PROGRAMS on NUMBERS

Write a program to Print 1 to N numbers?

```java
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?

```java
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?

```java
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?

```java
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?

```java
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);

        }
```

```java
        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?

```java
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.

```java
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?

```java
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?

```java
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**.

```java
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?

```java
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?

```java
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?

```java
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");
```

```java
        }
        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
153
Given num is Armstrong
enter the number
1
Given num is Armstrong

Write a Program to display the range of ARMSTRONG numbers?

```java
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 3rd 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 3ʳᵈ variable?

```java
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?

```java
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?

```java
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?

```java
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?

```java
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)?

```java
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?

```java
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?

```java
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?

```java
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*?*

```java
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*?*

```java
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(" ");
}
```

```java
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?

```java
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");
```

```java
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?

```java
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
 ABCDCBA
  ABCBA
   ABA
    A
```

Write a program to display M pattern with stars?

```java
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?

```java
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 weather 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];
```

```java
                                    //if it is in lower case no need to convert
                }
        }
        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;
        }
}
```

```java
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.

```java
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;
    }
}
```

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?

```java
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?

```java
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);
        }
}
```

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

```java
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?

```java
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","fifteeen","sixteeen","seventeen","eighteen","nineteen"};
        static String two[]={"","","twenty","thirty","fourty","fifty","sixty","seventy","eigty","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," ");
}
}
```

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();
```

```java
            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?

```java
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 : **P**ramod **R**eddy **P**avan **C**handu

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?

```java
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?

```java
public class SearchBinary
{
        public static int binarySearch(int[] arr, int x)
        {
                int first=0;
                int last=arr.length-1;
                while(first<=l)
                {
                        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];
```

```java
        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?

```java
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?

```java
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
```

```java
        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?

```java
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++)
```

```java
            {
                    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 Secondoccuranceelement
{
        public static void main (String [] args)
        {
                int ar[]={22,11,23,11,15,19,11};
                int inx=secondoccurance (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");
        }
```

```java
        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?

```java
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?

```java
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 Disctinctelements
{
        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?

```java
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
enter4elements
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");
```

```java
        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
enter4elements
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-yyyy/100+yyyy/400;
                else
                        return (yyyy-1)/4-(yyyy-1)/100+ (yyyy-1)/400;
        }
        int getNumberOfDays ()
        {
    int dCount= yyyy*365+getNumberOfLeapYear () +dd;
        for (int i=0; i<mm-1; i++)
```

```java
        {
                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