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***PROGRAMS on  
NUMBERS***

## Write a program to Print 1 to N numbers?

```
class Printnums
{
    public static void main (String[] args)
    {
        java.util.Scanner sc = new java.util.Scanner (System.in);
        System.out.println ("enter value of n");
        int n = sc.nextInt();
        for (int i = 1; i<=n ; i++)
        {
            System.out.println (i);
        }
    }
}
```

### OUTPUT:

enter value of n: 10

1  
2  
3  
4  
5  
6  
7  
8  
9  
10

## Write a program to Print REVERSE of N to 1 numbers?

```
class Printnums
{
    public static void main(String[] args)
    {
        java.util.Scanner sc = new java.util.Scanner(System.in);
        System.out.println ("enter value of n");
        int n=sc.nextInt();
        for(int i=n ;i>=1;i--)
        {
            System.out.print(i);
        }
    }
}
```

### OUTPUT:

enter value of n: 10

10 9 8 7 6 5 4 3 2 1

## Write a program to display sum of 1 to N numbers?

```
class Sumnum
{
    public static void main(String[] args)
    {
        java.util.Scanner sc=new java.util.Scanner(System.in);
        System.out.println("enter value of n");
        int n=sc.nextInt();
        int sum=0;
        for(int i=1;i<=n ;i++)
        {
            sum+=i;
        }
        System.out.println(sum);
    }
}
```

### OUTPUT:

```
enter value of n: 10
55
```

## Write a program to check given number is EVEN or ODD?

```
class EvenOdd
{
    public static void main(String[] args)
    {
        java.util.Scanner sc=new java.util.Scanner(System.in);
        System.out.println("enter the num");
        int n=sc.nextInt();
        if(n%2==0)
            System.out.println(n+" is even");
        else
            System.out.println(n+" is odd");
    }
}
```

### OUTPUT:

```
enter the num: 20
20 is even
```

```
F:\Practice>java Even(Command prompt)
enter the num: 11
11 is odd
```

**Write a program to display PRIME NUMBERS from 1 to n?**

```
class Prime
{
    public static void main (String [] args)
    {
        java.util.Scanner sc=new java.util.Scanner (System.in);
        System.out.println ("enter number");
        int n=sc.nextInt ();
        System.out.println ("Prime numbers between 1 and " + n);
        //loop through the numbers one by one
        for (int i=1; i < n; i++)
        {
            boolean isPrime = true;
            //check to see if the number is prime
            for (int j=2; j < i ; j++)
            {
                if (i % j == 0)
                {
                    isPrime = false;
                    break;
                }
            }
            // print the number
            if (isPrime)
                System.out.print (i + " ");
        }
    }
}
```

**OUTPUT:**

enter number

25

Prime numbers between 1 and 25

1 2 3 5 7 11 13 17 19 23

## Write a program to check whether the given number is PRIME or not?

```
class Prime
{
    public static void main(String[] args)
    {
        java.util.Scanner sc=new java.util.Scanner(System.in);
        System.out.println("enter number");
        int n=sc.nextInt();
        int i;
        if(n==1)
        {
            System.out.println("Prime starts from 2");
        }
        for(i=2;i<n ;i++)
        {
            if(n%i==0)
                System.out.println("not a prime");
            break;
        }
        if(n==i)
            System.out.println("prime");
    }
}
```

### OUTPUT:

Enter the number : 17

Prime

## Write a program to find SUM OF PRIME numbers?

```
import java.util.Scanner;

public class SumofPrime
{
    public static void main(String[] args)
    {
        Scanner scn=new Scanner(System.in);
        System.out.println("Enter the range to print sum of prime Nos.....");
        int range=scn.nextInt();
        int sum=0;
        for(int i=1;i<=range ;i++)
        {
            if(isPrime(i))
                sum=sum+i;
        }
        System.out.println(sum);
    }
}
```

```

public static boolean isPrime(int num)
{
    if(num==1) return false;
    for(int i=2;i<num ;i++)
    {
        if(num%i==0)
        {
            return false;
        }
    }
    return true;
}
}

```

**OUTPUT:**

Enter the range to print sum of prime Nos.....

10

17

**Write a program to display MULTIPLICATION table?**

```

class Multiplication
{
    public static void main(String[] args)
    {
        java.util.Scanner sc=new java.util.Scanner(System.in);
        System.out.println("enter value of n");
        int n=sc.nextInt();
        for(int i=1;i<=10;i++)
        {
            System.out.println(n+"*"+i+"="+n*i);
        }
    }
}

```

**Output:**

enter value of n: 2

2\*1=2

2\*2=4

2\*3=6

2\*4=8

2\*5=10

2\*6=12

2\*7=14

2\*8=16

2\*9=18

2\*10=20

## Write a program to display MULTIPLICATION TABLES?

class Tables

```
{
    public static void main(String[] args)
    {
        java.util.Scanner sc=new java.util.Scanner(System.in);
        System.out.println("enter value of n");
        int n=sc.nextInt();
        for(int i=1;i<=n ;i++)
        {
            for (int j=1;j<=10 ;j++ )
            {
                System.out.print(j+"*"+i+"="+j*i+"\t");
            }
        }
        System.out.println();
    }
}
```

### OUTPUT:

enter value of n: 5

1*1=1	2*1=2	3*1=3	4*1=4	5*1=5
1*2=2	2*2=4	3*2=6	4*2=8	5*2=10
1*3=3	2*3=6	3*3=9	4*3=12	5*3=15
1*4=4	2*4=8	3*4=12	4*4=16	5*4=20
1*5=5	2*5=10	3*5=15	4*5=20	5*5=25
1*6=6	2*6=12	3*6=18	4*6=24	5*6=30
1*7=7	2*7=14	3*7=21	4*7=28	5*7=35
1*8=8	2*8=16	3*8=24	4*8=32	5*8=40
1*9=9	2*9=18	3*9=27	4*9=36	5*9=45
1*10=10	2*10=20	3*10=30	4*10=40	5*10=50

**Write program weather the number is PERFECT NUMBER or not?**

**Def:**

**Perfect number**, a positive integer that is equal to the sum of its proper divisors. The smallest perfect number is 6, which is the sum of 1, 2, and 3.

```
import java.util.*;
class Perfectnumber
{
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("enter a number");
        int num=sc.nextInt();
        int sum=1;
        for (int i=2;i<=num/2;i++ )
        {
            if (num%i==0)
                sum=sum+i;
        }
        if (sum==num)
        {
            System.out.println(num+"is a Perfect number");
        }
        else
            System.out.println(num+" is not a Perfect number");
    }
}
```

**OUTPUT:**

enter a number

6

6 is a Perfect number



## Write a program to display RANGE of PERFECT NUMBERS?

```
import java.util.*;
class Rangeperfectnumber
{
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("enter a number");
        int n=sc.nextInt();
        for(int num=1;num<=n; num++)
        {
            int sum=1;
            for (int i=2;i<=num/2;i++ )
            {
                if (num%i==0)
                    sum=sum+i;
            }
            if (sum==num)
            {
                System.out.println(num+"is a Perfect number");
            }
        }
    }
}
```

### OUTPUT:

enter a number

100

1is a perfect number

6is a perfect number

28is a perfect number

**Write a program to check the given number is PALINDROME or not?**

```
import java.util.*;
class Palindrome
{
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("enter a number");
        int n =sc.nextInt();
        int t=n;
        int rev=0;
        while (n!=0)
        {
            rev=rev*10+(n%10);
            n=n/10;
        }
        if (rev==t)
            System.out.println(t+" is a palindrome number");
        else
            System.out.println(t+" is not a palindrome number");

    }
}
```

**OUTPUT:**

enter a number

121

121 is a palindrome number

enter a number

143

143 is not a palindrome number

## Write a program to find the FACTORIAL of a given number?

```
import java.util.*;
class Factorial
{
    public static void main(String[] args)
    {
        Scanner scn=new Scanner(System.in);
        System.out.println("enter the number");
        int n=scn.nextInt();
        int fact=1;
        for (int i=1;i<=n ;i++ )
        {
            fact=fact*i;
        }
        System.out.println(fact);
    }
}
```

### OUTPUT:

```
Enter the number
5
120
```

## Write a program to find the FACTORIAL of a given RANGE of numbers?

```
import java.util.*;
class FactRange
{
    static int fact(int n)
    {
        int fact=1;
        while (n>0)
        {
            fact=fact*n;
            n--;
        }
        return fact;
    }
    public static void main(String[] args)
    {
        Scanner scn=new Scanner(System.in);
        System.out.println("enter the factorial range number");
        int k=scn.nextInt();
        for (int i=1;i<=k ;i++)
        {
            System.out.println(i+"!---->" +fact(i));
        }
    }
}
```

**OUTPUT:**

enter the factorial range number :7

1!---->1

2!---->2

3!---->6

4!---->24

5!---->120

6!---->720

7!---->5040

**Write program to check the given number is STRONG or not?**

**Def: Strong numbers** are the **numbers** whose sum of factorial of digits is equal to the original **number**.

Example: 145 is a **strong number**.

```
import java.util.*;
class Strongnumber
{
    static int fact(int n)
    {
        int fact=1;
        while (n>0)
        {
            fact= fact*n;
            n--;
        }
        return fact;
    }
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("enter a number");
        int n =sc.nextInt();
        int num=n;
        int sum=0;
        int t=num;
        while (num!=0)
        {
            int r=num%10;
            sum=sum + fact(r);
            num=num/10;
        }

        if (sum==t)
            System.out.println(t+" is a strong number");
        else
            System.out.println(t+" not a strong number");
    }
}
```

