JAVA PROGRAMS

1. Accessing Instance variable by using object reference.

```
import java.util.*;

class MainRunner

{

        int a=10;

        static int b=30;

        public static void main(String args[])//jvm call main method from class area or static pool

        {

                int c=10;

                System.out.println(c);

                System.out.println(b); //static variable

                MainRunner mr = new MainRunner();

                System.out.println(mr.a); //instance variable

        }

}
```

Output:

```
10

30

10
```

2. Accessing Method variable by using object reference.

```
import java.util.*;

class MainRunner1

{
```

```
	void display()
	{
		System.out.println("I am display method");
	}
	static void write()
	{
		System.out.println("I am write method");
	}
	public static void main(String args[])//JVM call main method from class area
	{
		System.out.println("Main method start");
		write();//static method
		MainRunner1 mr1 = new MainRunner1();
		mr1.display();		//static members access outside class by class name
		System.out.println("Main Method End");
	}
}
```

Output:

Main method start

I am write method

I am display method

Main Method End

3. Employee details

```
class Employee
{
```

```
	static int ccode;
	int eid;
	String ename;
	double esal;
	void working()
	{
		System.out.println("Employee is working");
	}
	static void display()
	{
		System.out.println("I am displaying");
	}
}
class MainEmployee
{
	public static void main(String args[])
	{
		System.out.println("Main method start");
		Employee.ccode=421;
		Employee e1 = new Employee();
		Employee e2 = new Employee();
		Employee e3 = new Employee();
		e1.ename = "abc";
		e2.ename = "def";
		e3.ename = "xyz";
```

```
                System.out.println(e1.eid);
                System.out.println(e1.ename);
                System.out.println(e1.esal);
                System.out.println(e1.ccode);
                System.out.println(e2.eid);
                System.out.println(e2.ename);
                System.out.println(e2.esal);
                System.out.println(e2.ccode);
                System.out.println("Main Method End");
        }
}
```

```
Main method start
0
abc
0.0
421
0
def
0.0
421
Main Method End
```

4. Write a java program to read radius of a circle from user based on that calculate area and circumference of a circle and print

```
import java.util.*;
class Circumference
```

```
{
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the radius of a circle");
        double radius = sc.nextInt();
        double circum = 2*3.142*radius;
        double area = 3.142*radius*radius;
        System.out.println("Circumference of the circle is :"+circum);
        System.out.println("Area of the circle is :"+area);

    }
}
```

Output:

Enter the radius of a circle

5

Circumference of the circle is :31.419999999999998

Area of the circle is :78.55

5. write a java program to read the length and breadth of rectangle from user display the area and perimeter of rectangle

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

```
        float l,w;
        double area,perimeter;
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the length and width of rectangle");
        l = sc.nextFloat();
        w = sc.nextFloat();
        area = 2*l+2*w;//Area = 2*length+2*width
        perimeter = l*w;//length*width
        System.out.println("Area of rectangle : "+area);
        System.out.println("Perimeter of a rectangle :"+perimeter);

    }
}
```

Output:

```
Enter the length and width of rectangle
5 3
Area of rectangle : 16.0
Perimeter of a rectangle :15.0
```

6. write a java program to read the integer value from user and print that number is special 2 digit number are not (ex: sum of digit and product of digit is same than it is special 2 num 89 -> (8+9)+(8*9) è 17+72)

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

```
        Scanner sc = new Scanner(System.in);
        int num;
        System.out.println("Enter the special number");
        num = sc.nextInt();
        int a,b;
        a = num/10;
        b=num%10;
        int n = (a+b) + (a*b);
        if(n == num)
            System.out.println("Special 2 Digit number is :"+num);
        else
            System.out.println("Entered number "+num+ " not a spacial number:");
    }

}
```

Output:

Enter the special number

89

Special 2 Digit number is :89

Enter the special number

65

Entered number 65 not a spacial number:

7. write a java program to check user entered number if positive or negative.

```
    import java.util.*;
```

```
class NumberCheck
{
	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		int a;
		System.out.println("Enter the integer number");
		a = sc.nextInt();
		if(a>=0)
			System.out.println(a+"  is positive");
		else
			System.out.println(a+"  is negative");
	}
}
```

Output:

```
Enter the integer number
-2
-2  is negative

Enter the integer number
2
2  is positive
```

8. Write a java program to read 3 integer values from user and print biggest among those 3 numbers.

```
import java.util.*;

class Greater

{

	public static void main(String args[])

	{

		Scanner sc = new Scanner(System.in);

		System.out.println("Enter the 3 numbers");

		int a = sc.nextInt();

		int b = sc.nextInt();

		int c = sc.nextInt();
```

```
            if(a>b)
            {
                  if(a>c)
                        System.out.println(a+ ": is greater");
                  else
                        System.out.println(c+ ": is greater");
            }
            else
            {
                  if(b>c)
                        System.out.println(b+ ": is greater");
                  else
                        System.out.println(c+ ": is greater");
            }
      }
}
```

Output:

Enter the 3 numbers

999 568 1020

1020: is greater

9. write a java program to check user entered no is Even or Odd

```
import java.util.*;
class Even
{
```

```
	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter the number");
		int a = sc.nextInt();
		if(a/2*2==a)
			System.out.println("Entered number is even");
		else
			System.out.println("Entered number is  odd");
	}
}
```

(OR)

```
string st[]={"Even","odd"}
System.out.println(n+"is "+st[n%2]+"number");
```

(OR)

by switch case

```
switch(n%2)
{
	case 0: s.o.pl("Even");
		break;
	case 1: s.o.pl("Odd");
```

```
            break;
}
```

(OR)

```
string st=(n%2==0)?"Even":"odd";
System.out.println(st);
```

10. Write a java program to read 3 distinct integer values from the user and print middle value among those 3 integers

```
import java.util.*;
class MiddleValue
{
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the 3 distinct number");
        int a = sc.nextInt();
        int b = sc.nextInt();
        int c = sc.nextInt();
        if ((a > b && a < c) || (a > c && a < b)) {
        System.out.println(a +" is middle value");
        }
    else if ((b > a && b < c) || (b>c && b < a)) {
        System.out.println(b +" is middle value");
```

```
            }
        else {
            System.out.println( c +" is middle value");
            }
        }
}
```

Output:

Enter the 3 distinct number

99 52 68

68 is middle value

11. Write a java program to read 3 integer values from user and print smallest among 3 number.

```
import java.util.*;
class SmallNum
{
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the 3 numbers");
        int a = sc.nextInt();
        int b = sc.nextInt();
        int c = sc.nextInt();
        if(a<b && a<c)
            System.out.println(a+" is lesser");
        else if(b<c)
            System.out.println(b+" is lesser");
```

```
        else
                System.out.println(c+" is lesser");
    }
}
```

Output :

```
Enter the 3 numbers
6 5 1
1 is lesser
```

12. write a java program to check user entered year is Leap Year or Not

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

Output:

```
Enter the year
```

2020

2020 is Leap Year

Enter the year

2000

2000 is Leap Year

13. Write a java program to read integer value from user and print that number is a perfect no or not (sum of its divisor equal to that number called perfect number ex: 8--> 1,2,4 (8 not its divisor) 1+2+4 !=8 not perfect no. 6--> 1+2+3 = 6 perfect number)

```
import java.util.*;

class PerfectNum

{

        public static void main(String args[])

        {

                Scanner sc = new Scanner(System.in);

                System.out.println("Enter the number");

                int n = sc.nextInt();

                int i=1,sum=0;

                while(i<=n/2)

                {

                        if(n%i==0)

                        {

                                sum=sum+i;

                        }

                        i++;

                }
```

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

Output:

i. Enter the number

8

8 is not a perfect number

ii. Enter the number

6

6 is perfect number

14. Write a java program to check user entered number is prime number or not

```
import java.util.*;
class PrimeNum
{
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number");
        int n = sc.nextInt();
        int i=2;
        while(i<=n/2)
        {
            if(n%i == 0)//if i=0 then divided by zero error
```

```
                    break;
                i++;
            }
            if(i>n/2)
                System.out.println(n+" is a prime number");
            else
                System.out.println(n+" is not a prime number");
        }
}
```

Output:

Enter the number

56

56 is not a prime number

Enter the number

7

7 is a prime number

15. Write a java program to calculate the product of 1st natural number(factorial)

```
import java.util.*;
class Factorial
{
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number");
```

```
                int n = sc.nextInt();
                int sum=1;
                for(int i=1;i<=n;i++)
                {
                        sum=sum*i;
                }
                System.out.println("The Factorial of number is : "+sum );
        }
}
```

Output:

Enter the number

5

The Factorial of number is : 120

16. Write a java program to calculate the sum of multiple of 4's within in n(n=20 (4+8+12+16+20=60))

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

```
        {
            if(i%4 ==0 )
                sum=sum+i;
        }
        System.out.println("The Sum of multiple of fours is: "+sum);
    }
}
```

Output:

Enter the number

20

The Sum of multiple of fours is: 60

17. Write a java program to define a method check the no is armstrong or not (Sum of power of individual digit by no of digits is equal to number ex: 153 => count = 3, $1^3 + 5^3+3^3$ =1+125+27 = 153 , 1=>1^1 = 1)

```
import java.util.*;
class MainArmStrong
{
    static int nodigits(int x)
    {
        int count=0;
        do{
            count++;
            x=x/10;
        }while(x!=0);
        return count;
    }
```

```
static int pow(int a,int n)
{
        int p=1;
        while(n>0)
        {
                p = p*a;
                n--;
        }
        return p;
}
static boolean isarmstrong(int x)
{
        int count=0,sum=0,n=x;
        count = nodigits(x);
        do
        {
                int r = x%10;
                sum = sum+pow(r,count);
                x = x/10;
        }while(x!=0);
        return n==sum;
}
public static void main(String args[])
{
        Scanner sc  = new Scanner(System.in);
```

```
            System.out.println("Enter the number");
            int n = sc.nextInt();
            System.out.println(isarmstrong(n));
        }
}
```

Output:

Enter the number

153

True

Enter the number

56

False

18. Write a java program to define a method to check user entered no is a diserium return true else false (sum of power of individual digits by their position 89 = 8^1+9^2 ==> 8+81, 135=$1^1+3^2+5^3$ ==> 1+9+125=135)

```
import java.util.*;
class Diserium
{
    int nodigits(int x)
    {
        int count=0;
        do{
            count++;
            x=x/10;
```

```
        }while(x!=0);
        return count;
}
int pow(int a,int n)
{
        int p=1;
        while(a>0)
        {
                p = p*n;
                a--;
        }
        return p;
}
boolean isdiserium(int n)
{
        int count=0,sum=0,s=n;
        count = nodigits(n);
        do{
                int r=n%10;
                sum=sum+pow(count,r);
                n=n/10;
                count--;
        }while(n!=0);
        return (sum==s);
}
```

```
}

class MainDiserium

{

        public static void main(String args[])

        {

                Diserium d = new Diserium();

                Scanner sc = new Scanner(System.in);

                System.out.println("Enter the number");

                int n = sc.nextInt();
                        System.out.println(d.isdiserium(n));

        }

}
```

Output:

Enter the number

89

True

Enter the number

154

False

19. Write a java program to define a method to return sum of square of individual digit (536è5^2+3^2+6^2 è 25+9+36 = 70)

```
import java.util.*;

class SumSquare
```

```
{
    int square(int n)
    {
        int sum=0;
        do
        {
            int r = n%10;
            sum += r*r;
            n=n/10;
        }while(n!=0);
        return sum;
    }
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number");
        int n=sc.nextInt();
        SumSquare s = new SumSquare();
        System.out.println("Sum of square of individual number is: "+s.square(n));
    }
}
```

Output:

Enter the number

536

Sum of square of individual number is: 70

20. Write a java program to define a method to return the reverse of number

```
import java.util.*;

class Reverse

{

	int rev(int n)

	{

		int d=0;

		while(n!=0)

		{

			int r = n%10;

			d = d*10 + r;//increase position

			n = n/10;

		}

		return d;

	}

	public static void main(String args[])

	{

		Scanner sc = new Scanner(System.in);

		System.out.println("Enter the number");

		int n = sc.nextInt();

		Reverse r = new Reverse();

		System.out.println(n+" Reverse is :"+r.rev(n));

	}

}
```

Output:

Enter the number

6589

6589 Reverse is :9856

21. Write a java program to define a method to return true if the no is palindrome otherwise return false.

```
import java.util.*;

class Palindrome

{

	boolean ispalindrome(int n)

	{

		int sum=0,num = n;

		do

		{

			int r=n%10;

			sum = sum *10 + r;

			n/=10;

		}while(n!=0);

		return (num==sum);

	}

	public static void main(String args[])

	{

		Scanner sc = new Scanner(System.in);

		System.out.println("Enter the number");

		int n = sc.nextInt();
```

```
        Palindrome p = new Palindrome();
        System.out.println(p.ispalindrome(n));
    }
}
```

