PROGRAMS on NUMBERS

Write a program to Print 1 to N numbers?

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

OUTPUT:

```
enter value of n: 10
1
2
3
4
5
6
7
8
9
10
```

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

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

OUTPUT:

```
enter value of n: 10
10 9 8  7 6 5 4 3 2 1
```

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

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

OUTPUT:

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

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

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

OUTPUT:

```
enter the num: 20
20 is even

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

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

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

OUTPUT:

```
enter number
25
Prime numbers between 1 and 25
1 2 3 5 7 11 13 17 19 23
```

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

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

	}
}
```

OUTPUT:

```
Enter the number : 17
Prime
```

Write a program to find SUM OF PRIME numbers?

```
import java.util.Scanner;

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

	}
```

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

		}
		return true;
}
}
```

OUTPUT:

```
Enter the range to print sum of prime Nos.....
10
17
```

Write a program to display MULTIPLICATION table?

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

Output:

```
enter value of n: 2
2*1=2
2*2=4
2*3=6
2*4=8
2*5=10
2*6=12
2*7=14
2*8=16
2*9=18
2*10=20
```

Write a program to display MULTIPLICATION TABLES?

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

OUTPUT:

enter value of n: 5

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

Write program weather the number is PERFECT NUMBER or not?

Def:

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

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

OUTPUT:

```
enter a number
6
6 is a Perfect number
```

Write a program to display RANGE of PERFECT NUMBERS?

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

OUTPUT:

```
enter a number
100
1is a  perfect number
6is a  perfect number
28is a  perfect number
```

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

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


	}
}
```

OUTPUT:

```
enter a number
121
121 is a palindrome number

enter a number
143
143 is not a palindrome number
```

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

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

OUTPUT:

```
Enter the number
5
120
```

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

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

OUTPUT:

```
enter the factorial range number :7
1!---->1
2!---->2
3!---->6
4!---->24
5!---->120
6!---->720
7!---->5040
```

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

Def: Strong numbers are the **numbers** whose sum of factorial of digits is equal to the original **number**.
Example: 145 is a **strong number**.

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

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

OUTPUT:
enter a number
143
143not a strong number

Write program weather to find range of STRONG NUMBER?

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

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

OUTPUT:
enter a Range
145
1is a strong number
2is a strong number
145 is a strong number

Write a program to display FIBONACCI series of a number?

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

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

OUTPUT:

```
Enter the number
10
55
```

Write a program to display range of FIBONACCI numbers?

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

```
                    if(c<=range)
                    {

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

                }
}
```

OUTPUT:
Enter the range….
50
0 1 1 2 3 5 8 13 21 34

Write a program to REVERSE the number?

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

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

OUTPUT:
enter the number
105
501

Write a program to display GCD of two numbers?

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

OUTPUT:

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

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

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

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

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

        }
}
```

OUTPUT:

```
enter a number
313
313 is a prime palindrome number

enter a number
103
103 is not a prime palindrome number
```

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

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

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

9 is an Armstrong number since 9*1= 9.

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

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

```
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?

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

OUTPUT:

i=20
j=10

NUMBER CONVERSIONS

Write a program to convert BINARY to DECIMAL?

```
import java.util.*;
public class Bintodec
{
	public static void main(String[] args)
{
		System.out.println("enter the binary number");
		Scanner sc=new Scanner(System.in);
	long n =sc. nextLong();
	long dec=0;
	int count=0;
	while(n>0)
	{
		long r=n%10;
		dec=dec +r*pow(2,count);
		count++;
		n/=10;
	}
	System.out.println("decimal Equivalent:" +dec);
  }
	static int pow(int n, int p)
	{
	int pw=1;
	while(p>0)
	{
		pw=pw*n;
		p--;
	}
	return pw;
	}

}
```

OUTPUT:

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

Write a program to convert DECIMAL to BINARY?

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

        }
        System.out.println("Binary Equivalent:" + bin);
}
}
```

OUTPUT:

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

Write a program to convert OCTAL to DECIMAL?

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

```
        }
        System.out.println("decimal Equivalent:" +dec);
  }
        static int pow(int n, int p)
        {
        int pw=1;
        while(p>0)
        {
                pw=pw*n;
                p--;
        }
        return pw;
        }

}
```

OUTPUT:

```
enter the octal number
763
decimal Equivalent:499
```

Write a program to convert DECIMAL to OCTAL?

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

OUTPUT:

```
enter the decimal number
56
Octal Equivalent:70
```

Write a program to convert DECIMAL to HEXADECIMAL?

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

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

	}
```

OUTPUT:

```
enter the decimal number
469
Hexadecimal Equivalent :1D5
```

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

```
import java.util.*;
public class DectoAll
{
public static void main(String[] args)
{
        System.out.println("enter the number");
        Scanner sc=new Scanner(System.in);
        int n=sc.nextInt();
        System.out.println("enter the base");
        int ba=sc.nextInt();
        System.out.println(ba +"base equivalent "+Convert(n, ba));

}
static String Convert(int num, int base)
{
        String st="0123456789ABCDEF";
        String b="";
        while(num>0)
        {
                int r= num % base;
                b=st.charAt(r)+b;
                num=num/base;

        }
        return b;
}
}
```

OUTPUT:

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

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

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

Write a program to convert DECIMAL to HEXADECIMAL?

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

OUTPUT:

```
enter the Hexa dec number:  1D5
Decimal Equivalent: 469
```

PROGRAMS on STAR PATTERNS

Write a program to display EQUILATERAL TRIANGLE with stars?

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

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


		}
	}

}
```

OUTPUT:

```
enter the number: 7
     *
    * *
   * * *
  * * * *
 * * * * *
* * * * * *
* * * * * * *
```

Write a program to Display INVERTED TRIANGLE with stars?

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

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

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

}
```

OUTPUT:

```
enter the number: 4
*******
  *****
    ***
     *
```

Write a program to display the FILLED BOX with stars?