**OUTPUT:**

```
enter a number
143
143not a strong number
```

**Write program weather to find range of STRONG NUMBER?**

```
import java.util.*;
class Strongnumber
{
    static int fact(int n)
    {
        int fact=1;
        while (n>0)
        {
            fact= fact*n;
            n--;
        }
        return fact;
    }
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("enter a Range");
        int n =sc.nextInt();
        for (int i=1;i<=n ;i++ )
        {
            int num=i;
            int sum=0;
            int t=num;
            while (num!=0)
            {
                int r=num%10;
                sum=sum + fact(r);
                num=num/10;
            }

            if (sum==t)
                System.out.println(t+ " is a strong number");
        }
    }
}
```

**OUTPUT:**

```
enter a Range
145
1is a strong number
2is a strong number
145 is a strong number
```

## Write a program to display FIBONACCI series of a number?

**Def:** a series of numbers in which each number ( *Fibonacci number* ) is the sum of the two preceding numbers. The simplest is the series 1, 1, 2, 3, 5, 8, etc.

```
class Fibonacci
{
    static int fib(int n)
    {
        if(n==0)
            return 0;
        if(n==1)
            return 1;
        return fib(n-1)+fib(n-2);
    }
    public static void main(String[] args)
    {
        java.util.Scanner sc=new java.util.Scanner(System.in);
        System.out.println("Enter the number");
        int m=sc.nextInt();
        int f=fib(m);
        System.out.println(f);
    }
}
```

### OUTPUT:

```
Enter the number
10
55
```

## Write a program to display range of FIBONACCI numbers?

```
import java.util.Scanner;
public class FibonacciSeries1
{
    public static void main(String[] args)
    {
        Scanner scn=new Scanner(System.in);
        System.out.println("enter the range:.....");
        int range=scn.nextInt();
        int a=0;
        int b=1;
        int c=0;
        System.out.print(a);
        System.out.print(b);
        for (int i = 2; i <=range; i++)
        {
            c=a + b;
```

```

        if(c<=range)
        {

            //c=a + b;
            System.out.print(c);
            a=b;
            b=c;
        }
    }
}

```

**OUTPUT:**

Enter the range....

50

0 1 1 2 3 5 8 13 21 34

**Write a program to REVERSE the number?**

```

import java.util.Scanner;
class Reversenum
{
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("enter the number");
        int num=sc.nextInt();
        int t=num;
        int rev=0;

        while(num!=0)
        {
            rev = rev*10+(num%10);
            num = num/10;
        }
        System.out.println(rev);
    }
}

```

**OUTPUT:**

enter the number

105

501

## Write a program to display GCD of two numbers?

```
import java.util.Scanner;
class Gcd
{
    static int gcd(int m,int n)
    {
        if(m<n)
            return gcd(n,m);
        if(n==0)
            return m;
        return gcd(n, m%n);
    }
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println(" Enter the two numbers");
        int p = sc.nextInt();
        int q = sc.nextInt();
        int a=gcd(p, q);
        System.out.println(a);
    }
}
```

### OUTPUT:

```
Enter the two numbers
90
120
30
```

## Write a program to check the given number is PRIME PALINDROME or not?

```
import java.util.*;
class Palindrome
{
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("enter a number");
        int n =sc.nextInt();
        int t=n;
        int rev=0;
        int i;
        while (n!=0)
        {
            rev=rev*10+(n%10);
            n=n/10;
        }
        if (rev==t)
```



```

        {
            for( i=2;i<rev ;i++)
            {
                if(rev % i==0)
                {
                    System.out.println("not a prime palindrome");
                    break;
                }
            }
            if(rev==i)

                System.out.println(t+ "is a prime palindrome number");
        }
        else
            System.out.println(t+ "is not a prime palindrome number");
    }
}

```

#### OUTPUT:

```

enter a number
313
313 is a prime palindrome number

```

```

enter a number
103
103 is not a prime palindrome number

```

### Write a Program to check the given number is ARMSTRONG or not?

**Def:** An Armstrong number is an integer such that the sum of the power of its digits is equal to the number itself.

For example, 371 is an Armstrong number since  $3^3 + 7^3 + 1^3 = 371$ .

9 is an Armstrong number since  $9^1 = 9$ .

```

import java.util.Scanner;
public class Armstrong1
{
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("enter the number");
        int n=sc.nextInt();
        boolean r=isArmstrong(n);
        if(r)
            System.out.println("Given num is Armstrong");
        else
            System.out.println("Given num is not Armstrong");
    }
}

```

```

    }
    static int countDigit(int num)
    {
        int count=0;
        while(num>0)
        {
            count++;
            num=num/10;
        }
        return count;
    }
    static int pow(int n, int p)
    {
        int pw=1;
        while(p>0)
        {
            pw=pw*n;
            p--;
        }
        return pw;
    }
    static boolean isArmstrong(int x)
    {
        int nd=countDigit(x);
        int t=x;
        int sum=0;
        while(t>0)
        {
            int r=t%10;
            sum=sum+ pow(r ,nd);
            t=t/10;
        }
        if(sum==x)
            return true;
        else
            return false;
    }
}

```

}

# **OUTPUT:**

enter the number

153

Given num is Armstrong

enter the number

1

Given num is Armstrong

## Write a Program to display the range of ARMSTRONG numbers?

```
import java.util.Scanner;
public class Armstrong2
{
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("enter the number");
        int n=sc.nextInt();
        for (int i=0;i<=n ;i++ )
        {

            boolean r=isAmstrong(i);
            if(r)
                System.out.println(i +" is Armstrong");

        }
    }
    static int countDigit(int num)
    {
        int count=0;
        while(num>0)
        {
            count++;
            num=num/10;
        }
        return count;
    }
    static int pow(int n ,int p)
    {
        int pw=1;
        while(p>0)
        {
            pw=pw*n;
            p--;
        }
        return pw;
    }
    static boolean isAmstrong(int x)
    {
        int nd=countDigit(x);
        int t=x;
        int sum=0;
```

```

        while(t>0)
        {
            int r=t%10;
            sum=sum +pow(r ,nd);
            t=t/10;
        }
        if(sum==x)
            return true;
        else
            return false;
    }
}

```

### OUTPUT:

enter the number: 300

0 is Armstrong

1 is Armstrong

2 is Armstrong

3 is Armstrong

4 is Armstrong

5 is Armstrong

6 is Armstrong

7 is Armstrong

8 is Armstrong

9 is Armstrong

153 is Armstrong

### Write a program to Swap two numbers without using 3<sup>rd</sup> variable?

```

class Swap
{
    public static void main(String[] args) {
        int i=10;
        int j=20;
        i=i + j;
        j=i-j;
        i=i-j;
        System.out.println("i="+i);
        System.out.println("j="+j);
    }
}

```

### OUTPUT:

i=20

j=10

**Write a program to Swap two numbers with using 3<sup>rd</sup> variable?**

```
class Swapv
{
    public static void main(String[] args)
    {
        int i=10;
        int j=20;
        int k;
        k=i;
        i=j;
        j=k;
        System.out.println("i="+i);
        System.out.println("j="+j);
    }
}
```

**OUTPUT:**

i=20

j=10

# **NUMBER CONVERSIONS**

## Write a program to convert BINARY to DECIMAL?

```
import java.util.*;
public class Bintodec
{
    public static void main(String[] args)
    {
        System.out.println("enter the binary number");
        Scanner sc=new Scanner(System.in);
        long n =sc. nextLong();
        long dec=0;
        int count=0;
        while(n>0)
        {
            long r=n%10;
            dec=dec +r*pow(2,count);
            count++;
            n/=10;
        }
        System.out.println("decimal Equivalent:" +dec);
    }

    static int pow(int n, int p)
    {
        int pw=1;
        while(p>0)
        {
            pw=pw*n;
            p--;
        }
        return pw;
    }
}
```

### OUTPUT:

```
enter the binary number
111100001111
decimal Equivalent:3855
```

## Write a program to convert DECIMAL to BINARY?

```
import java.util.*;
public class Dectobin
{
    public static void main(String[] args)
    {
        System.out.println("enter the decimal number");
        Scanner sc=new Scanner(System.in);
        int n=sc.nextInt();
        String bin="";
        while(n>0)
        {
            int r=n%2;
            bin= r + bin;
            n=n/2;
        }
        System.out.println("Binary Equivalent:" + bin);
    }
}
```

### OUTPUT:

```
enter the decimal number
3855
Binary Equivalent:111100001111
```

## Write a program to convert OCTAL to DECIMAL?

```
import java.util.*;
public class Octtodec
{
    public static void main(String[] args)
    {
        System.out.println("enter the octal number");
        Scanner sc=new Scanner(System.in);
        int n =sc.nextInt();
        int dec=0;
        int count=0;
        while(n>0)
        {
            int r=n%10;
            dec=dec + r*pow(8,count);
            count++;
            n/=10;
        }
    }
}
```



```

    }
    System.out.println("decimal Equivalent:" +dec);
}

static int pow(int n, int p)
{
    int pw=1;
    while(p>0)
    {
        pw=pw*n;
        p--;
    }
    return pw;
}

}

```

**OUTPUT:**

```

enter the octal number
763
decimal Equivalent:499

```

**Write a program to convert DECIMAL to OCTAL?**

```

import java.util.*;
public class DectoOct
{
    public static void main(String[] args)
    {
        System.out.println("enter the decimal number");
        Scanner sc=new Scanner(System.in);
        int n=sc.nextInt();
        String oct="";
        while(n>0)
        {
            int r=n%8;
            oct= r + oct;
            n=n/8;
        }
        System.out.println("Octal Equivalent:" + oct);
    }
}