Output:

Enter the number

989

True

Enter the number

8987

False

22. Write a java program to define a method to return nth Fibonacci number

```
import java.util.*;
class Fibonacci
{
    int isFib(int n)
    {
        int f1=0,f2=1,f3=0;
        System.out.print("0 ");
        while(n>1)
        {
```

```
            f3=f1+f2;
            f1=f2;
            f2=f3;
            System.out.print(f3+" ");
            n--;
        }
        System.out.println();
        return f3;

    }

    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number");
        int n=sc.nextInt();
        Fibonacci f1=new Fibonacci();
        System.out.println(n+"th Fibonacci number is: "+f1.isFib(n));
    }

}
```

Output:

Enter the number

5

0 1 2 3 5

5th Fibonacci number is: 5

23. Write a java program to print the palindrome numbers within n(100-> 1 2 3 4 5 6 7 8 9 11 22 33 44 55 66 77 88 99)

```
import java.util.*;

class NPalindrome

{

	void ispalindrome(int n)

	{

		int sum=0,num = n;

		do

		{

			int r=n%10;

			sum = sum *10 + r;

			n/=10;

		}while(n!=0);

		if(num==sum)

			System.out.print(num+" ");

	}

	public static void main(String args[])

	{

		Scanner sc = new Scanner(System.in);

		System.out.println("Enter the number");

		int n = sc.nextInt();

		NPalindrome p = new NPalindrome();

		for(int i=0;i<=n;i++)
```

```
            {
                p.ispalindrome(i);
            }
        }
}
```

Output:

Enter the number

100

0 1 2 3 4 5 6 7 8 9 11 22 33 44 55 66 77 88 99

24. Write a java program to print the first nth prime numbers

```
import java.util.*;


class NPrime
{
    void ifprime(int n)
    {
        int i=1;
        while(n>0)
        {
            boolean rs= isprime(i);
            if(rs)
            {
                System.out.println(i);
            }
            n--;
```

```
                i++;
            }
        }
        boolean isprime(int n)
        {
            for(int i=2;i<n;i++)
            {
                if(n%i==0)
                    return false;
            }
            return true;
        }
        public static void main(String args[])
        {
            Scanner sc = new Scanner(System.in);
            System.out.println("Enter the number");
            int n=sc.nextInt();
            NPrime np = new NPrime();
            np.ifprime(n);
        }
}
```

Output:

Enter the number

12

1

2

3

5

7

11

25. Write a java program to define a method to return how many prime no's within n

```
import java.util.*;
class CountPrime
{
	void ifprime(int n)
	{
		int i=1,count=0;
		while(n>0)
		{
			boolean rs= isprime(i);
			if(rs)
			{
				System.out.println(i);
				count++;
			}
			n--;
			i++;
		}
		System.out.println("Count "+count);
	}
```

```
    boolean isprime(int n)
    {
        for(int i=2;i<n;i++)
        {
            if(n%i==0)
                return false;
        }
        return true;
    }
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number");
        int n=sc.nextInt();
        CountPrime np = new CountPrime();
        np.ifprime(n);

    }
}
```

Output:

Enter the number

15

1

2

3

5

7

11

13

Count 7

26. Write a java program to define a method to return sum of prime numbers within n

```
import java.util.*;


class SumPrime
{
	void ifprime(int n)
	{
		int i=1,sum=0;
		while(n>0)
		{
			boolean rs= isprime(i);
			if(rs)
			{
				System.out.println(i);
				sum+=i;
			}
			n--;
			i++;
		}
		System.out.println("Sum is: "+sum);
```

```
    }
    boolean isprime(int n)
    {
        for(int i=2;i<n;i++)
        {
            if(n%i==0)
                return false;
        }
        return true;
    }
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number");
        int n=sc.nextInt();
        SumPrime np = new SumPrime();
        np.ifprime(n);

    }
}
```

Output :

```
Enter the number
15
1
2
```

3

5

7

11

13

Sum is: 42

27. Write a java program to define a method to convert the number from decimal to binary, decimal to octal and decimal to hexadecimal

```
import java.util.*;

class Convert

{

        String dectobin(int dec)

        {

                String bin="";

                do

                {

                        int r = dec%2;

                        bin = r + bin;

                        dec = dec/2;

                }while(dec!=0);

                return bin;

        }

        String dectooct(int dec)

        {

                String oct="";
```

```
        do
        {
                int r = dec%8;
                oct = r + oct;
                dec = dec/8;
        }while(dec!=0);
        return oct;
}
String dectohex(int dec)
{
        String hex="";
        do
        {
                int r = dec%16;
                if(r<10)
                        hex = r+hex;
                else
                        hex = (char)(r+87) + hex;//for Upper case 55
                dec = dec/10;
        }while(dec!=0);
        return hex;
}
public static void main(String args[])
{
        Convert c = new Convert();
```

```
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the decimal number");
        int dec = sc.nextInt();
        System.out.println("Binary : "+c.dectobin(dec));
        System.out.println("Octal : "+c.dectooct(dec));
        System.out.println("Hexa Decimal : "+c.dectohex(dec));
    }
}
```

Output:

Enter the decimal number

12

Binary : 1100

Octal : 14

Hexa Decimal : 1c

28. Write a java program to define a method to convert the number from binary to decimal, octal to decimal

```
import java.util.*;
class Convert
{
    int bintodec(int bin)
    {
        int dec = 0,pw=1;
        do
        {
```

```
            int r = bin%10;
            dec += (r*pw);
            pw = pw*2;
            bin = bin/10;
        }while(bin!=0);
        return dec;
}
int octtodec(int bin)
{
        int dec = 0,pw=1;
        do
        {
            int r = bin%10;
            dec += (r*pw);
            pw = pw*8;
            bin = bin/10;
        }while(bin!=0);
        return dec;
}
public static void main(String args[])
{
        Convert c = new Convert();
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the binary number");
        int n = sc.nextInt();
```

```
                System.out.println("Enter the octal number");
                int o = sc.nextInt();
                int dec = c.bintodec(n);
                System.out.println("Decimal no from binary: "+dec);
                int oct = c.octtodec(o);
                System.out.println("Decimal no from octal: "+oct);

        }
}
```

Output :

```
Enter the binary number
1100
Enter the octal number
14
Decimal no from binary: 12
Decimal no from octal: 12
```

29. Write a java program to print the multiple of 3's within n

```
import java.util.*;
class ThreeMultiple
{
        public static void main(String args[])
        {
                Scanner sc = new Scanner(System.in);
                System.out.println("Enter the number");
                int n = sc.nextInt();
```

```
            int i=0;
            System.out.println("Multiples of 3 is");
            for(i=3;i<=n;i=i+3)//for(;;) for infinite time or i=3
            {
                  if(i%3==0)
                        System.out.print(i+" ");
            }
      }
}
```

Output:

Enter the number

12

Multiples of 3 is
3 6 9 12

30. Write a java program to return true if the number is happy number otherwise false (97 -> sum of square of individual digits(<10) if that no is not digit than sum of square of individual digits again if that no is not digit than sum of square of individual digits. 97=> 9*9+7*7 => 130 => 1*1+3*3+0*0 = 10 => 1*1+0*0 =>1(the digit is 1 or 7 is called happy no (97)))

```
import java.util.*;
class Happy
{
      boolean ishappy(int n)
      {
            while(n>9)
            {
                  int sum =0;
                  do
```

```
                {
                        int r = n%10;
                        sum = sum+r*r;
                        n = n/10;
                }while(n!=0);
                n = sum;
        }
        return n==1||n==7;
    }
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number");
        int n = sc.nextInt();
        Happy h = new Happy();
        boolean b = h.ishappy(n);
        System.out.println(b);
    }
}
```

Output :

Enter the number

97

True

Enter the number

65

False

31. Write a java program to calculate the sum of even numbers and sum of odd within n

```
import java.util.*;
class SumEvenOdd
{
	void sum(int n)
	{
		int even=0,odd=0;
		for(int i=0;i<=n;i++)
		{
			if(i%2==0)
				even+=i;
			else
				odd+=i;
		}
		System.out.println("Even Sum "+even);
		System.out.println("Odd Sum "+odd);
	}
	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter the number");
		int n = sc.nextInt();
		SumEvenOdd ed = new SumEvenOdd();
```

```
            ed.sum(n);
        }
}
```

Output:

Enter the number

25

Even Sum 156

Odd Sum 169

32. Write a java program to print the multiplication table for user entered number

```
import java.util.*;
class Multiplication
{
        void multiply(int n)
        {
                for(int i = 1;i<11;i++)
                {
                        System.out.println(n+" x "+i+" = "+n*i);
                }
        }
        public static void main(String args[])
        {
                Scanner sc = new Scanner(System.in);
                System.out.println("Enter the number");
                int n = sc.nextInt();
```

```
        Multiplication m = new Multiplication();

        m.multiply(n);

    }

}
```

Output:

Enter the number

5

5 x 1 = 5

5 x 2 = 10

5 x 3 = 15

5 x 4 = 20

5 x 5 = 25

5 x 6 = 30

5 x 7 = 35

5 x 8 = 40

5 x 9 = 45

5 x 10 = 50

33. Write a java program to print fizz if the no is divisible by 3 , print buzz if the no is divisible by 5, print fizz and buzz if no divisible by both 3 and 5 otherwise print that no for the numbers b/w 1 to n(upto n 1,2,4,7,8,11....upto n)

```
import java.util.*;

class Divide

{

    void div(int n)

    {

        for(int i=1;i<=n;i++)
```

```
        {
            if(i%3 ==0 && i%5 ==0)
                System.out.println("Fizz Buzz");
            else if(i%3 == 0)
                System.out.println("Fizz");
            else if(i%5 == 0)
                System.out.println("Buzz");
            else if(i>0)
                System.out.println(i);
        }
    }
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number");
        int n = sc.nextInt();
        Divide d = new Divide();
        d.div(n);
    }
}
```

Output :

Enter the number

8

1

2

Fizz

4

Buzz

Fizz

7

8

34. Write a java program to print the odd numbers b/w m to n (2 inputs)100-200

```
import java.util.*;
class Odd
{
	void DisOdd(int a,int b)
	{
		System.out.println("Odd Numbers are ");
		for(int i = a;i<=b;i++)
		{
			if(i%2 !=0 )
				System.out.println(i);
		}

	}
	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter the 2 numbers");
```

```
            int n = sc.nextInt();
            int m = sc.nextInt();
            Odd o = new Odd();
            o.DisOdd(n,m);
        }
}
```

Output :

```
Enter the 2 numbers
25
50
Odd Numbers are
25
27
29
31
33
35
37
39
41
43
45
47
49
```

35. Write a java program to print the even numbers from n to 1

```
import java.util.*;

class Even

{

	void DisEven(int n)

	{

		System.out.println("Even Numbers are ");

		for(int i = n;i>=0;i--)

		{

			if(i%2 ==0 )

				System.out.println(i);

		}


	}

	public static void main(String args[])

	{

		Scanner sc = new Scanner(System.in);

		System.out.println("Enter the 2 numbers");

		int n = sc.nextInt();

		Even e = new Even();

		e.DisEven(n);

	}

}
```

Output:

```
Enter the 2 numbers

8
```

Even Numbers are

8

6

4

2

0

36. Write a java program to print Number of days in given Month

```
import java.util.*;
class Days
{
	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter the month number");
		int n = sc.nextInt();
		switch(n)//multiple case one print statement
		{
			case 1:
			case 3:
			case 5:
			case 7:
			case 8:
			case 10:
			case 12:System.out.println(" 31 Days");
```

```
                    break;
                case 2: System.out.println(" 28 or 29 Days");
                    break;
                case 4:
                case 6:
                case 9:
                case 11: System.out.println(" 30 Days");
                    break;
                default : System.out.println("Invalid Number");
                    break;

            }
        }
}
```

Output:

Enter the month number

5

31 Days

37. (n=5)

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

```
* * * * *
```

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

38. (n=5)

```
*

* *

* * *

* * * *

* * * * *
```

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

```
        }
}
```

39. (n=5)

1

2 3

4 5 6

7 8 9 1

2 3 4 5 6

```
import java.util.*;
class Num
{
        static void num(int n)
        {
                int k=1;
                for(int i=1;i<=n;i++)
                {
                        for(int j=1;j<=i;j++)
                        {
                                System.out.print(k+" ");
                                k++;
                                if(k==10) k=1;
                        }
                        System.out.println();
                }
```

```
	}
	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter the number");
		int n = sc.nextInt();
		num(n);
	}
}
```

