-7/5/A");
```

```
        ms.search(10001L);
    }
}
```

57. Write a java program on method overriding?

```
class Parent
{
    public void property()
    {
        System.out.println("Cash+Gold+Land");
    }
    //overridden methods
    public void marry()
    {
        System.out.println("Subhalakshmi");
    }
}
class Child extends Parent
{
    //overriding methods
    public void marry()
    {
        System.out.println("Rashmika");
    }
}
class OverridingApp
{
    public static void main(String[] args)
    {
        Parent p=new Parent();
        p.property(); // cash+gold+land
        p.marry(); // subhalakshmi

        Child c=new Child();
        c.property(); // cash+gold+land
        c.marry(); // Rashmika

        Parent p1=new Child();
        p1.property(); //cash+gold+land
        p1.marry(); // Rashmika
    }
}
```

58. Write a java program on inheritance?

```
class Parent
{
    public void m1()
    {
        System.out.println("Parent-M1 Method");
    }
}
class Child extends Parent
{
    public void m2()
    {
        System.out.println("Child-M2 Method");
    }
}
class InheritanceApp
{
    public static void main(String[] args)
    {
        Parent p=new Parent();
        p.m1();

        Child c=new Child();
        c.m1();
        c.m2();

        Parent p1=new Child();
        p1.m1();

        Child c1=new Parent(); //invalid
    }
}
```

59. Write a java program for interface?

```
interface A
{
    public abstract void m1();
}
class B implements A
{
    public void m1()
    {
        System.out.println("M1-Method");
    }
}
class InterfaceApp
{
    public static void main(String[] args)
```

```

    {
        A a=new B();
        a.m1();
    }
}

```

Or

```

interface A
{
    public abstract void m1();
}

class InterfaceApp
{
    public static void main(String[] args)
    {
        A a=new A()
        {
            public void m1()
            {
                System.out.println("From M1 Method");
            }
        };
        a.m1();
    }
}

```

60. Write a java program on constructor?

```

class Employee
{
    //current class variables
    private int emplId;
    private String empName;
    private double empSal;

    public Employee(int emplId,String empName,double empSal)
    {
        this.emplId=emplId;
        this.empName=empName;
        this.empSal=empSal;
    }

    public void getEmployeeDetails()
    {
        System.out.println("Employee Id :" +emplId);
        System.out.println("Employee Name :" +empName);
        System.out.println("Employee Salary :" +empSal);
    }
}

class ConstructorApp
{
    public static void main(String[] args)
    {
        Employee e=new Employee(101,"Alan",1000d);
        e.getEmployeeDetails();
    }
}

```

```
    }  
}
```

61. Write a java program to perform sum of two binary numbers?

```
import java.util.Scanner;  
class TwoBinaryNumber  
{  
    public static void main(String[] args)  
    {  
        Scanner sc=new Scanner(System.in);  
  
        System.out.println("Enter the first binary number :");  
        String binary1=sc.next();  
  
        System.out.println("Enter the second binary number :");  
        String binary2=sc.next();  
  
        //converting binary to decimal  
        int a=Integer.parseInt(binary1,2);  
        int b=Integer.parseInt(binary2,2);  
  
        //logic  
        int c=a+b;  
  
        //converting decimal to binary  
        String result=Integer.toBinaryString(c);  
        System.out.println(result);  
    }  
}
```

## Strings

62. Write a java program to display the string in reverse order?

Input:  
hello

Output:  
olleh

```
class ReverseString  
{  
    public static void main(String[] args)  
    {  
        String str="hello";  
        char[] carr=str.toCharArray(); // h   e   l   l   o  
  
        String rev="";  
  
        for(int i=carr.length-1;i>=0;i--)  
        {
```

```

        rev+=carr[i];
    }

    System.out.println(rev);
}
}

```

63. Write a java program to display reverse of a sentence?

Input:

This Is Java Class

Output:

Class Java Is This

```

class ReverseString
{
    public static void main(String[] args)
    {
        String str="This Is Java Class";
        String[] sarr=str.split(" ");      //This   Is   Java   Class

        String rev="";
        for(int i=sarr.length-1;i>=0;i--)
        {
            rev+=sarr[i]+" ";
        }
        System.out.println(rev);
    }
}

```

64. Write a java program to display reverse of a word in a given string?

Input:

This Is Java Class

Output:

sihT sl avaJ ssalC