```

**OUTPUT:**

```

enter the decimal number
56
Octal Equivalent:70

```

## Write a program to convert DECIMAL to HEXADECIMAL?

```
import java.util.*;
public class Dectohex
{
    public static void main(String[] args)
    {
        System.out.println("enter the decimal number");
        Scanner sc=new Scanner(System.in);
        int n=sc.nextInt();
        String hex="";
        while(n>0)
        {
            int r=n%16;
            switch (r)
            {
                case 10: hex='A'+ hex;
                    break;
                case 11: hex='B'+ hex;
                    break;
                case 12: hex='C'+ hex;
                    break;
                case 13: hex='D'+ hex;
                    break;
                case 14: hex='E'+ hex;
                    break;
                case 15: hex='F'+ hex;
                    break;

                default: hex=r + hex;
                    break;
            }
            n=n/16;
        }
        System.out.println("Hexadecimal Equivalent :"+hex);
    }
}
```

### OUTPUT:

enter the decimal number

469

Hexadecimal Equivalent :1D5

## Write a program to convert DECIMAL to ALL(Octal , Hexa and Binary)?

```
import java.util.*;
public class DectoAll
{
    public static void main(String[] args)
    {
        System.out.println("enter the number");
        Scanner sc=new Scanner(System.in);
        int n=sc.nextInt();
        System.out.println("enter the base");
        int ba=sc.nextInt();
        System.out.println(ba +"base equivalent "+Convert(n, ba));
    }
    static String Convert(int num, int base)
    {
        String st="0123456789ABCDEF";
        String b="";
        while(num>0)
        {
            int r= num % base;
            b=st.charAt(r)+b;
            num=num/base;
        }
        return b;
    }
}
```

### OUTPUT:

enter the number: 469  
enter the base: 16  
16 base equivalent: 1D5

enter the number: 369  
enter the base: 8  
8 base equivalent : 561

enter the number: 50  
enter the base: 2  
2 base equivalent: 110010

## Write a program to convert DECIMAL to HEXADECIMAL?

```
import java.util.Scanner;
class HexatoDec
{
    public static void main(String[] args)
    {
        System.out.println("enter the Hexa dec number");
        Scanner sc=new Scanner(System.in);
        String st=sc.nextLine();
        int dec = 0;
        int count = 0;
        int l = st.length();
        while(l>0)
        {
            int r=0;
            char ch=st.charAt(l-1);
            if(ch>=65 && ch<=70)
                r=ch-55;
            else if(ch>=97 && ch<=102)
                r=ch-87;
            else
                r=ch-48;
            dec=dec + r*pow(16,count);
            count++;
            l--;
        }
        System.out.println("Decimal Equivalent: "+dec);
    }
    static int pow(int n ,int p)
    {
        int pw=1;
        while(p>0)
        {
            pw=pw*n;
            p--;
        }
        return pw;
    }
}
```

### OUTPUT:

enter the Hexa dec number: 1D5

Decimal Equivalent: 469

***PROGRAMS on  
STAR PATTERNS***

## Write a program to display EQUILATERAL TRIANGLE with stars?

```
import java.util.Scanner;
public class EquiTri
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("enter the number");
        int n = sc.nextInt();
        for(int i=0;i<n ;i++)
        {
            for (int j=0;j<n-i-1;j++)
            {
                System.out.print(" ");
            }
            for(int k=0;k<=i; k++)
            {
                System.out.print("* ");
            }
            System.out.println( );
        }
    }
}
```

### OUTPUT:

enter the number: 7

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

## Write a program to Display INVERTED TRIANGLE with stars?

```
import java.util.Scanner;
public class InverTri
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("enter the number");
        int n = sc.nextInt();
        for(int i=0;i<n ;i++)
        {
```

```

        for (int j=0;j<i; j++)
        {
            System.out.print(" ");

        }
        for(int k=0;k<2*(n-i)-1;k++)
        {
            System.out.print("*");
        }
        System.out.println ( );
    }
}

```

**OUTPUT:**

enter the number: 4

\*\*\*\*\*

\*\*\*\*\*

\*\*\*

\*

## Write a program to display the FILLED BOX with stars?

```

class FilledBox
{
    public static void main(String[] args)
    {
        java.util.Scanner sc=new java.util.Scanner(System.in);
        System.out.println("enter value of n");
        int n=sc.nextInt();
        for(int i=1;i<n ;i++)
        {
            for (int j=0;j<n ;j++ )
            {
                System.out.print("*");
            }
            System.out.println();
        }
    }
}

```

**Output:**

enter value of n: 7

\*\*\*\*\*

\*\*\*\*\*

\*\*\*\*\*

\*\*\*\*\*

\*\*\*\*\*

\*\*\*\*\*

## Write a program to display the HALLOW BOX with stars?

```
class Box1
{
    public static void main(String[] args)
    {
        java.util.Scanner sc = new java.util.Scanner(System.in);
        System.out.println ("enter value of n");
        int n = sc.nextInt();
        for (int i=0;i<n ;i++ )
        {
            for (int j=0;j<n ;j++ )
            {
                if (i==0||j==0||i==n-1||j==n-1)
                {
                    System.out.print("*");
                }
                else
                {
                    System.out.print(" ");
                }
            }
            System.out.println();
        }
    }
}
```

### Output:

```
enter value of n 7
* ***** *
*          *
*          *
*          *
*          *
*          *
* ***** *
```

## Write a program to display the BOX and CROSS inside it with stars?

```
class Box1
{
    public static void main(String[] args)
    {
        java.util.Scanner sc=new java.util.Scanner(System.in);
        System.out.println("enter value of n");
        int n=sc.nextInt();
        for (int i=0;i<n ;i++ )
        {
            for (int j=0;j<n ;j++ )
            {
```



```

        if (i==0||j==0||i==n-1||j==n-1||i==j||i+j==n-1)
        {
            System.out.print("*");
        }
        else
        {
            System.out.print(" ");
        }
    }
    System.out.println();
}
}
}

```

### OUTPUT:

enter value of n: 7

```

*****
**      **
* * * *
*  *  *
* * * *
**      **
*****

```

## Write a program to display CROSS mark with stars?

```

class Cross
{
    public static void main(String[] args)
    {
        java.util.Scanner sc=new java.util.Scanner(System.in);
        System.out.println("enter value of n");
        int n=sc.nextInt();
        for(int i=1;i<n ;i++)
        {
            for (int j=0;j<n ;j++ )
            {
                if(i==j||I + j==n-1)
                    System.out.print("*");
                else
                    System.out.print(" ");
            }
            System.out.println();
        }
    }
}

```

**OUTPUT:**

enter value of n 7(odd)

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

**Write a program to display RIGHT ANGLE triangle with stars?**

```
class Triangle
```

```
{
    public static void main(String[] args)
    {
        java.util.Scanner sc=new java.util.Scanner(System.in);
        System.out.println("enter value of n");
        int n=sc.nextInt();
        for(int i=1;i<n ;i++)
        {
            for (int j=0;j<i ;j++ )
            {
                System.out.print("*");
            }
            System.out.println();
        }
    }
}
```

**OUTPUT:**

enter value of n :7

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

**Write a program to display Reverse Triangle with stars?**

```
class Triangle1
```

```
{
    public static void main (String [] args)
    {
        java.util.Scanner sc=new java.util.Scanner (System.in);
        System.out.println ("enter value of n");
        int n=sc.nextInt ();
        for (int i=1; i<n; i++)
        {
            for (int j=0; j<n; j++)
```

```

        {
            if (i<=j)
                System.out.print ("*");
            else
                System.out.print (" ");
        }
        System.out.println ();
    }
}

```

**OUTPUT:**

enter value of n 7

```

*****
*****
****
***
**
*

```

**Write a program to display MIRROR of RIGHT ANGLE triangle with stars?**

```

class Triangle2
{
    public static void main(String[] args)
    {
        java.util.Scanner sc=new java.util.Scanner(System.in);
        System.out.println("enter value of n");
        int n=sc.nextInt();
        for(int i=1;i<n ;i++)
        {
            for (int j=0;j<n ;j++ )
            {
                if(i + j>n-1)
                    System.out.print("*");
                else
                    System.out.print(" ");
            }
            System.out.println();
        }
    }
}

```

***OUTPUT:***

enter value of n: 7

```

*
**
***
****
*****
*****

```

## Write a program to display DOWNWARD MIRROR of RIGHT ANGLE triangle with stars?

```
class Triangle2
{
    public static void main(String[] args)
    {
        java.util.Scanner sc=new java.util.Scanner(System.in);
        System.out.println("enter value of n");
        int n=sc.nextInt();
        for(int i=1;i<n ;i++)
        {
            for (int j=0;j<n ;j++ )
            {
                if(i + j<=n-1)
                    System.out.print("*");
                else
                    System.out.print(" ");
            }
            System.out.println();
        }
    }
}
```

### OUTPUT:

enter value of n: 7

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

## Write a program to display DIAMOND with stars?

```
class Diamond
{
    public static void main(String[] args)
    {
        java.util.Scanner scn=new java.util.Scanner (System.in);
        System.out.println ("enter odd number");
        int n=scn.nextInt();
        int spaces=n/2;
        int stars=1;
        for(int i=1;i<n ;i++)
        {
            for( int j=1;j<=spaces ;j++)
            {
                System.out.print(" ");
            }
        }
    }
}
```

```

for ( int k=1;k<=stars ;k++)
{
System.out.print("*");
}
System.out.println();
if (i<=n/2)
{
    spaces--;
    stars+=2;
}
else
{
    spaces++;
    stars-=2;
}
}
}
}