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

Output:

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

Write a program to display the HALLOW BOX with stars?

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

Output:

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

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

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

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

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

OUTPUT:

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

Write a program to display CROSS mark with stars?

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

        }
}
```

OUTPUT:
enter value of n 7(odd)

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

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

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

OUTPUT:
enter value of n :7

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

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

```
class Triangle1
{
	public static void main (String [] args)
	{
		java.util.Scanner sc=new java.util.Scanner (System.in);
		System.out.println ("enter value of n");
		int n=sc.nextInt ();
		for (int i=1; i<n; i++)
		{
			for (int j=0; j<n; j++)
```

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

OUTPUT:

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

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

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

OUTPUT:

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

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

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

OUTPUT:

enter value of n: 7

******

*****

****

***

**

*

Write a program to display DIAMOND with stars?

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

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

OUTPUT:

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

Write a program to display HALLOWDIAMOND with stars?

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

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

OUTPUT:

```
enter   the value of n  ; 13
    *
   * *
  *   *
 *     *
*       *
*       *
 *     *
  *   *
   * *
    *
```

Write a program to display NUMBERS in DIAMOND shape?

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

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

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

OUTPUT:

```
enter   the value of n: 7
    1
   121
  12321
 1234321
  12321
   121
    1
```

Write a program to display CHARACTERS in DIAMOND shape?

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

OUTPUT:

```
enter   the value of n: 7
     A
   ABA
  ABCBA
ABCDCBA
  ABCBA
    ABA
      A
```

Write a program to display M pattern with stars?

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

                                System.out.print(" ");
                        }
                        for(int l=1;l<=i ;l++)
                                {
                          System.out.print("*");
                        }

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

        }
        }
```

OUTPUT:

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

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

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

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

	}
}
```

OUTPUT:

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

Programs on Strings

Write a program to find 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];
```

```
                                        //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;
        }
}
```

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

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

	}
}
```

Output:

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

Write program weather the string is PANAGRAM or not?

Def: a sentence containing every letter of the alphabet.

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

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

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

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

  return nstr;
            }

            public  static int check(String st)
   {

             int n = 26;

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

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

```
            return -1;
          }
        }
        return 1;
    }
}
```

OUTPUT:

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

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

```
import java.util.Scanner;

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

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

        }
}
```

OUTPUT:

```
Enter the string: Malayalam
Malayalam  string is palindrome
```

Write a program to display REVERSE of a STRING?

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

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

OUTPUT:

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

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

```
import java.util.Scanner;
public class NoOfCharactersInaString
{

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

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

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

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

			j+=ch[i]-48;
		}
	}
		System.out.println(j);
	}

}
```

OUTPUT:
enter the alpha numeric string
139y1d5801
28

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

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

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

OUTPUT:

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

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

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

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

                }
                 System.out.println(nst);

        }

}
```

OUTPUT:

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

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

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

```
                else spc++;

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

OUTPUT:

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

Write a program to convert NUMBER into WORDS?

```
import java.util.*;
public class Numtoword
{
        static String one[]={"","one","two","three","four","five","six","seven","eight","nine","ten",

"eleven","tweleve","thirteen","fourteen","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," ");
}
}
```

OUTPUT:
enter the number : 999999
nine Lakhs ninety nine Thousand nine Hundered and ninety nine

Write a program to REVERSE the SENTENCE?

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

OUTPUT:
enter the sentence: rama and laxmana
The reserve sentence is: laxmana and rama

Write a program to REVERSE THE WORDS in a SENTENCE?

```
import java.util.Scanner;

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

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

OUTPUT:

enter the sentence: **rama and laxmana**

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

Write a program to display STRING INITCAP of Words?

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

                                }
                        }
```

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

OUTPUT:

enter the string: pramod reddy pavan chandu
enter the string in it cap : **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?

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

}
```

OUTPUT:

```
 3
-1
```

Write a program for BINARY SEARCH?

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

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

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

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

Output:

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

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

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

```
import java.util.Scanner;

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

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

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

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

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

Output:

```
enter the length
5
enter the   5 elements
2
8
6
7
88


length of array before inserting--->5
0------->2
1------->8
2------->6
3------->7
4------->88
enter the index of specified position or index
3
enter the element to replace to specified index
62
length of array after inserting--->6
0------->2
1------->8
2------->6
3------->62
4------->7
5------->88
```

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

```
import java.util.Scanner;

class DeletingArray

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

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

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

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

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

OUTPUT:

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

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

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

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

OUTPUT:

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

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

```
import java.util.Scanner;

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

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

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

}
```

OUTPUT:

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

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

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

OUTPUT:

```
First biggest element    is  56
Second biggest element is 28
```

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

```
class 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");
        }
```

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

OUTPUT:

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

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

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

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

OUTPUT:

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

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

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

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

OUTPUT:

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

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

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

OUTPUT:

```
Sum of two element----->48
The first element--->32
The second element--->16
```

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

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

```
                    break;
                }
            }
        }
    }
```

OUTPUT:

common elements are:
13
23
15

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

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

            }
            System.out.println ("AFTER EXCHANGE OF ARRAY");
            for (int i = 0; i < ar.length; i++)
            {
                System.out.println (ar[i]);
            }
        }
    }
```

OUTPUT:

```
BEFORE EXCHANGE OF ARRAY
21
12
15
32
16
17
22
AFTER EXCHANGE OF ARRAY
16
17
22
32
21
12
15
```

Write program TO DISPLAY DISTINCT ELEMENTS from given two array?

```
public class 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?

```
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");
```

```
        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++)
```

```
            {
                    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
```