```

class Test
{
    public static void main(String[] args)
    {
        String str="This Is Java Class";

        String[] sarr=str.split(" "); //This   Is   Java   Class

        String rev="";
        for(String s:sarr)
        {
            char[] carr=s.toCharArray(); // T h i s

            //reading reverse
            for(int i=carr.length-1;i>=0;i--)
            {
                rev+=carr[i];
            }
            //add the space
        }
    }
}

```

```

        rev+=" ";
    }
    System.out.println(rev);
}
}

```

65. Write a java program to check given string is palindrome or not?

Input:

racar

Output:

It is a palindrome string

```

package com.ihub.www;
class PalindromeApp
{
    public static void main(String[] args)
    {
        String str="racar";

        char[] carr=str.toCharArray();

        String rev="";

        for(int i=carr.length-1;i>=0;i--)
        {
            rev+=carr[i];
        }

        if(str.equals(rev))
            System.out.println("It is palindrome string");
        else
            System.out.println("It is not palindrome string");
    }
}

```

66. Write a java program to display permutation of given string?

Input:

ABC

Output:

ABC  
ACB  
BAC  
BCA  
CBA  
CAB

```

class PermutationApp
{
    public static void main(String[] args)
    {

```

```

        String str="ABC";
        permutation(str.toCharArray(),0);
    }

    public static void permutation(char[] arr,int fi)
    {
        if(fi==arr.length-1)
        {
            System.out.println(arr);
            return;
        }

        for(int i=fi;i<arr.length;i++)
        {
            swap(arr,i,fi);
            permutation(arr,fi+1);
            swap(arr,i,fi);
        }
    }

    public static void swap(char[] carr,int i,int fi)
    {
        char temp=carr[i];
        carr[i]=carr[fi];
        carr[fi]=temp;
    }
}

```

67. Write a java program to display given string in below format?

Input:

A1B2C3D4

Output:

ABBCCDDDD

```

class StringFormatAp
{
    public static void main(String[] args)
    {
        String str="A1B2C3D4";

        for(int i=0;i<str.length();i++)
        {
            if(Character.isAlphabetic(str.charAt(i)))
            {
                System.out.print(str.charAt(i)); //
            }
            else
            {
                int k=Character.getNumericValue(str.charAt(i));

                for(int j=1;j<k;j++)
                {

```

68. Write a java program to display duplicate and unique characters from given string?

## Input:

google

## Output:

Duplicate Characters : og  
Unique Characters : gole

```
class DuplicateCharacters
{
    public static void main(String[] args)
    {
        String str="google";

        String duplicates="";
        String uniques="";

        for(int i=0;i<str.length();i++)
        {
            String current=Character.toString(str.charAt(i));

            if(uniques.contains(current))
            {
                if(!duplicates.contains(current))
                {
                    duplicates+=current;
                }
            }
        }
    }
}
```

```

        continue;
    }
}
uniques+=current;
}
System.out.println("Duplicate Characters :" + duplicates);
System.out.println("Unique Characters :" + uniques);
}
}

```

69. Write a java program to find out largest common subsequence in two given strings?

```

package com.ihub.www;
public class LargestSubsequence
{
    public static void main(String[] args)
    {
        String s1="ABCAB";
        String s2="AECB";

        int size1=s1.length()-1;
        int size2=s1.length()-1;

        System.out.println(lcs(size1,size2,s1,s2));
    }
    public static int lcs(int m,int n,String a,String b)
    {
        return lcsUtil(m,n,a,b);
    }
    public static int lcsUtil(int m,int n,String a,String b)
    {
        if(m==0 || n==0)
            return 0;
        if(a.charAt(m-1) == b.charAt(n-1))
            return 1+lcsUtil(m-1,n-1,a,b);
        else
            return Math.max(lcsUtil(m,n-1,a,b), lcsUtil(m-1,n,a,b));
    }
}

```

70. Write a java program to perform right rotation of a given string?

**Input:**

ihubtalent

count : 2

**Output:**

ntihubtale

```

package com.ihub.www;
public class RightRotation
{
    public static void main(String[] args)
    {
        String str="ihubtalent";

        int count=2;

        //System.out.println(str.substring(str.length()-count,str.length()));// nt
        //System.out.println(str.substring(0,str.length()-count));// ihubtale