40. (n=5)

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

1 2 3 4 5

```
import java.util.*;
class Num
{
	static void num(int n)
	{
		for(int i=1;i<=n;i++)
		{
			for(int j=1;j<=n;j++)
			{
				System.out.print(j+" ");
```

```
                }
                System.out.println();
            }
        }
        public static void main(String args[])
        {
            Scanner sc = new Scanner(System.in);
            System.out.println("Enter the number");
            int n = sc.nextInt();
            num(n);
        }
}
```

41. (n=5)

1 0 1 0 1

1 0 1 0 1

1 0 1 0 1

1 0 1 0 1

1 0 1 0 1

```
import java.util.*;
class Num
{
    static void num(int n)
    {
        for(int i=1;i<=n;i++)
        {
```

```
                for(int j=1;j<=n;j++)
                {
                        if(j%2==0)
                                System.out.print(" 0 ");
                        else
                                System.out.print(" 1 ");
                }
                System.out.println();
        }
    }
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number");
        int n = sc.nextInt();
        num(n);
    }
}
```

42. N=5

5 5 5 5 5

4 4 4 4

3 3 3

2 2

1

```
import java.util.*;
```

```
class Num
{
	static void num(int n)
	{
		for(int i=n;i>0;i--)
		{
			for(int j=n;j>0;j--)
			{
				System.out.print(n+" ");
			}
			n--;
			System.out.println();
		}
	}
	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter the number");
		int n = sc.nextInt();
		num(n);
	}
}
```

43. N=5

1 0 1 0 1

0 1 0 1 0

1 0 1 0 1

0 1 0 1 0

1 0 1 0 1

```
import java.util.*;
class Num
{
	static void num(int n)
	{
		for(int i=0;i<n;i++)
		{
			for(int j=1;j<=n;j++)
			{
				System.out.print((i+j)%2+" ");
			}
			System.out.println();
		}
	}
	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter the number");
		int n = sc.nextInt();
		num(n);
	}
}
```

44. N = 5

5

4 5

3 4 5

2 3 4 5

1 2 3 4 5

```
import java.util.*;
class Num
{
	static void num(int n)
	{
		for(int i=n;i>0;i--)
		{
			for(int j=i;j<=n;j++)
			{
				System.out.print(j+" ");


			}
			System.out.println();
		}
	}
	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter the number");
```

```
        int n = sc.nextInt();
        num(n);
    }
}
```

45. N = 5

1

2 3

4 5 6

7 8 9 1

2 3 4 5 6

```
import java.util.*;
class Num
{
    static void num(int n)
    {
        int val=1;
        for(int i=1;i<=n;i++)
        {
            for(int j=1;j<=i;j++)
            {
                System.out.print(val+" ");
                if(val==9)
                    val=1;
                else
```

```
                    val++;
                }
                System.out.println();
            }
        }
        public static void main(String args[])
        {
            Scanner sc = new Scanner(System.in);
            System.out.println("Enter the number");
            int n = sc.nextInt();
            num(n);
        }
}
```

46. N = 5

1

0 0

1 1 1

0 0 0 0

1 1 1 1 1

```
import java.util.*;
class Num
{
    static void num(int n)
    {
        for(int i=1;i<=n;i++)
```

```
            {
                for(int j=1;j<=i;j++)
                {
                    if(i%2==0)
                        System.out.print(0+" ");
                    else
                        System.out.print(1+" ");

                }
                System.out.println();
            }
        }
        public static void main(String args[])
        {
            Scanner sc = new Scanner(System.in);
            System.out.println("Enter the number");
            int n = sc.nextInt();
            num(n);
        }
}
```

47. N =5

1 0 1 0 1

1 0 1 0

1 0 1

1 0

1

```
import java.util.*;
class Num
{
	static void num(int n)
	{
		for(int i=1;i<=n;i++)
		{
			for(int j=n;j>=i;j--)
			{
				if(j%2==0)
					System.out.print(0+" ");
				else
					System.out.print(1+" ");

			}
			System.out.println();
		}
	}
	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter the number");
		int n = sc.nextInt();
		num(n);
```

```
        }
}
```

48. N = 5

1

0 1

0 1 0

1 0 1 0

1 0 1 0 1

```
import java.util.*;
class Num
{
        static void num(int n)
        {
                int k=1;
                for(int i=1;i<=n;i++)
                {
                        for(int j=1;j<=i;j++)
                        {
                                System.out.print(k%2+" ");
                                k++;

                        }
```

```
                System.out.println();
            }
        }
        public static void main(String args[])
        {
            Scanner sc = new Scanner(System.in);
            System.out.println("Enter the number");
            int n = sc.nextInt();
            num(n);
        }
}
```

49. N = 5

1

2 6

3 7 10

4 8 11 13

5 9 12 14 15

```
import java.util.*;
class Num
{
    static void num(int n)
    {
        for(int i=1;i<=n;i++)
        {
            int k=i;
```

```
                for(int j=1;j<=i;j++)
                {
                        System.out.print(k+" ");
                        k=k+(n-j);

                }
                System.out.println();
        }
    }
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number");
        int n = sc.nextInt();
        num(n);
    }
}
```

50. N = 5

1 0 1 0 1

0 1 0 1

0 1 0

1 0

1

```
import java.util.*;
class Num
```

```
{
	static void num(int n)
	{
		int t=1;
		for(int i=n;i>=1;i--)
		{
		for(int j=1;j<=i;j++)
		{
				if(t%2==1)
					System.out.print(" 1 ");
				else
					System.out.print(" 0 ");

			t++;
		}
			System.out.println();
		}
	}
	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter the number");
		int n = sc.nextInt();
		num(n);
	}
```

```
}
```

51. N = 5

A B C D E

A B C D

A B C

A B

A

```
import java.util.*;
class Num
{
	static void num(int n)
	{
		int a=64;
		for(int i=n;i>0;i--)
		{
			for(int j=1;j<=i;j++)
			{
				a=a+j;
				System.out.print((char)a+" ");
				a=64;

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

```
	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter the number");
		int n = sc.nextInt();
		num(n);
	}
}
```

52. N = 5

1 2 3 4 5

2 3 4 5

3 4 5

4 5

5

```
import java.util.*;
class Num
{
	static void num(int n)
	{
		for(int i=1;i<=n;i++)
		{
			for(int j=i;j<=n;j++)
			{
				System.out.print(j+" ");
			}
```

```
                System.out.println();
            }
        }
        public static void main(String args[])
        {
            Scanner sc = new Scanner(System.in);
            System.out.println("Enter the number");
            int n = sc.nextInt();
            num(n);
        }
}
```

53. N = 5

A

B B

C C C

D D D D

E E E E E

```
import java.util.*;
class Num
{
    static void num(int n)
    {
        int a=65;
        for(int i=1;i<=n;i++)
        {
```

```
                for(int j=1;j<=i;j++)
                {
                        System.out.print((char)a+" ");
                }
                a++;
                System.out.println();
        }
    }
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number");
        int n = sc.nextInt();
        num(n);
    }
}
```

54. N = 5

1

1*2

1*2*3

1*2*3*4

1*2*3*4*5

```
import java.util.*;
class Num
{
```

```
    static void num(int n)
    {
        for(int i=1;i<=n;i++)
        {
            for(int j=1;j<=i;j++)
            {
                System.out.print(j);
                if(j<i)
                    System.out.print("*");
            }
            System.out.println();
        }
    }
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number");
        int n = sc.nextInt();
        num(n);
    }
}
```

55. N = 5

1 1 1 1 1

2 2 2 2 2

3 3 3 3 3

4 4 4 4 4

5 5 5 5 5

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

56. N = 5

A

B A

C B A

D C B A

E D C B A

```
import java.util.*;
class Num
{
	static void num(int n)
	{
		int a=64;
		for(int i=1;i<=n;i++)
		{
			for(int j=i;j>=1;j--)
			{
				System.out.print((char)(a+j)+" ");
			}
			System.out.println();
		}
	}
	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter the number");
		int n = sc.nextInt();
```

```
        num(n);
    }
}
```

57. N = 5

1

2 1

3 2 1

4 3 2 1

5 4 3 2 1

```
import java.util.*;
class Num
{
    static void num(int n)
    {
        for(int i=1;i<=n;i++)
        {
            for(int j=i;j>0;j--)
            {
                System.out.print(j+" ");
            }
            System.out.println();
        }
    }
    public static void main(String args[])
    {
```

```
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number");
        int n = sc.nextInt();
        num(n);
    }
}
```

58. N = 5

1

1 0

1 0 1

1 0 1 0

1 0 1 0 1

```
import java.util.*;
class Num
{
    static void num(int n)
    {
        for(int i=1;i<=n;i++)
        {
            for(int j=1;j<=i;j++)
            {
                if(j%2==0)
                    System.out.print(" 0 ");
                else
                    System.out.print(" 1 ");
```

```
                }
                System.out.println();
            }
        }
        public static void main(String args[])
        {
            Scanner sc = new Scanner(System.in);
            System.out.println("Enter the number");
            int n = sc.nextInt();
            num(n);
        }
}
```

59. N = 5

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

```
import java.util.*;
class Num
{
```

```
    static void num(int n)
    {
        for(int i=1;i<=n;i++)
        {
            for(int j=1;j<=n-i;j++)
            {
                System.out.print(" ");
            }
            for(int j=1;j<=i;j++)
            {
                System.out.print("*");
            }
            System.out.println();
        }
    }
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number");
        int n = sc.nextInt();
        num(n);
    }
}
```

60.


```
import java.util.*;

class Num

{

	static void num(int n)

	{

		for(int i=1;i<=n;i++)

		{

			for(int j=1;j<=n-i;j++)

			{

				System.out.print(" ");

			}


			for(int j=1;j<=2*i-1;j++)

			{

				System.out.print("*");

			}

			System.out.println();

		}

	}

	public static void main(String args[])
```

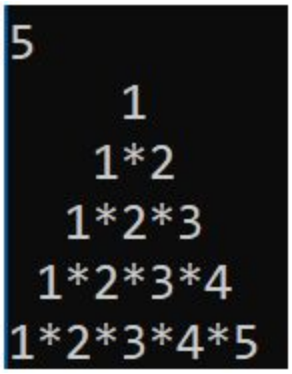
```
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter the number");
		int n = sc.nextInt();
		num(n);
	}
}
```

61.


```
import java.util.*;
class Num
{
	static void num(int n)
	{
		for(int i=n;i>=1;i--)
		{
			for(int j=n-i;j>=1;j--)
			{
				System.out.print(" ");
			}
```

```
                for(int j=2*i-1;j>=1;j--)
                {
                        System.out.print("*");
                }
                System.out.println();
        }
    }
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number");
        int n = sc.nextInt();
        num(n);
    }
}
```

62.




```
import java.util.*;

class Num

{

	static void num(int n)

	{

		for(int i=1;i<=n;i++)

		{

			for(int j=1;j<=n-i;j++)

			{

				System.out.print(" ");

			}


			for(int j=1;j<=i;j++)

			{

				System.out.print(j);

				if(j<i)

					System.out.print("*");

			}

			System.out.println();
```

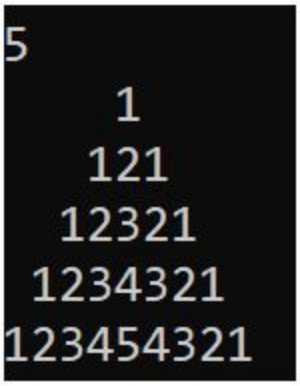
```
        }
    }
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number");
        int n = sc.nextInt();
        num(n);
    }
}
```

63.