```

OUTPUT:

```

    *
   ***
  *****
 *****
 *****
  ***
   *

```

## Write a program to display HALLOWDIAMOND with stars?

```

import java.util.Scanner;
class HallowDiamond
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("enter the value of n");
        int n = sc.nextInt();
        n = (n+1)/2;
        for (int i=0;i<n ;i++ )
        {
            for (int j=0;j<n-i-1 ;j++ )
            {
                System.out.print(" ");
            }
            for (int j=0;j<2*i+1 ;j++ )
            {
                if (j==0||j==2*i)
                {
                    System.out.print("*");

```

```

        }
        else
            System.out.print(" ");
    }
    System.out.println();
}
n = n-1;
for (int i=0;i<n ;i++ )
{
    for (int j=0;j<=i ;j++ )
    {
        System.out.print(" ");
    }
    for (int j=0;j<2*(n-i)-1 ;j++ )
    {
        if (j==0||j==2*(n-i)-2)
        {
            System.out.print("*");
        }
        else
            System.out.print(" ");
    }
    System.out.println();
}
}
}

```

#### OUTPUT:

enter the value of n ; 13

```

*
**
***
****
*****
*****
****
***
**
*

```

#### Write a program to display NUMBERS in DIAMOND shape?

```

import java.util.Scanner;
class NumDiamond
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("enter the value of n");
    }
}

```

```

int n = sc.nextInt();
n = (n+1)/2;
for (int i=0;i<n ;i++ )
{
    for (int j=0;j<n-1-i ;j++ )
    {
        System.out.print(" ");
    }
    int k=1;
    for (int j=0;j<2*i+1 ;j++ )
    {
        System.out.print(""+k);
        if (j<(2*i+1)/2)
            k++;
        else
            k--;
    }
    System.out.println();
}
n = n-1;
for (int i=0;i<n ;i++ )
{
    for (int j=0;j<=i ;j++ )
    {
        System.out.print(" ");
    }
    int k=1;
    for (int j=0;j<2*(n-i)-1 ;j++ )
    {
        System.out.print(""+k);
        if (j<(2*(n-i)-1)/2)
            k++;
        else
            k--;
    }

    System.out.println();
}
}

```

### OUTPUT:

enter the value of n: 7

```

1
121
12321
1234321
12321
121
1

```

## Write a program to display CHARACTERS in DIAMOND shape?

```
import java.util.Scanner;
class CharDiamond
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("enter the value of n");
        int n = sc.nextInt();
        n = (n+1)/2;
        char ch='A';
        for (int i=0;i<n;i++)
        {
            for (int j=0;j<n-1-i;j++)
            {
                System.out.print(" ");
            }
            int k=0;
            for (int j=0;j<2*i+1;j++)
            {
                System.out.print(""+(char)(ch + k));
                if (j<(2*i+1)/2)
                    k++;
                else
                    k--;
            }
            System.out.println();
        }
        n = n-1;
        for (int i=0;i<n;i++)
        {
            for (int j=0;j<=i;j++)
            {
                System.out.print(" ");
            }
            int k=0;
            for (int j=0;j<2*(n-i)-1;j++)
            {
                System.out.print(""+(char)(ch + k));
                if (j<(2*(n-i)-1)/2)
                    k++;
                else
                    k--;
            }
            System.out.println();
        }
    }
}
```



**OUTPUT:**

enter the value of n: 7

```

  A
 ABA
ABCBA
ABCD CBA
ABCBA
 ABA
  A

```

**Write a program to display M pattern with stars?**

```

class DisplayM
{
    public static void main(String[] args)
    {
        int spaces=8;
        for (int i=1;i<=5 ;i++ )
        {
            for ( int j=1;j<=i ;j++ )
            {
                System.out.print("*");
            }
            for ( int k=1;k<=spaces ; k++)
            {
                System.out.print(" ");
            }
            for(int l=1;l<=i ;l++)
            {
                System.out.print("*");
            }

            System.out.println();
            spaces -=2;
        }
    }
}

```

**OUTPUT:**

```

*          *
**         **
***        ***
****       ****
*****      *****

```

## Write a program to display sequence of numbers in TRIANGLE format?

```
import java.util.Scanner;
class Series
{
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("enter the rows");
        int n = sc.nextInt();
        int k =0;
        for ( int i=1;i<=n ;i++ )
        {
            for ( int j=1;j<=i ; j++)
            {
                k++;
                System.out.print(k+" ");

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

### OUTPUT:

enter the rows: 5

```
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
```

# ***Programs*** ***on*** ***Strings***

## Write a program to find whether a string is ANAGRAM or not?

**Def:** a word, phrase, or name formed by rearranging the letters of another, such as *silent* formed from *listen*.

```
class Anagram
{
    static String removeSpaces(String str)
    {
        char [] ch=str.toCharArray ();

        //convert the string into array

        String nstr=" ";

        //create a new empty string

        for(int i=0;i<ch.length;i++)
        {
            if(ch[i]!=' ')
                nstr=nstr + ch[i];

            /* if the character at ith index is not equal to space
            then add that character to new empty string*/
        }
        return nstr;
    }

    static String toLowerCase(String str)
    {
        char[] ch=str.toCharArray();

        //convert the string into array

        String nstr=" ";

        //create a new empty string

        for(int i=0;i<ch.length;i++)
        {
            if(ch[i]>=65 && ch[i]<=90)
            {
                nstr=nstr+((char)ch[i]+32);
            }

            /*if any alphabet is in upper case convert it
            into lower case*/

            else
            {
                nstr=nstr + ch[i];
            }
        }
    }
}
```

```

        }
    }
    return nstr;
}
static String sort(String str)
{
    char[] ch=str.toCharArray();

    //sort string in alphabetical order

    for(int i=0;i<ch.length-1;i++)
    {
        for(int j=i+1;j<ch.length;j++)
        {
            if(ch[i]>ch[j])
            {
                char t=ch[i];
                ch[i]=ch[j];
                ch[j]=t;
            }
        }
    }
    String st=new String(ch);
    return st;
}

static boolean compare(String s1, String s2)
{
    if(s1.length()!=s2.length())
        return false;
    else
    {
        s1=toLowerCase(s1);
        s2=toLowerCase(s2);
        s1=sort(s1);
        s2=sort(s2);
        char ch1[]=s1.toCharArray();
        char ch2[]=s2.toCharArray();

        for(int i=0;i<ch1.length;i++)
        {
            if (ch1[i]!=ch2[i])
            {
                return false;
            }
        }
        return true;
    }
}

```

```
public static void main(String[] args)
{
    java.util.Scanner sc=new java.util.Scanner(System.in);
    System.out.println ("Enter the first string");
    String s1=sc.nextLine();
    System.out.println ("Enter the second string");
    String s2=sc.nextLine();
    s1=removeSpaces (s1);
    s2=removeSpaces (s2);
    boolean b= compare(s1,s2);

    if(b)
        System.out.println("string is anagram");
    else
        System.out.println("not an anagram");
}
}
```

**Output:**

```
Enter the first string
Mother in law
Enter the second string
Hitler woman
string is anagram
```

## Write program weather the string is PANAGRAM or not?

**Def:** a sentence containing every letter of the alphabet.

```
import java.util.Scanner;
public class Panagram
{
    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);
        System.out.println("enter the string ");
        String s = sc.nextLine();
        System.out.println("given string is : "+"\\n" +s);
        String st=removeSpace(s);

        int d = check(st);
        if(d == -1)
            System.out.print(s+"\\n" + "is not pangram");
        else
            System.out.print(s+"\\n" + "is a pangram");

    }
    public static String removeSpace(String s)
    {
        char ch[]=s.toCharArray();
        String nstr="";
        for (int i = 0; i < s.length(); i++)
        {
            if (ch[i]!=' ')
            {
                nstr=nstr + ch[i];
            }
        }

        return nstr;
    }

    public static int check(String st)
    {

        int n = 26;

        /*if(s.length() < n){
            return -1;
        }*/
        use these lines only for perfect Panagram i.e., it must contain only
        26 letters (alphabets) without any repetition.

        for(char i = 'A'; i <= 'Z' ; i++){
            if((st.indexOf(i) < 0) && (st.indexOf((char)(i + 32)) < 0))
            {
                return -1;
            }
        }
    }
}
```

```

        return -1;
    }
}
return 1;
}
}

```

### OUTPUT:

enter the string:  
 the quick brown fox jumps over a lazy dog  
 given string is :  
 the quick brown fox jumps over a lazy dog  
 the quick brown fox jumps over a lazy dog  
 is a pangram

### Write a program check the given string is PALINDROME or not?

```

import java.util.Scanner;

public class PalindromeStr
{
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("enter the string");
        String st=sc.nextLine();
        String nstr="";
        char ch[]=st.toCharArray();
        for (int i=0 ;i<ch.length/2;i++ )
        {
            char t=ch[i];
            ch[i]=ch[ch.length-1-i];
            ch[ch.length-1-i]=t;
        }
        nstr=new String (ch);

        if(nstr.equalsIgnoreCase(st))
            System.out.println( st+" string is palindrome ");
        else
            System.out.println(st+" string is not palindrome");

    }
}

```

### OUTPUT:

Enter the string: Malayalam  
 Malayalam string is palindrome



## Write a program to display REVERSE of a STRING?

```
import java.util.Scanner;
class Revstring
{
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("enter the string");
        String st=sc.nextLine();
        char ch[]=st.toCharArray();
        for (int i=0 ;i<ch.length/2;i++ )
        {
            char t=ch[i];
            ch[i]=ch[ch.length-1-i];
            ch[ch.length-1-i]=t;
        }
        st=new String (ch);

        System.out.println("Reserved string is :"+st);
    }
}
```

### OUTPUT:

```
enter the string
rama and laxmana
Reserved string is : anamxal dna amar
```

## Write a program to COUNT number of CHARACTERS in a String?