        //right to left rotation
        str=str.substring(str.length()-count,str.length())+str.substring(0,str.length()-count);

        System.out.println(str);

    }
}

```

71. Write a java program to perform left rotation of a given string?

Input:

ihubtalent

no of characters : 2

output:

ubtalentih

```

package com.ihub.www;
public class TEst
{
    public static void main(String[] args)
    {
        String str="ihubtalent";

        int count=2;

        //System.out.println(str.substring(0,count));// ih
        //System.out.println(str.substring(count,str.length())); // ub (remaining)

        //left to right rotation
        str=str.substring(count,str.length())+str.substring(0,count);

        System.out.println(str);
    }
}

```

72. Write a java program to create your own immutable class?

```
public final class ImmutableClass
{
    private final int i;
    private final String s;

    // Constructor to initialize immutable fields
    public ImmutableClass(int i, String s) {
        this.i = i;
        this.s = s;
    }

    // Getter methods to access immutable fields
    public void getDetails()
    {
        System.out.println("Immutable Field is :" + i);
        System.out.println("Immutable String is :" + s);
    }
}

public static void main(String[] args)
{
    ImmutableClass ic = new ImmutableClass(10, "Immutable");
    ic.getDetails();

    ic.i=20; // invalid
    ic.s="myobject"; // invalid
}
```

73. Write a java program to check given string is anagram or not?

Input:

```
str1="silent";
str2="listen";
```

Output:

It is a anagram string

```
import java.util.Arrays;
class AnagramApp
{
    public static void main(String[] args)
    {
        String str1="silent";
        String str2="listen";

        char[] carr1=str1.toCharArray();
        char[] carr2=str2.toCharArray();

        //sorting
```

```

        Arrays.sort(carr1); // e i l n s t
        Arrays.sort(carr2); // e i l n s t

        boolean flag=true;
        for(int i=0;i<carr1.length && i<carr2.length;i++)
        {
            if(carr1[i] != carr2[i])
            {
                flag=false;
                break;
            }
        }
        if(flag==true)
            System.out.println("It is a anagram string");
        else
            System.out.println("It is not a anagram string");
    }
}

```

74. Write a java program to display most repeating character in a given string?

**Input:**

ihubtalentinstitute

**Output:**

t is repeating for 5 times

```

class MostRepeating
{
    public static void main(String[] args)
    {
        String str="ihubtalentinstitute";

        int maxCount=0;
        char character=' ';

        for(int i=0;i<str.length();i++)
        {
            int cnt=0;

            for(int j=0;j<str.length();j++)
            {
                if(str.charAt(i)==str.charAt(j))
                {
                    cnt++;
                }
            }
            if(maxCount<cnt)
            {
                maxCount=cnt;
                character=str.charAt(i);
            }
        }
        System.out.println(character+" is repeating for "+maxCount+" times");
    }
}

```

}

## StringBuffer

75. Write a java program to display reverse of a given string?

Input:

hello

Output:

olleh

```
class StringBuffer
{
    public static void main(String[] args)
    {
        String str="hello";

        StringBuffer sb=new StringBuffer(str);

        String rev=sb.reverse().toString();

        System.out.println(rev);

    }
}
```

76. Write a java program to check given string is palindrome or not?

Input:

racar

Output:

It is a palindrome string

```
class Test
{
    public static void main(String[] args)
    {
        String str="racar";

        StringBuffer sb=new StringBuffer(str);

        String rev=sb.reverse().toString();

        if(str.equals(rev))
            System.out.println("It is a palindrome string");
        else
            System.out.println("It is not a palindrome string");

    }
}
```

77. Write a java program to display the given string in below format?

Input:

ABBCCCCDDD

Output:

A1B2C3D4

ex:

---

```
class StringFormat
{
    public static void main(String[] args)
    {
        String str="ABBCCCCDDD";
        StringBuffer sb=new StringBuffer();
        int count=1;
        for(int i=0;i<str.length();i++)
        {
            if(i<str.length()-1 && str.charAt(i) == str.charAt(i+1))
            {
                count++;
            }
            else
            {
                sb.append(str.charAt(i)).append(count);
                count=1;
            }
        }
        System.out.println(sb.toString());
    }
}
```

78. Write a java program to perform multiplication of two arrays?

Input:

arr1 = 6 2 4

arr2 = 3 1

Output:

19344 (624\*31)