```
import java.util.*;
class Num
{
    static void num(int n)
    {
        for(int i=n;i>=1;i--)
        {
            for(int j=n-i;j>=1;j--)
```

```
                {
                        System.out.print(" ");
                }
                for(int j=1;j<=i;j++)
                {
                        System.out.print("*");
                }
                System.out.println();
        }
    }
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number");
        int n = sc.nextInt();
        num(n);
    }
}
```

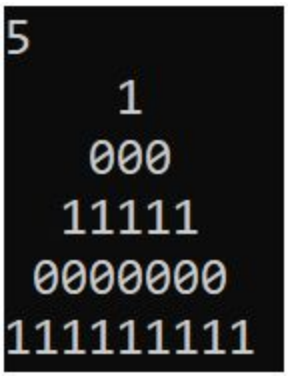
64.



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

```
        System.out.println("Enter the number");
        int n = sc.nextInt();
        num(n);
    }
}
```

65.

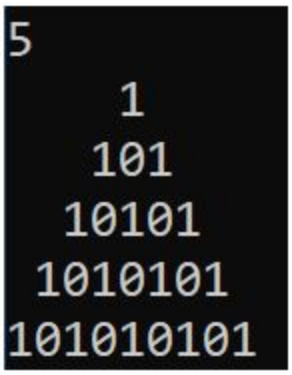



```
import java.util.*;
class Num
{
    static void num(int n)
    {
        for(int i=1;i<=n;i++)
        {
            for(int j=1;j<=n-i;j++)
            {
                System.out.print(" ");
```

```
                }
                for(int j=1;j<=i;j++)
                {
                        if(i%2==0)
                                System.out.print(0);
                        else
                                System.out.print(1);
                        if(j==i){
                                for(int k=j-1;k>=1;k--)
                                if(i%2==0)
                                        System.out.print(0);
                                else
                                        System.out.print(1);
                        }
                }
                System.out.println();
        }
}
public static void main(String args[])
{
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number");
        int n = sc.nextInt();
        num(n);
}
```

}

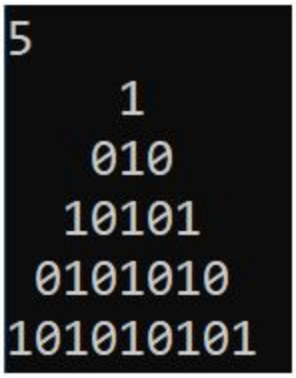
66.




```
import java.util.*;

class Num

{

	static void num(int n)

	{

		for(int i=1;i<=n;i++)

		{

			for(int j=1;j<=n-i;j++)

			{

				System.out.print(" ");

			}

			for(int j=1;j<=i;j++)

			{

				if(j%2==0)

					System.out.print(0);
```

```
                else
                        System.out.print(1);
                if(j==i){
                        for(int k=j-1;k>=1;k--)
                        if(k%2==0)
                                System.out.print(0);
                        else
                                System.out.print(1);
                }
        }
        System.out.println();
    }
}
public static void main(String args[])
{
    Scanner sc = new Scanner(System.in);
    System.out.println("Enter the number");
    int n = sc.nextInt();
    num(n);
}
}
```

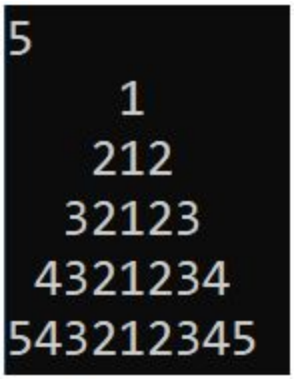
67.




```
import java.util.*;

class Num

{

	static void num(int n)

	{

		int k=0;

		for(int i=1;i<=n;i++)

		{

			for(int j=1;j<=n-i;j++)

			{

				System.out.print(" ");

			}

			for(int j=1;j<=i;j++)

			{

				System.out.print(((i+j)+1)%2);

				if(j==i)

				{

					for(k=2;k<=j;k++)

					{
```

```
                                        System.out.print(((k+n)+1)%2);
                                    }
                                }
                            }
                            System.out.println();
                        }
                }
        public static void main(String args[])
        {
                Scanner sc = new Scanner(System.in);
                System.out.println("Enter the number");
                int n = sc.nextInt();
                num(n);
        }
}
```

68.

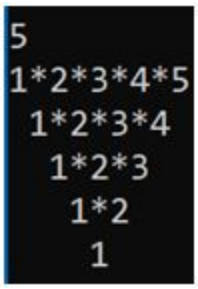



```
import java.util.*;
class Num
{
```

```
static void num(int n)
{
	for(int i=1;i<=n;i++)
	{
		for(int j=1;j<=n-i;j++)
		{
			System.out.print(" ");
		}
		int k=i;
		for(int j=1;j<=2*i-1;j++)
		{
			System.out.print(k);
			if(j<i)
				k--;
			else
				k++;
		}
		System.out.println();
	}
}
public static void main(String args[])
{
	Scanner sc = new Scanner(System.in);
	System.out.println("Enter the number");
	int n = sc.nextInt();
```

```
        num(n);
    }
}
```

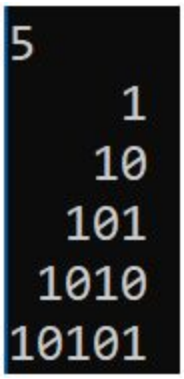
69.




```
import java.util.*;
class Num
{
    static void num(int n)
    {
        for(int i=n;i>=1;i--)
        {
            for(int j=n-i;j>=1;j--)
            {
                System.out.print(" ");
            }

            for(int j=1;j<=i;j++)
            {
                System.out.print(j);
                if(j<i)
```

```
                    System.out.print("*");
                }
                System.out.println();
            }
        }
        public static void main(String args[])
        {
            Scanner sc = new Scanner(System.in);
            System.out.println("Enter the number");
            int n = sc.nextInt();
            num(n);
        }
}
```

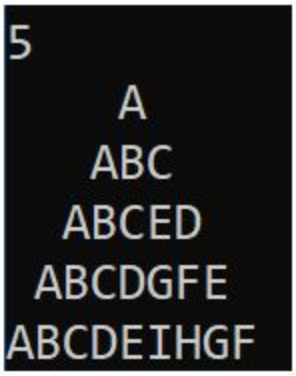
70.




```
import java.util.*;
class Num
{
    static void num(int n)
    {
```

```
        for(int i=1;i<=n;i++)
        {


            for(int j=1;j<=n-i;j++)
            {
                System.out.print(" ");
        }
        for(int k=1;k<=i;k++)
        {
                if(k%2==0)
                    System.out.print("0");
                else
                    System.out.print("1");
        }
            System.out.println();
        }
    }
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number");
        int n = sc.nextInt();
        num(n);
    }
}
```

71.




```
import java.util.*;

class Num

{

	static void num(int n)

	{

		for(int i=1;i<=n;i++)

		{

			for(int j=1;j<=n-i;j++)

			{

				System.out.print(" ");

			}

			for(int j=1;j<=i;j++)

			{

				System.out.print((char)(j+64));

				if(j==i){

					for(int k=j-1;k>=1;k--)

						System.out.print((char)(k+64+j) );

				}
```

```
                }
                System.out.println();
            }
        }
        public static void main(String args[])
        {
            Scanner sc = new Scanner(System.in);
            System.out.println("Enter the number");
            int n = sc.nextInt();
            num(n);
        }
}
```

72.


```
import java.util.*;
class Num
{
```

```
public static void main(String args[])
{
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number");
        int n = sc.nextInt();
        int sp=n/2,st=1;//sp->space, st->star
        for(int i=1;i<=n;i++)
        {
                for(int j=1;j<=sp;j++)
                {
                        System.out.print(" ");
                }
                for(int j=1;j<=st;j++)
                {
                        System.out.print("*");
                }
                if(i<=n/2)
                {
                        sp--;
                        st = st+2;
                }
                else
                {
                        sp++;
                        st = st-2;
```

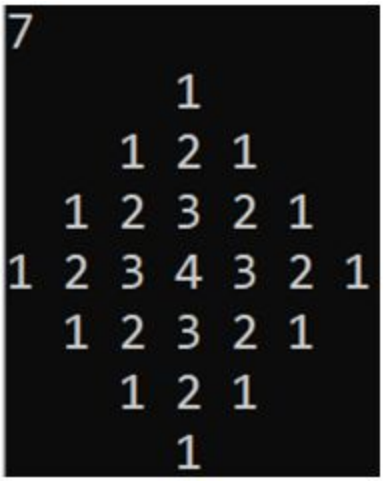
```
                }

                System.out.println();

            }

        }

}
```

73.


```
import java.util.*;
class Num
{
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number");
        int n = sc.nextInt();
        int sp=0,st=n;//sp->space, st->star
        for(int i=1;i<=n;i++)
        {
            for(int j=1;j<=sp;j++)
            {
                System.out.print(" ");
            }
            for(int j=1;j<=st;j++)
            {
                System.out.print("*");
            }
            if(i<=n/2)
            {
```

```
                        sp++;
                        st = st-2;
                    }
                    else
                    {
                        sp--;
                        st = st+2;
                    }
                    System.out.println();
                }
            }
        }
```

74.

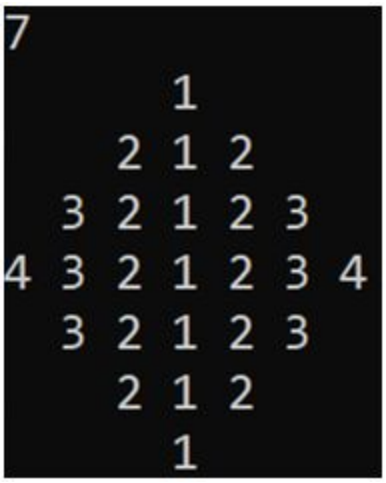



```
import java.util.*;

class Num

{

    public static void main(String args[])

    {

        Scanner sc = new Scanner(System.in);

        System.out.println("Enter the number");

        int n = sc.nextInt();

        int sp=n/2,st=1;//sp->space, st->star
```

```
for(int i=1;i<=n;i++)
{
        for(int j=1;j<=sp;j++)
        {
                System.out.print("  ");
        }
        int k=1;
        for(int j=1;j<=st;j++)
        {
                System.out.print(k+" ");
                if(j<=st/2)
                        k++;
                else
                        k--;
        }
        if(i<=n/2)
        {
                sp--;
                st = st+2;
        }
        else
        {
                sp++;
                st = st-2;
        }
```

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

75.




```
import java.util.*;
class Num
{
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number");
        int n = sc.nextInt();
        int sp=n/2,st=1;//sp->space, st->star
        for(int i=1;i<=n;i++)
        {
            for(int j=1;j<=sp;j++)
            {
```

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

76.


```
import java.util.*;
class Num
{
	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter the number");
		int n = sc.nextInt();
		int sp=n/2,st=1;//sp->space, st->star
		for(int i=1;i<=n;i++)
		{
			for(int j=1;j<=sp;j++)
			{
				System.out.print(" ");
			}
			for(int j=1;j<=st;j++)
			{
```

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

77.


```
import java.util.*;
class Num
{
	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=1;i<=n;i++)
		{
			for(int j=1;j<=n;j++)
			{
				if(i==1 || i==n ||j==1||j==n||i==j||i+j==n+1)
					System.out.print("*");
				else
					System.out.print(" ");
			}
			System.out.println();
```

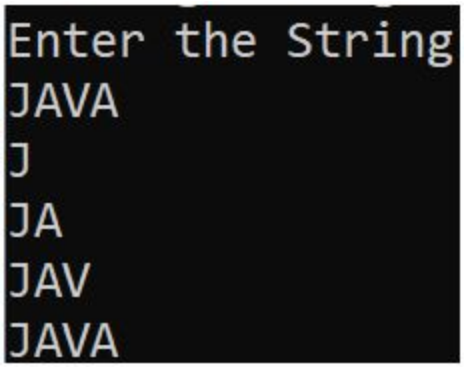
```
        }
    }
}
```

78.


```
import java.util.*;
class Num
{
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number");
        int n = sc.nextInt();
        int sp=n/2,st=1;
        for(int i=1;i<=n;i++)
        {
            for(int j=1;j<=sp;j++)
            {
                System.out.print(" ");
```

```
                }
                int k=st/2+1;
                for(int j=1;j<=st;j++)
                {
                        System.out.print((char)(64+k));
                        if(j<=st/2)
                                k--;
                        else
                                k++;
                }
                if(i<=n/2)
                {
                        sp--;
                        st = st+2;
                }
                else
                {
                        sp++;
                        st = st-2;
                }
                System.out.println();
        }
    }
}
```

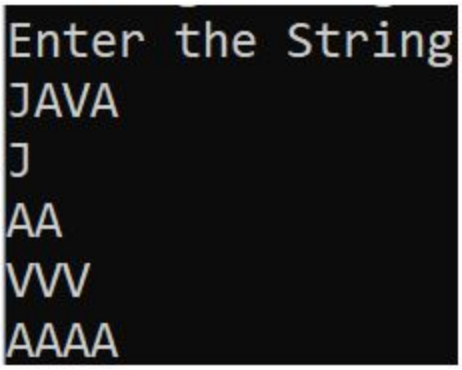
79.




```
import java.util.*;

class Num

{

	public static void main(String args[])

	{

		Scanner sc = new Scanner(System.in);

		System.out.println("Enter the String");

		String s = sc.next();

		int n = s.length();

		String s1="";

		for(int i=1;i<=n;i++)

		{

				char a= s.charAt(i-1);

				s1 = s1+a;

				System.out.print(s1);

				System.out.println();

		}
```

```
        }
}
```

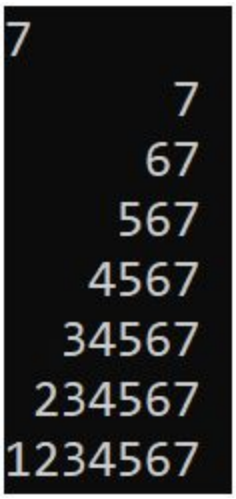
80.