```
import java.util.Scanner;
public class NoOfCharactersInaString
{
    public static void main(String[] args)
    {
        int count=0;
        Scanner scn=new Scanner(System.in);
        System.out.println("Enter a string:.....");
        String st=scn.nextLine();
        char ch[]=st.toCharArray();
        for (int i = 0; i < ch.length; i++)
        {
            if(ch[i]>=65&&ch[i]<=90 ||ch[i]>=97 && ch[i]<=122||ch[i]>=48&&ch[i]<=57 &&
                ch[i]!=32 && ch[i]!=',' &&ch[i]!='.')
                count++;
        }
        System.out.println("No of Characters="+count);
    }
}
```

**OUTPUT:**

Enter a string:.....  
adkvdh dodksk  
No of Characters=12

**Write a program to find the sum of numbers in an ALPHA NUMERIC STRING?**

```
import java.util.Scanner;
public class SumOfDigits
{
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("enter the alpha numeric string");
        String str=sc.nextLine();
        char[] ch=str.toCharArray();
        int j=0;
        for(int i=0;i<ch.length;i++)
        {
            if(ch[i]>=48 && ch[i]<=57)
            {
                j+=ch[i]-48;
            }
        }
        System.out.println(j);
    }
}
```

**OUTPUT:**

enter the alpha numeric string  
139y1d5801  
28

**Write a Program for number of characters in each WORD and count them?**

```
import java.util.Scanner;
class Countword
{
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("enter the string");
        String s=sc.nextLine();
        String nst=" ";
        int nc=0;
        for (int i=0; i<s.length();i++ )
        {
            if (s.charAt(i)==' ')

```

```

        {
            nst=nst + nc;
            nc=0;
        }
        else
        {
            nc++;
            nst=nst + s.charAt(i);
        }
    }
    nst=nst + nc;
    System.out.println (" no of character in each word in a string is "+ nst);
}
}

```

**OUTPUT:**

enter the string  
rama and laxmana  
no of character in each word in a string is rama 4 and 3 laxmana 7

**Write a Program to display OCCURENCES of each character in a STRING?**

```

import java.util.Scanner;
class NumOfOcc
{
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter the String");
        String st = sc.nextLine();
        int n=st.length();
        char ch[]=st.toCharArray();
        for (int i=0;i<n ;i++ )
        {
            int count=1;
            for (int j=i+1;j<n ;j++ )
            {
                if(ch[i]==ch[j])
                {
                    count++;
                    int k=j;
                    while (k<n-1)
                    {
                        ch[k]=ch[k+1];
                        k++;
                    }
                    n--;
                    j--;
                }
            }
        }
    }
}

```

```

        System.out.println(ch[i]+" occurred "+count+" times");
    }
    String nst=" ";
    for (int i=0;i<n ;i++ )
    {
        nst=nst + ch[i];
    }
    System.out.println(nst);
}
}

```

**OUTPUT:**

Enter the String Malayalam  
m occurred 2 times  
a occurred 4 times  
l occurred 2 times  
y occurred 1 times  
maly

**Write a program to display number of LOWERCASE, UPPERCASE, SPECIAL SYMBOLS, SPACES and DIGITS in a STRING?**

```

import java.util.Scanner;
class DiffTypeCharsSymbols
{
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("enter the string");
        String st=sc.nextLine();
        char ch[]=st.toCharArray();
        int uc=0,lc=0,spc=0,dc=0,sp=0;
        for (int i=0;i<ch.length ;i++ )
        {
            if (ch[i]>=65&&ch[i]<=90)
            { uc++;
            }
            else if (ch[i]>=97&&ch[i]<=122)
            {
                lc++;
            }
            else if (ch[i]>=48&&ch[i]<=57)
                dc++;
            else
                if(ch[i]==' ')
                    sp++;
        }
    }
}

```

```

        else spc++;
    }
    System.out.println("no :of upper case letter "+uc);
    System.out.println("no: of lower case letter" +lc);
    System.out.println("no: of decimal number" +dc);
    System.out.println("no: of spaces "+sp);
    System.out.println("no: of special characters" +spc);
}
}

```

#### OUTPUT:

```

enter the string: PramoD123$@gmail.com
no :of upper case letter 2
no : of lower case letter12
no : of decimal number3
no : of spaces 0
no : of special characters3

```

### Write a program to convert NUMBER into WORDS?

```

import java.util.*;
public class Numtoword
{
    static String one[]={"","one","two","three","four","five","six","seven","eight","nine","ten",
"eleven","tweleve","thirteen","fourteen","fifteen","sixteen","seventeen","eighteen","nineteen"};
    static String two[]={"","","twenty","thirty","fourty","fifty","sixty","seventy","eighty","ninety"};

    static void pw(int n, String st)
    {
        if(n<=19)
            System.out.print(one[n]+" ");
        else
            System.out.print(two[n/10]+one[n%10]+" ");
        if(n!=0)
            System.out.print(st+" ");
    }
    public static void main(String[] args)
    {
        System.out.println("enter the number");
        Scanner sc=new Scanner(System.in);
        int num=sc.nextInt();
        pw(num/10000000,"crores");
        pw((num/100000)%100,"Lakhs");
        pw((num/1000)%100,"Thousand");
        pw((num/100)%10,"Hundered");
        pw(num%100," ");
    }
}

```

**OUTPUT:**

enter the number : 999999

nine Lakhs ninety nine Thousand nine Hundered and ninety nine

**Write a program to REVERSE the SENTENCE?**

```
import java.util.Scanner;
class Revsentence
{
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("enter the sentence");
        String st=sc.nextLine();
        char ch[]=st.toCharArray();
        String rst=" ";
        for (int i=ch.length-1;i>=0 ;i-- )
        {
            int k=i;
            while (i>=0&&ch [i]!=' ')
            {
                i--;
            }
            int j=i+1;
            while ( j<=k)
            {
                rst =rst +ch[j];
                j++;
            }
            rst=rst+' ';
        }
        System.out.println("The reserve sentence is:"+rst);
    }
}
```

**OUTPUT:**

enter the sentence: rama and laxmana

The reserve sentence is: laxmana and rama

**Write a program to REVERSE THE WORDS in a SENTENCE?**

```
import java.util.Scanner;
```

```
class Revwords
```

```
{
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("enter the sentence");
        String st=sc.nextLine();
```

```

char ch[]=st.toCharArray();
String rst=" ";
for (int i=0 ;i<ch.length;i++ )
{
    int k=i;
    while (i<ch.length &&ch [i]!=' ')
    {
        i++;
    }
    int j=i-1;
    while ( k<=j)
    {
        rst=rst + ch[j];
        j--;
    }
    rst=rst+' ';
}
System.out.println("The reserved words of sentence is:"+rst);
}
}

```

#### OUTPUT:

enter the sentence: **rama and laxmana**

The reserved words of sentence is: **amar dna anamxal**

### Write a program to display STRING INITCAP of Words?

```

import java.util.Scanner;
class Stringinitcap
{
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("enter the string");
        String st=sc.nextLine();
        char ch[]=st.toCharArray();
        for (int i=0 ;i<ch.length;i++ )
        {
            if (i==0||(ch[i]!=' '&&ch[i-1]==' '))
            {
                if (ch[i]>=97&&ch[i]<=122)
                {
                    ch[i]=(char)(ch[i]-32);
                }
                else if (ch[i]>=65&&ch[i]<=90)
                {
                    ch[i]=(char)(ch[i]-32);
                }
            }
        }
    }
}

```

```

        }
        st=new String(ch);
System.out.println("enter the string in it cap : "+st);
    }
}

```

**OUTPUT:**

enter the string: pramod reddy pavan chandu  
enter the string in it cap : **Pramod Reddy Pavan Chandu**

## Write a program to convert UPPER CASE TO LOWER CASE & VICE VERSA?

```

import java.util.Scanner;

class Stringuptolow
{
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("enter the string");
        String st=sc.nextLine();
        char ch[]=st.toCharArray();
        for (int i=0 ;i<ch.length;i++ )
        {
            if (ch[i]>=65&&ch[i]<=90)
            {
                ch[i]=(char)(ch[i]+32);
            }
            else if (ch[i]>=97&&ch[i]<=122)
            {
                ch[i]=(char)(ch[i]-32);
            }
        }

        st=new String(ch);
System.out.println("converted String in Case : "+st);
    }
}

```

**OUTPUT:**

enter the string : PraMoD ReddY GoPi RedDY  
converted String in Case : pRAmOd rEDDy gOpI rEDdy



## Write a program to find a SUB-STRING without using INBUILT functions?

```
import java.util.Scanner;
class Substring
{
    public static void main(String[] args)
    {
        System.out.println("enter the main string");
        Scanner sc=new Scanner(System.in);
        String st1=sc.next();
        char ch1[]=st1.toCharArray();
        System.out.println("enter the sub string");
        String st2=sc.next();
        char ch2[]=st2.toCharArray();
        int find=0;
        for (int i=0;i<ch1.length ;i++ )
        {
            int k=i, j=0;
            while (k<ch1.length && j<ch2.length && ch1[k]==ch2[j])
            {
                j++;
                k++;
            }
            if(j==ch2.length)
            {
                find++;
                System.out.println( find+" times  "+st2+" present between "+i+" to
"+k+" indexs");
            }
        }
        if(find==0)
            System.out.println("not found");
    }
}
```

### OUTPUT:

```
enter the main string : PramodReddy
enter the sub string : Reddy
1 times  Reddy present between 6 to 11 indexs
```

## Write a program to convert Integer of String type to INTEGER type without using parse int?