```
class MultiplicationOfTwoArray
{
    public static void main(String[] args)
    {
        int[] arr1 ={6,2,4};
        int[] arr2 ={3,1};

        String str1=arrayToString(arr1);
```

```

        String str2=arrayToString(arr2);

        //convert string to int
        int a=Integer.parseInt(str1);
        int b=Integer.parseInt(str2);
        System.out.println(a*b);
    }
    public static String arrayToString(int[] arr)
    {
        StringBuffer sb=new StringBuffer();

        //for each loop
        for(int i:arr)
        {
            sb.append(i);
        }

        return sb.toString();
    }
}

```

## Collections

79. Write a java program to check given string is balanced or not?

Input:

{[()]}

Output:

It is a balanced string

```

import java.util.*;
class Test
{
    public static void main(String[] args)
    {
        String str="{[()]}";

        if(isBalanced(str.toCharArray()))
            System.out.println("It is balanced string");
        else
            System.out.println("It is not balanced string");
    }

    //callie method
    public static boolean isBalanced(char[] carr)
    {
        Stack<Character> s=new Stack<Character>();
        for(char ch:carr)
        {
            if(ch=='{' || ch=='[' || ch=='(')
            {
                s.push(ch);
            }
            else if(ch=='}' && !s.empty() && s.peek()=='{')
            {

```

```

        s.pop();
    }
    else if(ch==']' && !s.empty() && s.peek()=='[')
    {
        s.pop();
    }
    else if(ch==')' && !s.empty() && s.peek()=='(')
    {
        s.pop();
    }
    else
    {
        return false;
    }
}
return s.isEmpty();
}
}

```

80. Write a java program to display duplicate and unique elements from given array?

```

import java.util.*;
class UniqueAndDuplicate
{
    public static void main(String[] args)
    {
        int[] arr={1,1,2,3,3,4,5,5,5};

        Set<Integer> unique=new LinkedHashSet<Integer>();
        Set<Integer> duplicate=new LinkedHashSet<Integer>();

        for(int i:arr)
        {
            if(!unique.add(i))
            {
                duplicate.add(i);
            }
            unique.add(i);
        }
        System.out.println(unique);
        System.out.println(duplicate);
    }
}

```

81. Write a java program to display number of words present in a given string?

Input:

this is is java java

Output:

this=1,is=2,java=2

```
import java.util.*;
class NoOfWords
{
    public static void main(String[] args)
    {
        String str="this is is java java";

        String[] sarr=str.split(" ");

        Map<String,Integer> map=new LinkedHashMap<String,Integer>();

        //for each loop
        for(String s:sarr)
        {
            if(map.get(s)!=null)
            {
                map.put(s,map.get(s)+1);
            }
            else
            {
                map.put(s,1);
            }
        }

        System.out.println(map);
    }
}
```

82. Write a java program to display number of characters present in a given string?

Input:

java

Output:

j=1,a=2,v=1

```
import java.util.*;
class NoOfCharacters
{
    public static void main(String[] args)
    {
        String str="java";

        char[] carr=str.toCharArray();
```

```

Map<Character,Integer> map=new LinkedHashMap<Character,Integer>();

//for each loop
for(char c:carr)
{
    if(map.get(c)!=null)
    {
        map.put(c,map.get(c)+1);
    }
    else
    {
        map.put(c,1);
    }

}
System.out.println(map);
}
}

```

## Date

83. Write a java program to display Date and Time?

```

import java.time.LocalDate;
import java.time.LocalTime;
class DateAndTime
{
    public static void main(String[] args)
    {
        LocalDate date=LocalDate.now();
        System.out.println(date);

        LocalTime time=LocalTime.now();
        System.out.println(time);
    }
}

```

Or

```

class DateAndTime
{
    public static void main(String[] args)
    {
        java.util.Date d=new java.util.Date();
        System.out.println(d);
    }
}

```

84. Write a java program to compare two dates?

```

import java.time.LocalDate;
class CompareTwoDates
{
    public static void main(String[] args)
    {

```

```

        LocalDate d1=LocalDate.now(); // 2024-02-09

        LocalDate d2=LocalDate.now(); // 2024-02-09

        if(d1.compareTo(d2)<0)
            System.out.println("Date1 less than Date2");
        else if(d1.compareTo(d2)>0)
            System.out.println("Date1 greater than Date2");
        else
            System.out.println("Both Date are same");
    }
}

```

## Exception Handling

85. Write a java program to create custom exceptions?