```
import java.util.*;
class Num
{
        public static void main(String args[])
        {
                Scanner sc = new Scanner(System.in);
                System.out.println("Enter the String");
                String s = sc.next();
                int n = s.length();
                for(int i=1;i<=n;i++)
                {
                        char a= s.charAt(i-1);
                        for(int j=1;j<=i;j++)
                        {
                                System.out.print(a);
                        }
```

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

81.




```
import java.util.*;
class Num
{
    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=n;i>=1;i--)
        {
            for(int j=1;j<i;j++)
            {
```

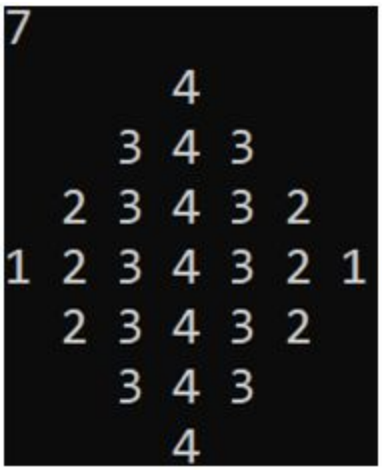
```
                System.out.print(" ");
            }
            for(int j=i;j<=n;j++)
            {
                System.out.print(j);
            }
            System.out.println();
        }
    }
}
```

82.


```
import java.util.*;
class Num
{
    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=1;i<=n;i++)
            {
                  for(int j=1;j<=n;j++)
                  {
                        if(i==n/2+1  ||j==n/2+1||i==j||i+j==n+1)
                              System.out.print("* ");
                        else
                              System.out.print("  ");
                  }
                  System.out.println();
            }
      }
}
```

83.




```
import java.util.*;
class Num
```

```
{
	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter the number");
		int n = sc.nextInt();
		int sp=n/2,st=1;
		for(int i=1;i<=n;i++)
		{
			for(int j=1;j<=sp;j++)
			{
				System.out.print(" ");
			}
			int k=sp+1;
			for(int j=1;j<=st;j++)
			{
				System.out.print(k);
				if(j<=st/2)
					k++;
				else
					k--;
			}
			if(i<=n/2)
			{
				sp--;
```

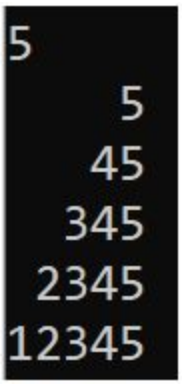
```
                st = st+2;
            }
            else
            {
                sp++;
                st = st-2;
            }
            System.out.println();
        }
    }
}
```

84.


```
import java.util.*;
class Num
{
    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=1;i<=n;i++)
            {
                  for(int j=1;j<=n;j++)
                  {
                        if(i==1  ||j==1 || j==n || i==n  ||j==n/2+1 || i==n/2+1)
                              System.out.print("* ");
                        else
                              System.out.print("  ");
                  }
                  System.out.println();
            }
      }
}
```

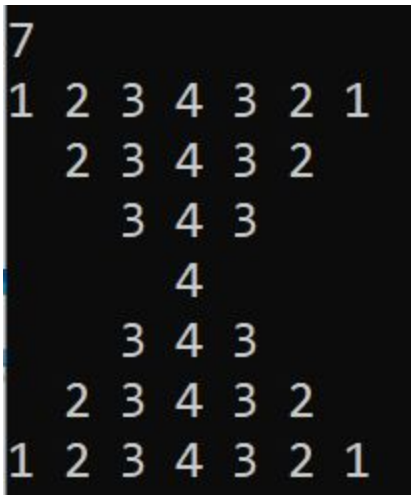
85.




```
import java.util.*;
class Num
{
```

```
    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=n;i>=1;i--)
        {
            for(int j=1;j<i;j++)
            {
                System.out.print(" ");
            }
            for(int j=i;j<=n;j++)
            {
                System.out.print(j);
            }
            System.out.println();
        }
    }
}
```

86.




```
 import java.util.*;
class pattern {
 public static void main(String[] args) {
  System.out.println("Enter the no");
  Scanner sc = new Scanner(System.in);
  int n = sc.nextInt();
  pat(n);
 }
 static void pat(int n) {
  int st=n;
  int sp=0;
  for(int i=1;i<=n;i++) {
   for(int j=1;j<=sp;j++) {
    System.out.print(" ");
   }
   int k=sp+1;
   for(int j=1;j<=st;j++) {
    System.out.print(k);
```

```
   if(j<=st/2 )
    k++;
   else
    k--;
  }
  if(i<=n/2) {
   sp++;
   st=st-2;
  }
  else {
   sp--;
   st=st+2;
  }
  System.out.println();
 }
}
}
```

ARRAYS

1. Write a java program to display array elements in same line by comma.

```
class Array1
{
        public static void main(String []arg)
        {
                int a[] = {25,35,45,55,65};
```

```
            for(int i=0;i<a.length;i++)
            {
                System.out.print(a[i]);
                if(i<a.length-1)
                    System.out.print(", ");
            }
        }
}
```

Output:

25, 35, 45, 55, 65

2. Write a java program to define a method to return sum of array elements

```
class SumArray
{
    static int sumOfArray(int x[])
    {
        int sum=0;
        for(int i=0;i<x.length;i++)
        {
            sum=sum+x[i];
        }
        return sum;
    }
    public static void main(String []arg)
    {
        int a[] = {25,35,45,55,65};
```

```
        int s = sumOfArray(a);
        System.out.println("sum of elements is " + s);
    }
}
```

Output:

sum of elements is 225

3. Write a java program to define a method to reverse the array.

```
class ReverseArray
{
    static void reverseArray(int x[])
    {
        int start=0,end=x.length-1;
        while(start<end)
        {
            int t=x[start];
            x[start]=x[end];
            x[end]=t;
            start++;
            end--;
        }
    }
    public static void main(String []arg)
    {
        int a[] = {25,35,45,55,65};
        System.out.println("before reverse");
```

```
            for (int i=0;i<a.length;i++)
            {
                System.out.print(a[i] + " ");
            }
            reverseArray(a);
            System.out.println();
            System.out.println("after reverse");
            for(int i=0;i<a.length;i++)
            {
                System.out.print(a[i] + " ");
            }
        }
}
```

Output:

```
before reverse
25 35 45 55 65
after reverse
65 55 45 35 25
```

4. Write a java program to define a method to print biggest element from an user input array.

```
import java.util.Scanner;
class BiggestArray
{
    static int getBiggest(int x[])
    {
        int big=x[0];
```

```
        for(int i=1;i<x.length;i++)
        {
            if(big<x[i])
                big=x[i];
        }
        return big;
    }
    public static void main(String []arg)
    {
        System.out.println("enter the array size");
        Scanner s1 = new Scanner(System.in);
        int size = s1.nextInt();
        int a[] = new int[size];
        System.out.println("enter " + size + " values");
        for(int i=0;i<size;i++)
        {
            a[i] = s1.nextInt();
        }
        System.out.println("biggest value is " + getBiggest(a));
    }
}
```

Output:

enter the array size

5

enter 5 values

9 8 5 7 12

biggest value is 12

5. Write a java program to define a method to return how many even odd numbers in an array

```
class EvenOddArray
{
	static int[] countEvenOdd(int x[])
	{
		int ec=0,oc=0;
		for(int i=0;i<x.length;i++)
		{
			if(x[i]%2==0)
				ec++;
			else
				oc++;
		}
		int count[]={ec,oc};
		return count;
	}
	public static void main(String []arg)
	{
		int ar[]={23,44,56,76,88};
		int c[]=countEvenOdd(ar);
		System.out.println("number of even entries " + c[0]);
		System.out.println("number of odd entries " + c[1]);
	}
```

```
}
```

(OR)

```
static int[] count(int x[])
{
        int count[]={0,0};
        for(int i=0;i<x.length;i++)
        {
                if(x[i]%2==0)
                        count[0]++;
                else
                        count[1]++;
        }
}
```

(OR)

```
static int[] countEC(int x[])
{
        int count[]={0,0};
        for(int i=0;i<x.length;i++)
                count[x[i]%2]++;
        return count;
}
```

Output:

```
number of even entries 4
number of odd entries 1
```

6. Write a java program to define a method to return how many armStrong number present inside a array.

```
import java.util.*;

import java.math.*;

class ArrayArmStrong

{

	static int nodigits(int x)

	{

		int count=0;

		do{

			count++;

			x=x/10;

		}while(x!=0);

		return count;

	}


	static boolean isarmstrong(int x)

	{

		int count=0,sum=0,n=x;

		count = nodigits(x);

		do

		{

			int r = x%10;

			sum = sum+(int)Math.pow(r,count);
```

```
            x = x/10;
        }while(x!=0);
        return n==sum;
    }
    public static void main(String args[])
    {
        Scanner sc  = new Scanner(System.in);
        System.out.println("Enter the number");
        int n = sc.nextInt();
        int a[] = new int[n];
        System.out.println("enter the values");
        for(int i=0;i<n;i++)
        {
            a[i]=sc.nextInt();
        }
        for(int i=0;i<n;i++)
        {
            System.out.println(a[i]+"  "+isarmstrong(a[i]));
        }

    }
}
```

Output:

Enter the number

5

enter the values

1

2

153

99

25

1 true

2 true

153 true

99 false

25 false

7. Write a java program to define a method to return average of array elements

```
import java.util.*;
class AverageArray
{
	static int Average(int x[])
	{
		int num=0;
		for(int i=0;i<x.length;i++)
		{
			num += x[i];
		}
		return num/x.length;
	}
```

```
    public static void main(String args[])
    {

        int ar[]={10,20,6,5,4,3,1};
        int avg = Average(ar);
        System.out.println("Average number is :"+avg);
    }
}
```

Output:

Average number is :7

8. Write a java program to read n Students percentage from the user and display in that how many Students grade is distinction, first class, second class and just pass

```
import java.util.*;
class Percentage
{
    static void Average(int x[])
    {
        int dis=0,fc=0,sc=0,p=0,f=0;
        for(int i=0;i<x.length;i++)
        {
            if(x[i]>=85)
                dis++;
            else if(x[i]>=60)
                fc++;
```

```
            else if(x[i]>=50)
                sc++;
            else if(x[i]>=35)
                p++;
            else f++;
        }
        System.out.println("Total number of Distinction students is : " +dis);
        System.out.println("Total number of First class students is : " +fc);
        System.out.println("Total number of Second class students is : " +sc);
        System.out.println("Total number of passing students is : " +p);
        System.out.println("Total number of Fail students is : " +f);

}

public static void main(String args[])
{
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number of Students");
        int n = sc.nextInt();
        int ar[]=new int[n];
        System.out.println("Enter the percentage of Students");
        for(int i=0;i<n;i++)
            ar[i] = sc.nextInt();
        Average(ar);
}
```

```
}
```

Output:

Enter the number of Students

5

Enter the percentage of Students

89 72 55 45 25

Total number of Distinction students is : 1

Total number of First class students is : 1

Total number of Second class students is : 1

Total number of passing students is : 1

Total number of Fail students is : 1

9. Write a java program to define a method to return how many prime numbers present inside a array

```
import java.util.*;

class PrimeNum

{

        static int check(int n)

        {

                int c=0;

                for(int i=2;i<n;i++)

                {

                        if(n%i==0)

                                c++;

                }

                if(c>0)
```

```
                return 0;
        else
                return 1;
    }
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the total number of prime numbers");
        int n = sc.nextInt();
        int p=0;
        int ar[]=new int[n];
        System.out.println("Enter the numbers");
        for(int i=0;i<n;i++)
            ar[i] = sc.nextInt();
        for(int i=0;i<n;i++)
        {
            p=p+check(ar[i]);
        }
        System.out.println("Total prime numbers :"+p);
    }
}
```

Output:

Enter the total number of prime numbers

5

Enter the numbers

9 7 5 3 2

Total prime numbers :4

10. Write a java program to read n product price and display the average price

```
import java.util.*;
class ProductPrice
{
	static int Average(int x[])
	{
		int num=0;
		for(int i=0;i<x.length;i++)
		{
			num += x[i];
		}
		return num/x.length;
	}

	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter the number of product");
		int n = sc.nextInt();
		int ar[]=new int[n];
		System.out.println("Enter the price of product");
		for(int i=0;i<n;i++)
			ar[i] = sc.nextInt();
```

```
            int avg = Average(ar);
            System.out.println("Average number is :"+avg);
        }
}
```

Output:

```
Enter the number of product
5
Enter the price of product
15 48 95 58 65
Average number is :56
```

11. Write a java program to define a method to return smallest element