```
import java.util.Scanner;

public class StringToInt
{
    public static void main (String [] args)
    {
        Scanner sc=new Scanner (System.in);
        System.out.println ("enter the String");
        String s=sc.next ();
        System.out.println (" After converting string to integer");
        int d = check(s);
        if (d==0)
            System.out.println ("not valid string ");
        else
            System.out.println (d + "is in integer type");
    }

    public static int check (String s)
    {
        int i=0, number=0;

        for (int j = 0; j < s.length (); j++)
        {
            char ch [] =s.toCharArray ();
            if (ch[j]>'a'&&ch[j] <='z'||ch[j]>'A'&&ch[j]<='Z')
            {
                return 0;
            }
        }

        while (i<s.length ())
        {
            number= number*10;
            number=number+ (s.charAt (i++)-'0');
        }
        return number;
    }
}
```

### OUTPUT:

```
enter the String
3306
After converting string to integer
3306 is in integer type
```

***SEARCHING &  
SORTING  
PROGRAMS***

## Write a program for LINEAR SEARCH?

```
public class SearchLinear
{
    public static int linearSearch(int[] arr, int x)
    {
        for(int i=0;i<arr.length;i++)
        {
            if(x==arr[i])
            {
                return i;
            }
        }
        return -1;
    }
    public static void main(String[] args)
    {
        int[] ar ={3,46,76,4,89,7,27};
        System.out.println(linearSearch(ar,4));
        System.out.println(linearSearch(ar,78));
    }
}
```

### OUTPUT:

```
3
-1
```

## Write a program for BINARY SEARCH?

```
public class SearchBinary
{
    public static int binarySearch(int[] arr, int x)
    {
        int first=0;
        int last=arr.length-1;
        while(first<=last)
        {
            int middle=(first + last)/2;
            if(x==arr[middle])
            {
                return middle;
            }
        }
    }
}
```

```

        else if(x>arr[middle])
        {
            first=middle+1;
        }
        else
        {
            last=middle-1;
        }
    }return -1;
}

public static void main(String[] args)
{
    int[] i={10,49,67,90,40,86};
        System.out.println(binarySearch(i,49));
}

```

}  
**OUTPUT:**  
 1

## Write a program for BUBBLE SORT?

```

class Bubbledown
{
public static void sortdown(int[]a)
{
    int n=a.length;
    for (int i=0;i<n-1 ;i++ )
    {
        for (int j=i+1;j<n ;j++ )
        {
            if(a[i]>a[j])
            {
                int temp=a[i];
                a[i]=a[j];
                a[j]=temp;
            }
        }
    }
}

public static void main(String[] args)

```

```
    {  
        int []a={5,8,1,6,9,2};  
        sortdown(a);  
        for (int x: a )  
        {  
            System.out.println(x);  
        }  
    }  
}
```

**OUTPUT:**

1  
2  
5  
6  
8  
9

# **PROGRAMS on ARRAYS**

## Write a program to INSERT the ELEMENTS in an Array?

```
import java.util.Scanner;
public class InstSingArray
{
    public static void main (String [ ] args)
    {
        Scanner sc= new Scanner (System.in);
        System.out.println ("enter the size");
        int length= sc.nextInt ();

        int arr [ ] =new int [length];
        System.out.println ("enter the "+length+" elements");
        for (int i = 0; i < arr.length; i++)
        {
            arr[i] =sc.nextInt ();
        }
        for (int i = 0; i < arr.length; i++)
        {
            System.out.println ("arr ["+i+"] ---->" +arr[i]);
        }
    }
}
```

**Output:** enter the size

```
5
Enter the 5 elements
2
3
5
8
64
arr [0] ---->2
arr [1] ---->3
arr [2] ---->5
arr [3] ---->8
arr [4] ---->64
```

## Write a Program to REVERSE THE ELEMENTS of an array?

```
import java.util.Scanner;
public class InstSingArray
{
    public static void main (String [ ] args)
    {
        Scanner sc= new Scanner (System.in);
        System.out.println ("enter the size");
        int length= sc.nextInt ();
        int arr [ ] =new int [length];
```



```

        System.out.println ("enter the  "+length+" elements");
        for (int i = 0; i < arr.length; i++)
        {
            arr[i] =sc.nextInt ();
        }
        System.out.println ("Before Reverse of an Array");
        for (int i = 0; i < arr.length; i++)
        {

            System.out.println ("arr ["+i+"] ---->" +arr[i]);
        }
        for (int i = 0; i < arr.length/2; i++)
        {
            int t=arr[i];
            arr[i] =arr [arr.length-1-i];
            arr [arr.length-1-i] =t;
        }
        System.out.println ("After Reverse of an Array");
        for (int i = 0; i < arr.length; i++)
        {

            System.out.println ("arr ["+i+"] ---->" +arr[i]);
        }
    }
}

```

### Output:

```

Enter the size
5
Enter the  5 elements
1
5
6
8
9
Before Reverse of an Array
arr [0] ---->1
arr [1] ---->5
arr [2] ---->6
arr [3] ---->8
arr [4] ---->9

After Reverse of an Array
arr [0] -->9
arr [1] -->8
arr [2] -->6
arr [3] -->5
arr [4] -->1

```

## Write a program to INSERT A ELEMENT INTO EXISTING ARRAY in a specified position?

```
import java.util.Scanner;

class Insertingelement
{
    public static void main (String [] args)
    {
        Scanner sc= new Scanner (System.in);
        System.out.println ("enter the length");
        int length= sc.nextInt ();

        int arr [] =new int [length];
        System.out.println ("enter the "+length+" elements");
        for (int i = 0; i < arr.length; i++)
        {
            arr[i]=sc.nextInt();
        }
        System.out.println ("length of array before inserting"+"--->" +arr.length);
        for (int i=0; i<arr.length; i++)
        {
            System.out.println (i+"----->" +arr[i]);
        }
        System.out.println ("enter the index of specified position or index");
        int in=sc.nextInt ();
        System.out.println ("enter the element to replace to specified index");
        int ele=sc.nextInt ();
        arr=insert (arr ,in ,ele);

        for (int i=0; i<arr.length; i++)
        {
            System.out.println (i+"----->" +arr[i]);
        }
    }
    static int [] insert (int a[],int in, int ele)
    {
        if (in>a.length||in<0)
        {
            System.out.println ("invalid index");
            return a;
        }
        else
        {
            int na [] = new int [a.length+1];
            for (int i = 0 ; i<in ;i++ )
            {
                na[i] = a[i];
            }
        }
    }
}
```

```

        }
        na [in] =ele;
        for (int i= in; i<a.length; i++)
        {
            na [i+1] = a[i];
        }
        System.out.println ("length of array after inserting"+"--->" +na.length);
        return na;
    }
}

```

### Output:

enter the length

5

enter the 5 elements

2

8

6

7

88

length of array before inserting--->5

0----->2

1----->8

2----->6

3----->7

4----->88

enter the index of specified position or index

3

enter the element to replace to specified index

62

length of array after inserting--->6

0----->2

1----->8

2----->6

3----->62

4----->7

5----->88

## Write a program to DELETE AN ELEMENT OF A SPECIFIED INDEX IN THE EXISTING ARRAY?

```
import java.util.Scanner;

class DeletingArray
{
    public static void main (String [] args)
    {
        Scanner sc= new Scanner (System.in);
        System.out.println ("enter the length");
        int length= sc.nextInt ();

        int ar [] = new int [length];
        System.out.println ("enter the  "+length+" elements");
        for (int i = 0; i < ar.length; i++)
        {
            ar[i] = sc.nextInt ();
        }
        System.out.println ("length of array before deleting"+"--->" +ar.length);
        display (ar);
        System.out.println ("enter specified position for deleting that element");
        int in=sc.nextInt ();
        ar=delete (ar , in);
        display (ar);

    }
    static void display (int a[])
    {
        for (int i=0; i<a.length; i++)
        System.out.println (i+"----->" +a[i]);
    }

    static int [] delete (int a[] , int in)
    {
        If (in>a.length||in<0)
        {
            System.out.println ("invalid index");
            return a;
        }
        else
        {
            int na [] = new int [a.length-1];
            for (int i=0; i<in; i++)
            {
                na[i] = a[i];
            }
        }
    }
}
```

```

        for (int i=in; i<a.length; i++)
        {
            na [i-1] = a[i];
        }
        System.out.println ("length of array after deleting"+"---->" +na.length);
        return na;
    }
}

```

### OUTPUT:

```

enter the length
6
enter the  6 elements
5
5
9
8
6
2
length of array before deleting--->6
0----->5
1----->5
2----->9
3----->8
4----->6
5----->2
enter specified position for deleting that element
5
length of array after deleting---->5
0----->5
1----->5
2----->9
3----->8
4----->2

```

### Write a program to SEARCH AN ELEMENT IN THE EXISTING ARRAY?

```

public class Search element
{
    public static void main (String [] args)
    {
        int ar [] = {22, 11, 23, 11, 15, 19};
        int inx=search (ar, 15);
        display (ar);
        if (inx>=0)
            System.out.println ("your element found at index  "+inx);
        else

```

```

        System.out.println ("not valid");
    }
    static void display (int a [])
    {
        for (int i=0; i<a.length; i++)
        System.out.println (i+"----->" +a[i]);
    }
    static int search (int a [], int ele)
    {
        for (int i=0; i<a.length; i++)
        {
            If (ele==a[i])
                return i;
        }
        return -1;
    }
}

```

#### OUTPUT:

```

0----->22
1----->11
2----->23
3----->11
4----->15
5----->19
your element found at index  4

```

#### Write a program to find BIGGEST AND SMALLEST ELEMENT in the given array?