```

class TooYoungException extends RuntimeException
{
    TooYoungException(String msg)
    {
        super(msg);
    }
}

class TooOldException extends RuntimeException
{
    TooOldException(String msg)
    {
        super(msg);
    }
}

class CustomException
{
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter the age :");
        int age=sc.nextInt();

        if(age<18)
            throw new TooYoungException("U r not eligible to vote");
        else
            throw new TooOldException("U r eligible to vote");
    }
}

```

86. Write a java program to handle multiple exceptions using single catch block?

```

class HandleMultipleExceptions
{
    public static void main(String[] args)
    {
        try
        {
            System.out.println(10/0);
        }
        catch (ArithmaticException | NullPointerException | ClassCastException e)

```

```

        {
            System.out.println("catch-block");
        }

    }
}

```

## Java 8 Features

87. Write a java program on functional interface and lamda expression?

```

@FunctionalInterface
interface A
{
    //abstract method
    public abstract void m1();
}

class LamdaExpression
{
    public static void main(String[] args)
    {
        A a=()->
        {
            System.out.println("Hello World");
        };
        a.m1();
    }
}

```

88. How to achieve multiple inheritance in java?

```

interface Right
{
    default void m1()
    {
        System.out.println("Right-M1-Method");
    }
}

interface Left
{
    default void m1()
    {
        System.out.println("Left-M1-Method");
    }
}

class Middle implements Right,Left
{
    public void m1()
    {
        Right.super.m1();
        Left.super.m1();
    }
}

class MultipleInheritance
{
    public static void main(String[] args)
    {

```

```

        Middle m=new Middle();
        m.m1();
    }
}

```

89. Write a java program to display employee details based on sorting order of salary?

```

import java.util.*;
import java.util.stream.*;
class Employee
{
    private int empld;
    private String empName;
    private double empSal;
    Employee(int empld,String empName,double empSal)
    {
        this.empld=empld;
        this.empName=empName;
        this.empSal=empSal;
    }
    public int getEmpld()
    {
        return empld;
    }
    public String getEmpName()
    {
        return empName;
    }
    public double getEmpSal()
    {
        return empSal;
    }
}
class IdSortingOrder
{
    public static void main(String[] args)
    {
        List<Employee> list=new ArrayList<Employee>();
        list.add(new Employee(101,"Alan",10000));
        list.add(new Employee(105,"Jose",50000));
        list.add(new Employee(103,"Nelson",30000));
        list.add(new Employee(104,"Lara",40000));
        list.add(new Employee(102,"Brook",20000));

        List<Employee> newList=list.stream()
            .sorted(Comparator.comparingInt(Employee::getEmpld))
            .collect(Collectors.toList());

        newList.forEach(employee ->
        System.out.println(employee.getEmpld()+" "+employee.getEmpName()+" "+employee.getEmpSal()));
    }
}

```

90. Write a java program to display employee details based on sorting order of employee names?

```
import java.util.*;
import java.util.stream.*;
class Employee
{
    private int empld;
    private String empName;
    private double empSal;
    Employee(int empld,String empName,double empSal)
    {
        this.empld=empld;
        this.empName=empName;
        this.empSal=empSal;
    }
    public int getEmpld()
    {
        return empld;
    }
    public String getEmpName()
    {
        return empName;
    }
    public double getEmpSal()
    {
        return empSal;
    }
}
class NameSortingOrder
{
    public static void main(String[] args)
    {
        List<Employee> list=new ArrayList<Employee>();
        list.add(new Employee(101,"Alan",10000));
        list.add(new Employee(105,"Jose",50000));
        list.add(new Employee(103,"Nelson",30000));
        list.add(new Employee(104,"Lara",40000));
        list.add(new Employee(102,"Brook",20000));

        List<Employee> newList=list.stream()
            .sorted(Comparator.comparing(Employee::getEmpName)).collect(Collectors.toList());

        newList.forEach(employee ->
        System.out.println(employee.getEmpld()+" "+employee.getEmpName()+" "+employee.getEmpSal()));
    }
}
```

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