```
import java.util.*;
class SmallArray
{
    static int Small(int x[])
    {
        int min=x[0];
        for(int i=0;i<x.length;i++)
        {
            if(min > x[i])
                min = x[i];
        }
        return min;
    }
```

```
    public static void main(String args[])
    {

        int ar[]={10,20,6,5,4,3,1};
        int min = Small(ar);
        System.out.println(min);
    }
}
```

Output:

1

12. Write a java program to define a method to create duplicate array

```
class DuplicateArray
{
    static int[] copyarray(int x[])
    {
        int r[] = new int[x.length];
        for(int i=0;i<x.length;i++)
        {
            r[i]=x[i];
        }
        return r;
    }
    public static void main(String []arg)
    {
```

```
        int ar[]={23,44,56,76,88};
        int c[]=copyarray(ar);
        for(int i:c)
            System.out.print(i+" ");
    }
}
```

Output:

23 44 56 76 88

13. Write a java program to define a method to merge 2 integer array elements into single array

```
import java.util.Scanner;
class MergeArray
{
    static int[] readArray()
    {
        Scanner s1 = new Scanner(System.in);
        System.out.println("enter the array size");
        int n = s1.nextInt();
        int ar[] = new int[n];
        System.out.println("enter the array elements");
        for(int i=0;i<n;i++)
        {
            ar[i]=s1.nextInt();
        }
        return ar;
    }
```

```
static void displayArray(int ar[])
{
	for(int i=0;i<ar.length;i++)
	{
		System.out.println(ar[i] + " ");
	}
}

static int[] mergeArray(int x[],int y[])
{
	int z[] = new int[x.length+y.length];
	for(int i=0;i<x.length;i++)
	{
		z[i]=x[i];
	}
	for(int i=0;i<y.length;i++)
	{
		z[x.length+i]=y[i];
	}
	return z;
}

public static void main(String []arg)
{
```

```
            System.out.println("1st array");
            int a[] = readArray();
            System.out.println("2nd array");
            int b[] = readArray();
            System.out.println("enter the elements of 1st array");
            displayArray(a);
            System.out.println("enter the elements of 2nd array");
            displayArray(b);
            int c[] = mergeArray(a,b);
            System.out.println("after merging");
            displayArray(c);
        }
}
```

Output:

```
1st array
enter the array size
3
enter the array elements
1 2 3
2nd array
enter the array size
3
enter the array elements
4 5 6
Elements of 1st array
```

1

2

3

Elements of 2nd array

4

5

6

after merging

1

2

3

4

5

6

14. Write a java program to define a method to merge 2 integer array elements into single array in Zig-Zag Order

```
import java.util.Scanner;

class MergeZigZag

{

  static int[] readArray()

  {

        Scanner s1 = new Scanner(System.in);

        System.out.println("enter the array size");

        int n = s1.nextInt();

        int ar[] = new int[n];
```

```
        System.out.println("enter the array elements");
        for(int i=0;i<n;i++)
        {
                ar[i]=s1.nextInt();
        }
        return ar;
}

static void displayArray(int ar[])
{
        for(int i=0;i<ar.length;i++)
        {
                System.out.println(ar[i] + " ");
        }
}

static int[] mergeArray(int x[],int y[])
{
        int z[] = new int[x.length+y.length];
        int i=0,k=0;
        while(i<x.length && i<y.length)
        {
                z[k]=x[i];
                k++;
                z[k]=y[i];
```

```
            k++;
            i++;
        }
        while(i<x.length)
        {
            z[k]=x[i];
            k++;
            i++;
        }
        while(i<y.length)
        {
            z[k]=y[i];
            k++;
            i++;
        }
        return z;
}

public static void main(String []arg)
{
        System.out.println("1st array");
        int a[] = readArray();
        System.out.println("2nd array");
        int b[] = readArray();
        System.out.println("enter the elements of 1st array");
```

```
        displayArray(a);
        System.out.println("enter the elements of 2nd array");
        displayArray(b);
        int c[] = mergeArray(a,b);
        System.out.println("after merging");
        displayArray(c);
  }
}
```

Output:

```
1st array
enter the array size
3
enter the array elements
1 2 3
2nd array
enter the array size
3
enter the array elements
4 5 6
Elements of 1st array
1
2
3
Elements of 2nd array
4
```

5

6

after merging

1

4

2

5

3

6

15. Write a java program to define a method to merge 2 sorted array elements into single sorted array

```
import java.util.Scanner;

class MergeSortedArr

{

 static int[] readArray()

 {

        Scanner s1 = new Scanner(System.in);

        System.out.println("enter the array size");

        int n = s1.nextInt();

        int ar[] = new int[n];

        System.out.println("enter the array elements");

        for(int i=0;i<n;i++)

        {

                ar[i]=s1.nextInt();

        }
```

```
        return ar;
}

static void displayArray(int ar[])
{
        for(int i=0;i<ar.length;i++)
        {
                System.out.println(ar[i] + " ");
        }
}

static int[] mergeArray(int x[],int y[])
{
        int z[] = new int[x.length+y.length];
        int i=0,j=0,k=0;
        while(i<x.length && j<y.length)
        {
                if(x[i]<y[i])
                        z[k++]=x[i++];
                else
                        z[k++]=y[j++];
        }
        while(i<x.length)
                z[k++]=x[i++];
        while(j<y.length)
```

```
            z[k++]=y[j++];
        return z;
    }

    public static void main(String []arg)
    {
        System.out.println("1st array");
        int a[] = readArray();
        System.out.println("2nd array");
        int b[] = readArray();
        System.out.println("enter the elements of 1st array");
        displayArray(a);
        System.out.println("enter the elements of 2nd array");
        displayArray(b);
        int c[] = mergeArray(a,b);
        System.out.println("after merging");
        displayArray(c);
    }
}
```

Output:

1st array

enter the array size

5

enter the array elements

2 8 9 15 16

2nd array

enter the array size

5

enter the array elements

3 5 6 10 11 18

Elements of 1st array

2

8

9

15

16

Elements of 2nd array

3

5

6

10

11

after merging

2

3

5

6

10

11

8

9

15

16

16. Write a java program to define a method how many +ve and -ve numbers present in array

```
import java.util.*;
class CheckNum
{
 static int[] checkArr(int x[])
 {
        int []a=new int[2];
        for(int i=0;i<x.length;i++)
        {
                if(x[i] > 0)
                        a[0]++;
                else
                        a[1]++;
        }
        return a;
 }
 public static void main(String args[])
 {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number of elements");
        int n = sc.nextInt();
        int ar[] = new int[n];
```

```
        System.out.println("Enter the numbers");
        for(int i = 0;i<n;i++)
                ar[i] = sc.nextInt();
        int a[] = checkArr(ar);
        System.out.println("Total positive numbers are :"+a[0]);
        System.out.println("Total negetive numbers are :"+a[1]);
  }
}
```

Output:

```
Enter the number of elements
5
Enter the numbers
5 6 2 4 7
Total positive numbers are :5
Total negetive numbers are :0
```

17. Write a java program to define a method to return how many elements greater than the specified elements

```
/*4. WAJP to define a method to return how many elements greater than the specified elements*/
import java.util.*;
class ElementsGreater
{
        static int[] disp(int x[],int n)
        {
                int k=0;
```

```
        for(int i=0;i<x.length;i++)
        {
                if(x[i]>n)
                {
                        k++;
                }
        }
        int a[] = new int[k];
        int j=0;
        for(int i=0;i<x.length;i++)
        {
                if(x[i]>n)
                {
                        a[j++] =x[i] ;
                }
        }
        return a;
}
public static void main(String args[])
{
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number of elelments");
        int n = sc.nextInt();
        int ar[] = new int[n];
        System.out.println("Enter the numbers");
```

```
            for(int i = 0;i<n;i++)
                ar[i] = sc.nextInt();
            System.out.println("Enter the element to print greater than that element");
            int i = sc.nextInt();
            int a[] = disp(ar,i);
            System.out.println("Elements are");
            for(int k:a)
                System.out.print(k+" ");
        }
}
```

Output:

Enter the number of elelments

5

Enter the numbers

9 5 68 75 22

Enter the element to print greater than that element

9

Elements are

68 75 22

18. Write a java program to define a method to print pair of elements whose sum=n

```
import java.util.*;
class ElementsPair
{
  static void disp(int x[],int n)
  {
```

```
        for(int i=0;i<x.length;i++)
        {
                for(int j=0;j<x.length;j++)
                {
                        if(i!=j)
                        {
                                if(x[i]+x[j]==n)
                                {
                                        System.out.println(x[i]+" "+x[j]);
                                }
                        }
                }
        }
}
public static void main(String args[])
{
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number of elelments");
        int n = sc.nextInt();
        int ar[] = new int[n];
        System.out.println("Enter the numbers");
        for(int i = 0;i<n;i++)
                ar[i] = sc.nextInt();
        System.out.println("Enter the element to print greater than that element");
```

```
        int i = sc.nextInt();
        disp(ar,i);
  }
}
```

Output:

```
Enter the number of elelments
5
Enter the numbers
1 2 3 4 5
Enter the element to print greater than that element
5
1 4
2 3
3 2
4 1
```

19. Write a java program to define a method to return sum of even numbers and odd no's present in array

```
import java.util.*;
class SumEvenOdd
{
  static int[] checkArr(int x[])
  {
        int []a=new int[2];
        for(int i=0;i<x.length;i++)
        {
```

```
            if(x[i]%2==0)
                a[0]+=x[i];
            else
                a[1]+=x[i];
        }
        return a;
    }
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number of elements");
        int n = sc.nextInt();
        int ar[] = new int[n];
        System.out.println("Enter the numbers");
        for(int i = 0;i<n;i++)
            ar[i] = sc.nextInt();
        int a[] = checkArr(ar);
        System.out.println("Total Even numbers are :"+a[0]);
        System.out.println("Total Odd numbers are :"+a[1]);
    }
}
```

Output:

```
Enter the number of elements
5
Enter the numbers
```

1 2 3 4 5

Total Even numbers are :6

Total Odd numbers are :9

20. Write a java program to define a method to insert element in the specified index

```
import java.util.Scanner;
class InsertElement
{
 static int[] insertArray(int x[],int ele,int in)
 {
        if (in<0||in>x.length)
        {
                System.out.println("index out of range");
                return x;
        }
        int y[] = new int[x.length+1];
        y[in]=ele;
        for(int i=0;i<x.length;i++)
        {
                if(i<in)
                        y[i]=x[i];
                else
                        y[i+1]=x[i];
        }
        return y;
 }
```

```
 public static void main(String []arg)
 {
        System.out.println("enter the array size");
        Scanner sc = new Scanner(System.in);
        int n = sc.nextInt();
        int a[] = new int[n];
        System.out.println("enter the array elements");
        for(int i=0;i<n;i++)
        {
                a[i] = sc.nextInt();
        }
        System.out.println("Enter the element for insert");
        int ele = sc.nextInt();
        System.out.println("Enter the index for insert an element");
        int in = sc.nextInt();
        a=insertArray(a,ele,in);
        for(int i:a)
                System.out.print(i+" ");
 }
}
```

Output:

enter the array size

5

enter the array elements

1 2 3 4 5

Enter the element for insert

6

Enter the index for insert an element

5

1 2 3 4 5 6

21. Write a java program to insert one array into another array at specified index

```
import java.util.Scanner;
class InsertArraySpecific
{
 static int[] insertArraySpec(int x[],int y[],int in)
 {
        if (in<0||in>x.length)
        {
                System.out.println("index out of range");
                return x;
        }
        int c[] = new int[x.length+y.length];
        for(int i=0;i<y.length;i++)
        {
                c[in+i]=y[i];
        }
        for(int i=0;i<x.length;i++)
        {
                if(i<in)
```

```
                c[i]=x[i];
            else
                c[i+y.length]=x[i];
        }
        return c;
}

public static void main(String []arg)
{
        Scanner s1 = new Scanner(System.in);
        System.out.println("enter the first array size");
        int size = s1.nextInt();
        int a[] = new int[size];
        System.out.println("enter the 1st array elements");
        for(int i=0;i<size;i++)
        {
            a[i]=s1.nextInt();
        }
        System.out.println("enter the second array size");
        int size1 = s1.nextInt();
        int b[] = new int[size1];
        System.out.println("enter the 2nd array elements");
        for(int i=0;i<size1;i++)
        {
            b[i]=s1.nextInt();
```

```
        }
        System.out.println("enter the index element");
        int n = s1.nextInt();
        int z[] = insertArraySpec(a,b,n);
        for(int i:z)
                System.out.print(i+" ");
  }
}
```

Output:

```
enter the first array size
5
enter the 1st array elements
1 2 3 4 5
enter the second array size
3
enter the 2nd array elements
7 8 9
enter the index element
2
1 2 7 8 9 3 4 5
```

22. Write a java program to define a method to delete the element from specified index

```
import java.util.Scanner;
class DeleteElement
{
```

```
static int[] deleteEle(int x[],int in)
{
	if (in<0||in>=x.length)
	{
		System.out.println("index out of range");
		return x;
	}
	int z[] = new int[x.length-1];
	for(int i=0;i<z.length;i++)
	{
		if(i<in)
			z[i]=x[i];
		else
			z[i]=x[i+1];
	}
	return z;
}

public static void main(String []arg)
{
	Scanner s1 = new Scanner(System.in);
	System.out.println("enter the array size");
	int size = s1.nextInt();
	int a[] = new int[size];
```

```
        System.out.println("enter the array elements");
        for(int i=0;i<size;i++)
        {
                a[i]=s1.nextInt();
        }
        System.out.println("enter the index");
        int in = s1.nextInt();
        int z[] = deleteEle(a,in);
        for(int i:z)
                System.out.print(i+" ");
  }
}
```

Output:

```
enter the array size
5
enter the array elements
1 2 3 4 5
enter the index
2
1 2 4 5
```

23. Write a java program to define a method to return Nth Biggest element

```
import java.util.Scanner;
class NthBiggest
{
  static int biggest(int x[],int n)
```

```
{
        int a=0;
        for(int i=0;i<x.length;i++)
        {
                int count=0;
                for(int j=0;j<x.length;j++)
                {
                        if(x[j]>x[i])
                                count++;
                }
                if(count==n-1)
                        a=x[i];
        }
        return a;
}

public static void main(String []arg)
{
        Scanner s1 = new Scanner(System.in);
        System.out.println("enter the array size");
        int size = s1.nextInt();
        int a[] = new int[size];
        System.out.println("enter the array elements");
        for(int i=0;i<size;i++)
        {
```

```
            a[i]=s1.nextInt();
        }
        System.out.println("enter the nth number to find biggest");
        int in = s1.nextInt();
        int z = biggest(a,in);
        System.out.print(in+"nd Biggest is: "+z);
  }
}
```

Output:

```
enter the array size
5
enter the array elements
3 2 14 58 7
enter the nth number to find biggest
2
2nd Biggest is: 14
```

24. Write a java program to read the date from the user and print corresponding day name

```
import java.util.Scanner;
class PrintDay
{
  int dd,mm,yy;
  int month[]={0,31,28,31,30,31,30,31,31,30,31,30,31};

  String dname[]= {"Sunday","Monday","Tuesday","Wednesday","Thrusday","Friday","Saturday"};
```

```
public PrintDay(int dd, int mm, int yy)
{
        this.dd = dd;
        this.mm = mm;
        this.yy = yy;
        if(yy%4==0&&yy%100!=0||yy%400==0)
                month[2]=29;
}
String getName()
{
        int x = countnodays();
        return dname[x%7];
}
int countnodays()
{
        int y=yy-1;
        int days=dd;
        days+=y*365;//for other than leap years
        days=days+(y/4-y/100+y/400);//for leapyear
        for(int i=1;i<mm;i++){
                days=days+month[i];
        }
        return days;
}
```

```
 public static void main(String[] args)
 {
        Scanner sc = new Scanner(System.in);
        System.out.println("enter Date :");
        int d = sc.nextInt();
        System.out.println("enter Month :");
        int m = sc.nextInt();
        System.out.println("enter Year :");
        int y = sc.nextInt();
        PrintDay D = new PrintDay(d,m,y);
        System.out.println("Day is: "+ D.getName());
 }
}
```

Output:

enter Date :

1

enter Month :

1

enter Year :

1998

Day is: Thrusday

25. Write a java program to read 2 dates from the user and print no of days between 2 dates

```
import java.util.*;
class BetweenDate
{
```

```
int dd;
int mm;
int yy;
int month[]={0,31,28,31,30,31,30,31,31,30,31,30,31};
String dName[]={"Sunday","Monday","Tuesday","Wednesday","Thursday","Friday","Saturday"};



BetweenDate(int dd,int mm,int yy)
{
        this.dd=dd;
        this.mm=mm;
        this.yy=yy;
        if(yy%400==0||yy%4==0&&yy%100!=0)
                month[2]=29;
}



int getNumberOfDays()
{

        int days=dd;
        for(int i=1;i<mm;i++)
                days=days+month[i];

        int y=yy-1;
```

```
        days=days+y*365;
        days=days+y/400+y/4-y/100;


        return days;
}
public static void main(String args[])
{
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the date");
        int d  = sc.nextInt();
        System.out.println("Enter the month");
        int m  = sc.nextInt();
        System.out.println("Enter the year");
        int y  = sc.nextInt();
        System.out.println("Enter the date1");
        int d1  = sc.nextInt();
        System.out.println("Enter the month1");
        int m1  = sc.nextInt();
        System.out.println("Enter the year1");
        int y1  = sc.nextInt();
        BetweenDate D = new BetweenDate(d,m,y);
        BetweenDate D1 = new BetweenDate(d1,m1,y1);
        int n1=D1.getNumberOfDays();
        int n=D.getNumberOfDays();
```

```
        System.out.println("Number of Days is : "+(n1-n));
  }
}
```

Output:

Enter the date

15

Enter the month

4

Enter the year

1947

Enter the date1

16

Enter the month1

12

Enter the year1

2020

Number of Days is : 26909

26. Write a java program to convert user entered number into sentence

```
import java.util.Scanner;
class NumbertoSentence
{
  static void nw(int x,String st)
  {
   String  one[]={""," one "," two "," three "," four "," five "," six "," seven "," eight "," nine "," ten "," eleven "," twelve "," thirteen "," fourteen "," fifteen "," sixteen "," seventeen "," eighteen "," nineteen "};
```

```
String two[]={"","," twenty "," thirty "," forty "," fifty "," sixty "," seventy "," eighty "," ninety "};



if(x<20)
        System.out.print(one[x]);
else
        System.out.print(two[x/10]+one[x%10]);


if(x!=0)
        System.out.print(st);
}


public static void main(String arg[])
{
        Scanner s=new Scanner(System.in);


        System.out.println("Enter the number ");
        int n=s.nextInt();


        nw(n/10000000," crore ");
        nw((n/100000)%100," lakh ");
        nw((n/1000)%100," thousand ");
        nw((n/100)%10," hundred ");
        nw(n%100,"");
        }
```

```
}
```

Output:

```
Enter the number
658
 six  hundred  fifty  eight
```

27. Write a java program to perform the union operation b/w 2 array elements

```
import java.util.Scanner;
class Union
{
  static int[] union(int a[],int b[])
  {
        int c[]= new int[a.length+b.length];

        for(int i=0;i<a.length;i++)
        {
              c[i]=a[i];
        }

        int k=a.length;

        for(int i=0;i<b.length;i++)
        {
              int j=0;

              for(j=0;j<a.length;j++)
```

```
            {
                if(b[i]==a[j])
                {
                    break;
                }
            }
            if(j==a.length)
                c[k++]=b[i];
        }
        int z[]=new int[k];
        for(int i=0;i<k;i++)
        {
            z[i]=c[i];
        }
        return z;
}
public static void main(String arg[])
{
        Scanner s=new Scanner(System.in);
        System.out.println("Enter the required size of 1st array ");
        int n1=s.nextInt();



        int ar1[]=new int[n1];
```

```
        System.out.println("Enter the "+n1+" values");
        for(int i=0;i<n1;i++)
        {
                ar1[i]=s.nextInt();
        }

        System.out.println("Enter the required size of 2nd array ");
        int n2=s.nextInt();



        int ar2[]=new int[n2];

        System.out.println("Enter the "+n2+" values");
        for(int i=0;i<n2;i++)
        {
                ar2[i]=s.nextInt();
        }

        int x[]=union(ar1,ar2);
        for(int i=0;i<x.length;i++)
        {
                System.out.print(x[i]+" ");
        }
  }
}
```

Output:

Enter the required size of 1st array

5

Enter the 5 values

1 2 3 4 5

Enter the required size of 2nd array

3

Enter the 3 values

5 6 7

1 2 3 4 5 6 7

28. Write a java program to perform intersection operation b/w 2 array elements

```
import java.util.Scanner;
class Intersection
{
  static int[] intersection(int a[],int b[])
  {
        int c[]= new int[a.length+b.length];
        int k=0;

        for(int i=0;i<a.length;i++)
        {
              for(int j=0;j<b.length;j++)
              {
                    if (a[i]==b[j])
                    {
```

```
                        c[k++]=a[i];
                        break;
                    }
                }
            }

        int z[]=new int[k];
        for(int i=0;i<k;i++)
        {
            z[i]=c[i];
        }
        return z;

}

public static void main(String arg[])
{
        Scanner s=new Scanner(System.in);
        System.out.println("Enter the required size of 1st array ");
        int n1=s.nextInt();


        int ar1[]=new int[n1];

        System.out.println("Enter the "+n1+" values");
```

```
        for(int i=0;i<n1;i++)
        {
                ar1[i]=s.nextInt();
        }

        System.out.println("Enter the required size of 2nd array ");
        int n2=s.nextInt();



        int ar2[]=new int[n2];

        System.out.println("Enter the "+n2+" values");
        for(int i=0;i<n2;i++)
        {
                ar2[i]=s.nextInt();
        }

        int x[]=intersection(ar1,ar2);
        for(int i=0;i<x.length;i++)
        {
                System.out.print(x[i]+" ");
        }
  }
}
```

Output:

Enter the required size of 1st array

5

Enter the 5 values

1 2 3 4 5

Enter the required size of 2nd array

5

Enter the 5 values

6 5 4 2 8

2 4 5

30. Write a java program to print the frequency of each element witout comparing each other(bitset)

```
import java.util.*;

class Frequency

{


  public static void main(String args[])

  {

        Scanner sc = new Scanner(System.in);

        System.out.println("Enter the number of array elements ");

        int n = sc.nextInt();

        System.out.println("Enter the array elements ");

        int a[] = new int[n];
```

```
        for(int i=0;i<n;i++)
                a[i] = sc.nextInt();
        int big = a[0];
        for(int i=0;i<a.length;i++)
                if(big<a[i])
                        big=a[i];
        int count[] = new int[big+1];
        for(int i=0;i<a.length;i++)
                count[a[i]]++;
        for(int i=0;i<count.length;i++)
        {
                if(count[i]>0)
                        System.out.println(i+" --> "+count[i]);
        }
  }
}
```

Output:

Enter the number of array elements

5

Enter the array elements

1 2 3 1 2

1 --> 2

2 --> 2

3 --> 1

31. Write a java program to perform the minus operations b/w 2 array elements

```
import java.util.Scanner;

class MinusArray

{

 static int[] minus(int a[],int b[])

 {

        int c[]= new int[a.length];

        int k=0,j=0;


        for(int i=0;i<a.length;i++)

        {

                for(j=0;j<b.length;j++)

                {

                        if (a[i]==b[j])

                        {


                                break;

                        }

                }

                if(j==b.length)

                        c[k++]=a[i];

        }

        int z[]=new int[k];

        for(int i=0;i<k;i++)

        {
```

```
            z[i]=c[i];
        }
        return z;
}
public static void main(String arg[])
{
        Scanner s=new Scanner(System.in);
        System.out.println("Enter the required size of 1st array ");
        int n1=s.nextInt();


        int ar1[]=new int[n1];


        System.out.println("Enter the "+n1+" values");
        for(int i=0;i<n1;i++)
        {
            ar1[i]=s.nextInt();
        }


        System.out.println("Enter the required size of 2nd array ");
        int n2=s.nextInt();


        int ar2[]=new int[n2];
```

```
        System.out.println("Enter the "+n2+" values");
        for(int i=0;i<n2;i++)
        {
                ar2[i]=s.nextInt();
        }

        int x[]=minus(ar1,ar2);
        for(int i=0;i<x.length;i++)
        {
                System.out.print(x[i]+" ");
        }
  }
}
```

Output:

Enter the required size of 1st array

5

Enter the 5 values

1 2 3 4 5

Enter the required size of 2nd array

6

Enter the 6 values

5 6 7 8 9 2

1 3 4

32. Write a java program to delete specific element from the array

```
import java.util.Scanner;
class DeleteSpecificElement
{
  static int[] deleteEle(int x[],int ele)
  {
        for(int i=0;i<x.length;i++)
        {
              if(x[i]==ele)
              {
                    x = deleteArr(x,i);
                    i--;
              }
        }
        return x;
  }

  static int[] deleteArr(int x[],int in)
  {
        if (in<0||in>=x.length)
        {
              System.out.println("index out of range");
              return x;
        }
        int z[] = new int[x.length-1];
        for(int i=0;i<z.length;i++)
```