```

import java.util.Scanner;

public class BigeleArray
{
    public static void main (String [] args)
    {
        Scanner sc= new Scanner (System.in);
        System.out.println ("enter the length");
        int length= sc.nextInt ();
        int arr [] =new int [length];
        int bigger=0;
        int smaller = 0;
        System.out.println ("enter the  "+length+ "elements");
        for (int i = 0; i < arr.length; i++)
        {
            arr[i] = sc.nextInt ();
        }
        for (int i = 0; i < arr.length; i++)

```

```

        {
            System.out.println ("arr ["+i+"] ----> "+arr[i]);
        }
        for (int i = 0; i < arr.length; i++)
        {
            int big=arr [0];
            int small=arr [0];
            if (big<arr[i])
            {
                big=arr[i];
            }
            if (small>arr[i])
            {
                small=arr[i];
            }
            smaller=small;
            bigger=big;

        }
        System.out.println ("biggest element is ---->"+bigger);
        System.out.println ("Smallest element is ---->"+smaller);
    }
}

```

### OUTPUT:

```

enter the length
5
enter the 5elements
1
8
99
66
75
arr [0] ---->1
arr [1] ---->8
arr [2] ---->99
arr [3] ---->66
arr [4] ---->75
biggest element is ---->75
Smallest element is ---->1

```

**Write a program to find FIRST BIGGEST AND SECOND BIGGEST ELEMENT in given array?**

```
class Fbiggest
{
    public static void main (String [] args)
    {
        int ar[]={23,12,14,56,22,28,13};
        int fbig=ar [0];
        int sbig=ar [1];
        for (int i=1; i<ar.length; i++)
        {
            if (fbig<ar[i])
            {
                sbig=fbig;
                fbig=ar[i];
            }
            else if (sbig<ar[i])
            {
                sbig=ar[i];
            }
        }
        System.out.println ("first biggest element is "+fbig);
        System.out.println ("second biggest element is "+sbig);
    }
}
```

**OUTPUT:**

First biggest element is 56  
Second biggest element is 28

**Write a program to FIND THE SECOND OCCURRENCE ELEMENT in a given array?**

```
class Secondoccurrenceelement
{
    public static void main (String [] args)
    {
        int ar[]={22,11,23,11,15,19,11};
        int inx=secondoccurrence (ar, 11);
        display (ar);
        if (inx>=0)
            System.out.println ("Second time occurred element found at the index "+inx);
        else
            System.out.println ("not valid");
    }
}
```



```

    }
    static void display (int a [])
    {
        for (int i=0; i<a.length; i++)
            System.out.println ("arr ["+i+"]"+"----->" +a[i]);
    }
    static int secondoccurance (int a [], int ele)
    {
        int count=0;
        for (int i=0; i<a.length; i++)
        {
            If (ele==a[i])
                count++;
            if (count==2)
                return i;
        }
        return -1;
    }
}

```

#### OUTPUT:

```

arr [0] ----->22
arr [1] ----->11
arr [2] ----->23
arr [3] ----->11
arr [4] ----->15
arr [5] ----->19
arr [6] ----->11

```

Second time occurred element found at the index 3

**Write a program to FIND THE OCCURRENCE ELEMENT IN which position in a given array?**

```

class Occuranceelement
{
    public static void main (String [] args)
    {
        int ar[]={22,11,23,11,15,19,11};
        int inx=occurrence (ar, 11, 2);
        display (ar);
        if (inx>=0)
            System.out.println ("your element found at index  "+inx);
        else
            System.out.println ("not valid");
    }
}

```

```

static void display (int a [])
{
    for (int i=0; i<a.length; i++)
System.out.println (i+"----->" +a[i]);
}
static int occurrence (int a [], int ele, int oc)
{
    int count=0;
    for (int i=0; i<a.length; i++)
    {
        if (ele==a[i])
            count++;
        if (count==oc)
            return i;
    }
    return -1;
}
}

```

#### OUTPUT:

```

0----->22
1----->11
2----->23
3----->11
4----->15
5----->19
6----->11
Your element found at index 3

```

**Write a program to FIND HOW MANY TIMES ELEMENT IS OCCURED in a given array?**

```

class Elementoccured
{
    public static void main (String [] args)
    {
        int ar[]={22,11,23,11,15,19,11};
        int in=occurred (ar, 11);
        display (ar);
        if (in>=0)
            System.out.println ("your element occurred "+in);
        else
            System.out.println ("not valid");
    }
    static void display (int a [])
    {
        for (int i=0; i<a.length; i++)
System.out.println (i+"----->" +a[i]);
    }
}

```

```

    }
    static int occurred (int a [], int ele)
    {
        int count=0;
        for (int i=0; i<a.length; i++)
        {
            if (ele==a[i])
                count++;
        }
        return count;
    }
}

```

### OUTPUT:

```

0----->22
1----->11
2----->23
3----->11
4----->15
5----->19
6----->11
Your element occurred 3

```

### Write a program to DISPLAY MISSING ELEMENT in a given sorted array?

```

class Missingelement
{
    public static void main (String [] args)
    {
        int ar [] = {8, 15, 21, 24, 30, 37};
        System.out.println ("Missing elements in given array are :");
        for (int i=0;i<ar.length-1 ;i++ )
        {
            for (int j=ar[i]+1;j<ar[i+1]; j++ )
            {
                System.out.println (j);
            }
        }
    }
}

```

### OUTPUT:

```

Missing elements in given array are:
9,10,11,12,13,14,16,17,18,19,20,22,23,25,26,27,28,29,31,32,33,34,35,36

```

**Write a program to FIND HIGHEST CONTIGUOUS SUM OF TWO ELEMENT in a given array?**

```
public class Sumoftwoelemnts
{
    public static void main (String [] args)
    {
        int ar[]={21,12,15,32,16,17,22};
        int inx=0;
        int big=ar [0] +ar [1];
        for (int i=1; i<ar.length-1; i++)
        {
            if (big<ar[i] + ar [i+1])
            {
                big=ar[i] +ar [i+1];
                inx=i;
            }
        }
        System.out.println ("sum of two element"+"----->" +big);
        System.out.println ("the first element"+"--->" +ar [inx]);
        System.out.println (" the second element"+"--->" +ar [inx+1]);
    }
}
```

**OUTPUT:**

Sum of two element----->48

The first element--->32

The second element--->16

**Write a program to DISPLAY THE COMMON ELEMENTS between two arrays?**

```
public class Commonelement
{
    public static void main (String [] args)
    {
        int ar1 [] = {12, 13, 23, 15, 11, 16};
        int ar2 [] = {53, 26, 23, 15, 18, 13};
        System.out.println ("common elements are: ");
        for (int i=0; i<ar1.length; i++)
        {
            for (int j=0; j<ar2.length;j++ )
            {
                if (ar1 [i] ==ar2 [j])
                {
                    System.out.println (ar1 [i]);
                }
            }
        }
    }
}
```

```

        break;
    }
}
}
}
}

```

## OUTPUT:

common elements are:

```

13
23
15

```

## Write a program to EXCHANGE OF FIRST PART ELEMENT TO SECOND PART Element between two arrays?

```

public class Exchangeofelements
{
    public static void main (String [] args)
    {
        int ar[]={21,12,15,32,16,17,22};
        System.out.println ("BEFORE EXCHANGE OF ARRAY");
        for (int i = 0; i < ar.length; i++)
        {
            System.out.println (ar[i]);
        }
        int n;
        if (ar.length%2==0)
            n=ar.length/2;
        else
            n= (ar.length/2) +1;
        for (int i=0; i<ar.length/2; i++)
        {
            int t=ar[i];
            ar[i] =ar [n+i];
            ar [n+i]=t;
        }
        System.out.println ("AFTER EXCHANGE OF ARRAY");
        for (int i = 0; i < ar.length; i++)
        {
            System.out.println (ar[i]);
        }
    }
}

```

## OUTPUT:

BEFORE EXCHANGE OF ARRAY

21  
12  
15  
32  
16  
17  
22

AFTER EXCHANGE OF ARRAY

16  
17  
22  
32  
21  
12  
15

**Write program TO DISPLAY DISTINCT ELEMENTS from given two array?**

```
public class Distinctelements
{
    public static void main (String [] args)
    {
        int ar1 [] = {12, 13, 23, 15, 11, 16};
        int ar2 [] = {53, 26, 23, 15, 18, 13};
        System.out.println ("Distinct elements from given two arrays");
        for (int i=0; i<ar1.length; i++)
        {
            int find=0;
            for (int j=0; j<ar2.length; j++)
            {
                if (ar1 [i] ==ar2 [j])
                {
                    find=1;
                    break;
                }
            }
            if (find==0)
                System.out.println (ar1 [i]);
        }

        for (int i=0; i<ar2.length; i++)
        {int find=0;
            for (int j=0; j<ar1.length; j++)
```

```

        {
            if (ar2 [i] ==ar1 [j])
            {
                find=1;
                break;
            }
        }
        if (find==0)
            System.out.println (ar2 [i]);
    }
}

```

### OUTPUT:

Distinct elements from given two arrays

```

12
11
16
53
26
18
13
13

```

### Write a program to MERGE TWO ARRAYS?

```

public class Merge
{
    public static void main (String [] args)
    {
        int ar1 [] = {12, 13, 23, 15, 11, 16};
        int ar2 [] = {53, 26, 23, 15, 18, 13};
        int res [] =new int [ar1.length+ar2.length];
        int j=0;
        for (int i = 0; i < ar1.length; i++, j++)
        {
            res[j] =ar1 [i];
        }
        for (int i = 0; i < ar2.length; i++, j++)
        {
            res[j] =ar2 [i];
        }
        System.out.println ("MERGED ARRAY ");
        for (int i = 0; i < res.length; i++)
        {
            System.out.println (res[i]);
        }
    }
}

```

## OUTPUT:

MERGED ARRAY

12  
13  
23  
15  
11  
16  
53  
26  
23  
15  
18  
13

## Write a program to COMBINE TWO ARRAYS IN ZIGZAG manner?

```
public class Zigzag
{
    public static void main (String [] args)
    {
        int ar1 [] = {12, 13, 23, 15, 11, 16};
        int ar2[]={53,26,23,15,18,13,23,45};
        int res [] =new int [ar1.length+ar2.length];
        int i=0, j=0;

        for (int k = 0; k < res.length; )
        {
            if (i<ar1.length)
            {
                res[k] =ar1 [i];
                i++;
                k++;
            }
            if (j<ar2.length)
            {
                res[k] =ar2 [j];
                j++;
                k++;
            }
        }

        System.out.println ("ZIGZAG ARRAY IS");
        for (int l = 0; l < res.length; l++)
        {
            System.out.println (res[l]);
        }
    }
}
```



**OUTPUT:**

ZIGZAG ARRAY IS

12  
53  
13  
26  
23  
23  
15  
15  
11  
18  
16  
13  
23  
45

**Write a program to find the PALINDROME numbers in the given ARRAY?**

```
class Main3
{
    static void display (int a [])
    {
        for (int i=0; i<a.length; i++)
        {
            System.out.print (a[i] +",");
        }
        System.out.println ();
    }
    static int revdig (int n)
    {
        int rev=0;
        while (n>0)
        {
            int r=n%10;
            rev=rev*10+r;
            n=n/10;
        }
        return rev;
    }
    public static void main (String [] args)
    {
        int ar [] = {232, 12, 78, 898, 34543, 45};

        display (ar);
        int count=0;
        for (int i=0; i<arr.length;i++ )
        {
            if (ar [i] ==revdig (ar[i]))          count++;
        }
    }
}
```

```

        System.out.println ("-----");
        System.out.println (" number of palindrome:"+count);
    }
}

```

**OUTPUT:**

232, 12,78,898,34543,45,

-----

number of palindrome: 3

## Write a program to read elements into the MATRIX from SCANNER?

```

import java.util.*;
class Main2
{
    static int [] [] readMat ()
    {
        Scanner sc= new Scanner (System.in);
        System.out.println ("Enter the Order");
        int m=sc.nextInt ();
        int n=sc.nextInt ();
        int ar [] [] =new int[m][n];
        System.out.println ("enter "+m*n+" Elements");
        for (int i=0; i<ar.length; i++)
        {
            for (int j=0; j<ar[i].length; j++)
            {
                ar[i] [j] =sc.nextInt ();
            }
        }
        return ar;
    }
    static void display (int a [] [])
    {
        for (int i=0; i<a.length; i++)
        {
            for (int j=0; j<a[i].length; j++)
            {
                System.out.print (a[i][j]+" ");
            }
            System.out.println ();
        }
    }
    public static void main (String [] args)
    {
        int ar [] []=readMat();
        System.out.println ("Entered Matrix :");
        display (ar);
    }
}

```

**OUTPUT:**

Enter the Order

2

2

enter 4 Elements

9

6

5

1

Entered Matrix:

9 6

5 1

**Write a program to read inputs from SCANNER and find the BIGGEST ELEMENT in EACH ROW and EACH COLUMN?**

```

import java .util.*;
class Readmatrix
{
    public static void main (String [] args)
    {
        Scanner sc=new Scanner (System.in);

        System.out.println ("enter the order");
        int m=sc.nextInt ();
        int n=sc.nextInt ();
        int ar[][]=new int [m][n];
        System.out.println ("enter" + m*n + " elements");
        for (int i=0;i<ar.length ;i++ )
        {
            for (int j=0;j<ar[i].length ;j++ )
            {
                ar[i][j]=sc.nextInt();
            }
        }
        System.out.println (" entered matrix:");
        for (int i=0;i<ar.length ;i++ )
        {
            for (int j=0; j<ar[i].length ; j++ )
            {
                System.out.print (ar[i][j]+"("+i+", "+j+")");
            }
            System.out.println ();
        }

        System.out.println ();

        for (int i=0;i<ar.length ;i++ )
        {
            int big=ar[i][0];

```

```

        for (int j=i ; j<ar[i].length ;j++)
        {
            if(big<ar[i][j])
                big = ar[i][j];
            break;
        }
        System.out.println (i+1+"row biggest element "+big);
    }
    for (int i=0; i<ar[0].length ;i++ )
    {
        int big=ar[0][i];
        for (int j=0;j<ar.length ;j++ )
        {
            if (big<ar[j][i])
                big =ar[j][i];
        }
        System.out.println(i+1+"column biggest element "+big);
    }
}

```

#### **OUTPUT:**

enter the order

2

2

enter 4 elements

5

6

8

9

entered matrix:

5(0,0)6(0,1)

8(1,0)9(1,1)

1row biggest element5

2row biggest element9

1column biggest element8

2column biggest element9

**Write a program to read inputs from SCANNER and find the SUM of ELEMENTS in EACH ROW and EACH COLUMN?**

```

import java.util.*;
class Rowwiseandcolwisesum
{
    static int [][] readMat()
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("enter the order");
    }
}

```

```

        int m=sc.nextInt();
        int n=sc.nextInt();
        int ar[][]=new int [m][n];
        System.out.println("enter"+ m*n+ "elements");

        for (int i=0;i<ar.length ;i++ )
        {
            for (int j=0;j<ar[i].length ;j++ )
            {
                ar[i][j]=sc.nextInt();
            }
        }
        return ar;
    }

    static void display(int a[][])
    {
        for (int i=0;i<a.length ;i++ )
        {
            for (int j=0;j<a[i].length ;j++ )
            {
                System.out.print(a[i][j]+"("+i+", "+j+")");
            }
            System.out.println();
        }
    }

    public static void main(String[] args)
    {
        int ar[][]=readMat();
        System.out.println("entered matrix");
        display(ar);
        for (int i=0;i<ar.length ;i++)
        {
            int rsum=0;
            int csum=0;
            for (int j=0;j<ar.length ;j++)
            {
                rsum=rsum + ar[i][j];
                csum=csum + ar[j][i];
            }

            System.out.println(i+1+"row sum is :"+rsum);
            System.out.println(i+1+"column sum is:"+csum);
        }
    }
}

```

**OUTPUT:**

enter the order

2

2

enter 4 elements

6

5

7

9

entered matrix

6(0,0)5(0,1)

7(1,0)9(1,1)

1row sum is :11

1column sum is:13

2row sum is :16

2column sum is: 14

# **SPECIAL PROGRAMS**

## Write a program to find the given YEAR is LEAP-YEAR or not?

```
import java.util.*;
public class Leapyear
{
    public static void main (String [] args)
    {
        Scanner sc=new Scanner (System.in);
        System.out.println ("Enter the year" );
        int m=sc.nextInt ();
        if (m%4==0&&m%100!=0||m%400==0)
            System.out.println ("it is a leap year");
        else
            System.out.println ("not a leap year");
    }
}
```

### OUTPUT:

```
Enter the year
1990
not a leap year
```

```
Enter the year
2016
it is a leap year
```

## Write a program to find days between DATE to DATE?

```
import java.util.Scanner;
class Date
{
    final int m[]={31,28,31,30,31,30,31,31,30,31,30,31};
    int dd, mm, yyyy;
    Date (int dd, int mm, int yyyy)
    {
        this.dd=dd;
        this.mm=mm;
        this.yyyy=yyyy;
    }
    int getNumberOfLeapYear ()
    {
        if (mm>2)
            return yyyy/4-yyy/100+yyy/400;
        else
            return (yyyy-1)/4-(yyy-1)/100+ (yyy-1)/400;
    }
    int getNumberOfDays ()
    {
        int dCount= yyyy*365+getNumberOfLeapYear () +dd;
        for (int i=0; i<mm-1; i++)
```



```

        {
            dCount+=m[i];
        }
        return dCount;
    }
    int difference (Date d1, Date d2)
    {
        int dy1=d1.getNumberOfDays ();
        int dy2=d2.getNumberOfDays ();
        if (dy1>dy2)
            return dy1-dy2;
        else
            return dy2-dy1;
    }
    public String toString ()
    {
        return dd+":"+mm+":"+yyyy+" ";
    }
    static Date readDate ()
    {
        Scanner sc= new Scanner (System.in);
        System.out.println ("Enter dd: ");
        int dd=sc.nextInt ();
        System.out.println ("Enter mm: ");
        int mm=sc.nextInt ();
        System.out.println ("Enter yyyy: ");
        int yy=sc.nextInt ();
        return new Date (dd, mm, yyyy);
    }
    public static void main (String [] args)
    {
        Date date1=readDate ();
        Date date2=readDate ();
        System.out.println ("Number of Days between"+date1+
            "And"+date2+" is: "+date1.difference (date1, date2));
    }
}

```

**OUTPUT:**

```

Enter dd: 31
Enter mm: 08
Enter yyyy: 2016
Enter dd: 5
Enter mm: 09
Enter yyyy: 2016
Number of Days between31:8:2016 And5:9:2016 is: 5

```