```
        {
                if(i<in)
                        z[i]=x[i];
                else
                        z[i]=x[i+1];
        }
        return z;
}
public static void main(String []arg)
{
        Scanner s1 = new Scanner(System.in);
        System.out.println("enter the array size");
        int size = s1.nextInt();
        int a[] = new int[size];
        System.out.println("enter the array elements");
        for(int i=0;i<size;i++)
        {
                a[i]=s1.nextInt();
        }
        System.out.println("enter the element");
        int in = s1.nextInt();
        a = deleteEle(a,in);
        for(int i:a)
                System.out.print(i+" ");
}
```

```
}
```

Output:

```
enter the array size
5
enter the array elements
1 2 3 4 5
enter the element
4
1 2 3 5
```

33. Write a java program to remove the duplicate from the array

```
import java.util.Scanner;
class RemoveDuplicate
{
 static int[] deleteEle(int x[])
 {
        int n = x.length;
        for(int k=0;k<n;k++)
        {
                int ele = x[k];
                for(int i=k+1;i<n;i++)
                {
                        if(x[i] == ele)
                        {
                                int j=i;
                                while(j<n-1)
```

```
                        {
                                x[j] = x[j+1];
                                j++;
                        }
                        n--; i--;
                }
        }
    }
    int y[]= new int[n];
    for(int i=0;i<n;i++)
        y[i] = x[i];
    return y;
}
public static void main(String []arg)
{
    Scanner s1 = new Scanner(System.in);
    System.out.println("enter the array size");
    int size = s1.nextInt();
    int a[] = new int[size];
    System.out.println("enter the array elements");
    for(int i=0;i<size;i++)
    {
        a[i]=s1.nextInt();
    }
    a = deleteEle(a);
```

```
        for(int i:a)
                System.out.print(i+" ");
  }
}
```

Output:

enter the array size

5

enter the array elements

1 2 3 2 1

1 2 3

34. Write a java program to print the frequency of each element

```
import java.util.Scanner;
class FrequencyArr
{
  static void freq(int x[])
  {
        int n = x.length;
        for(int i=0;i<n;i++)
        {
                int count = 1;
                for(int j=i+1;j<n;j++)
                {
                        if(x[i] == x[j])
                        {
                                count++;
```

```
                    x[j] = x[n-1];
                    n--; j--;
                }
            }
            System.out.println(x[i]+" ==> "+count);
        }

    }
    public static void main(String []arg)
    {
        Scanner s1 = new Scanner(System.in);
        System.out.println("enter the array size");
        int size = s1.nextInt();
        int a[] = new int[size];
        System.out.println("enter the array elements");
        for(int i=0;i<size;i++)
        {
            a[i]=s1.nextInt();
        }
        freq(a);
    }
}
```

Output:

enter the array size

5

enter the array elements

1 2 3 1 2

1 ==> 2

2 ==> 2

3 ==> 1

STRING

1. Write a java program to count how many digits, Capital letters, Small letters and Special Characters present in the string.

```
import java.util.*;

class CountChar

{

        public static void main(String args[])

        {

                Scanner sc = new Scanner(System.in);

                System.out.println("Enter the String");

                String s = sc.nextLine();

                int dc=0,uc=0,lc=0,sp=0;

                for(int i=0;i<s.length();i++)

                {

                        char ch=s.charAt(i);

                        if(ch>='A' && ch<='Z')

                                uc++;

                        else if(ch>='a' && ch<='z')

                                lc++;

                        else if(ch>='0' && ch<='9')
```

```
                dc++;
            else
                sp++;
        }
        System.out.println("Upper Case is:"+uc);
        System.out.println("Lower Case is:"+lc);
        System.out.println("Digits Count is:"+dc);
        System.out.println("Special characters is:"+sp);
    }
}
```

Output:

```
Enter the String
Jspiders@123
Upper Case is:1
Lower Case is:7
Digits Count is:3
Special characters is:1
```

2. Write a java program to count how many Consonants and Vowels present in the string.

```
import java.util.*;
class CountVowels
{
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the String");
```

```
        String s = sc.nextLine();
        int vc=0,cc=0;
        for(int i=0;i<s.length();i++)
        {
            char ch=s.charAt(i);
            if(ch>=65 && ch<=90)
            {
                if(ch=='A'||ch=='E'||ch=='I'||ch=='O'||ch=='U')
                    vc++;
                else
                    cc++;
            }
            else if(ch>=97 && ch<=122)
            {
                if(ch=='a'||ch=='e'||ch=='i'||ch=='o'||ch=='u')
                    vc++;
                else
                    cc++;
            }
        }
        System.out.println("Vowels Count is:"+vc);
        System.out.println("Consonants Count is:"+cc);
    }
}
```

Output:

Enter the String

Vowels

Vowels Count is:2

Consonants Count is:4

3. Write a java program to define a method to convert all the alphabet in the string into lowercase

```
import java.util.*;

class LowerCase

{

	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("Lower Case is:"+s.toLowerCase());

	}

}
```

Output:

Enter the String

BANglore

Lower Case is:banglore

(OR)

```
class LowerCase
```

```
{
	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("Lower Case is:"+toSmall(s));
	}
	static String toSmall(String str)
	{
		String rs="";
		for(int i=0;i<str.length();i++)
		{
			char ch=str.charAt(i);
			if(ch>=65 && ch<=90)
				ch=(char)(ch+32);
			rs+=ch;
		}
		return rs;
	}
}
```

(OR)

```
class LowerCase
```

```
{
	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("Lower Case is:"+toSmall(s));
	}
	static String toSmall(String str)
	{
		char ch[] = str.toCharArray();
		for(int i=0;i<ch.length;i++)
		{
			if(ch[i]>='A' && ch[i]<='Z')
				ch[i]=(char)(ch[i]+32);
		}
		str = new String(ch);
		return str;
	}
}
```

4. Write a java program to calculate the sum of digits in a string

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

```
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the String");
        String s = sc.nextLine();
        int sum=0;
        for(int i=0;i<s.length();i++)
        {
            char ch = s.charAt(i);
            if(ch>='0' && ch<='9')
                sum+=ch-48;
        }
        System.out.println("Sum of the digits: "+sum);
    }
}
```

Output:

Enter the String

java42king85

Sum of the digits: 19

5. Write a java program to calculate the frequency of each character in given string without comparing

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

```
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the String");
        String s = sc.nextLine();
        int count[] = new int[128];
        for(int i=0;i<s.length();i++)
        {
            char ch = s.charAt(i);
            count[ch]++;
        }
        for(int i=0;i<count.length;i++)
        {
            if(count[i]!=0)
                System.out.println((char)i+" ---> "+count[i]);
        }
    }
}
```

Output:

```
Enter the String
qwerty12
1 ---> 1
2 ---> 1
e ---> 1
q ---> 1
r ---> 1
t ---> 1
```

w ---> 1

y ---> 1

6. Write a java program to print the frequency count of each character in given string by ignoring the cases

```
import java.util.Scanner;

class Alphabetfreq

{

	public static void main(String arg[])

	{

		Scanner s=new Scanner(System.in);

		System.out.println(" Enter the string ");

		String str=s.nextLine();

		int count[]=new int[26];

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

		{

			char ch=str.charAt(i);

			if(ch>=65&&ch<=90)

			{

				count[ch-65]++;

			}

			else if(ch>=97&&ch<=122)

			{

				count[ch-97]++;

			}
```

```
        }


        for(int i=0;i<26;i++)
        {
                if(count[i]!=0)


                        System.out.println((char)(i+65)+"------ "+count[i]);
        }
    }
}
```

Output:

```
Enter the string
Strings
G------ 1
 I------ 1
N------ 1
R------ 1
S------ 2
T------ 1
```

7. Write a java program to define a method to return true if string Pangram

Ex: Str = "The quick brown fox jumps over the lazy dog"

String str contains all the 26 characters at once it is called pangram.

```
import java.util.Scanner;
class Panagram
{
```

```
static boolean isPanagram(String t)
{
	int count[] = new int[26];
	for(int i=0;i<t.length();i++)
	{
		char ch=t.charAt(i);
		if(ch>=65&&ch<=90)
			count[ch-65]++;
		else if(ch>=97&&ch<=122)
			count[ch-97]++;
	}
	for(int i=0;i<26;i++)
	{
		if(count[i]==0)
			return false;
	}
	return true;
}
public static void main(String arg[])
{
	Scanner s=new Scanner(System.in);
	System.out.println(" Enter the string ");
	String str=s.nextLine();
	boolean x=isPanagram(str);
	if(x==true)
```

```
                System.out.println(" entered string is a panagram  ");
        else
                System.out.println(" entered string is not a panagram  ");
    }
}
```

Output:

Enter the string

qwertyuiopasdfghjklzxcvbnm

entered string is a panagram

Enter the string

qwerfgh

entered string is not a panagram

8. Write a java program to define a method to check 2 strings are Anagram or not

Ex: Characters are present in 1st String are all present in 2nd String

cat == act

listen == silent

```
import java.util.Scanner;
class Anagram
{
    static int[] countFreq(String t)
    {
        int count[] = new int[26];
        for(int i=0;i<t.length();i++)
```

```
        {
                char ch=t.charAt(i);
                if(ch>=65&&ch<=90)
                        count[ch-65]++;
                else if(ch>=97&&ch<=122)
                        count[ch-97]++;
        }
        return count;
}
static boolean isAnagram(String str1,String str2)
{
        int c1[]=countFreq( str1);
        int c2[]=countFreq( str2);
        for(int i=0;i<26;i++)
        {
                if(c1[i]!=c2[i])
                        return false;
        }
        return true;
}
public static void main(String arg[])
{
        Scanner s=new Scanner(System.in);
        System.out.println("Enter the string 1 ");
        String str1=s.nextLine();
```

```
            System.out.println("Enter the string 2 ");
            String str2=s.nextLine();
            System.out.println("The given 2 strings is an anagram : "+isAnagram(str1,str2));
        }
}
```

Output:

Enter the string 1

cat

Enter the string 2

act

The given 2 strings is an anagram : true

Enter the string 1

aaa

Enter the string 2

saa

The given 2 strings is an anagram : false

9. Write a java program to define a method to count the number of words in a string

```
import java.util.*;
class CountWords
{
    static int countStr(String s)
    {
        int wc=0;
        char ch[]= s.toCharArray();
```

```
        for(int i=0;i<ch.length;i++)
        {
            if(i==0 && ch[i]!=' ' || ch[i]!=' ' && ch[i-1]==' ')
                wc++;
        }
        return wc;
    }

    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("Number of times word present in string: "+countStr(s));

    }
}
```

Output:

Enter the String

King is a good boy

Number of times word present in string: 5

10. Write a java program to define a method to convert all the characters in the string to upper String

```
import java.util.*;
class UpperCase
{
```

```
	static String upper(String st)
	{
		return st.toUpperCase();
	}
	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("String to Upper case is : "+upper(s));
	}
}
```

Output:

Enter the String

qwerty

String to Upper case is : QWERTY

11. Write a java program to define a method to convert all the characters cases into vice versa (A—a , a—A)

```
import java.util.*;
class StrViceVersa
{
	static String upper(String st)
	{
		String s="";
```

```
        for(int i=0;i<st.length();i++)
        {
            char c = st.charAt(i);
            if(c>='A' && c<='Z')
                s+=Character.toLowerCase(c);
            else if(c>='a' && c<='z')
                s+=Character.toUpperCase(c);
        }
        return s;
    }
    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("String to Upper case is : "+upper(s));
    }
}
```

Output:

Enter the String

LAPtop

String to Upper case is : lapTop

12. Write a JAVA program to define a method to return how many times specific character present in the given String by ignoring the casese

```
import java.util.*;
```

```
class SpecifiedStr
{
	static void count(String st,char c)
	{
		int cn=0;
		for(int i=0;i<st.length();i++)
		{
			char c1 = st.charAt(i);
			if(c1>='A' && c1<='Z' || c1>='a' && c1<='z')
			{
				if(c==c1 ||
c1==Character.toLowerCase(c)||c1==Character.toUpperCase(c))
					cn++;
			}
		}
		System.out.println("Total Count of Letters is:"+cn);
	}
	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("Enter the character");
		char c = sc.next().charAt(0);
		count(s,c);
```

```
    }
}
```

Output:

Enter the String

Characters

Enter the character

c

Total Count of Letters is:2

13. Write a java program to define a method to return how many times specific character present in the given String.

```
import java.util.*;
class SpecifiedString
{
    static void count(String st,char c)
    {
        int cn=0;
        for(int i=0;i<st.length();i++)
        {
            char c1 = st.charAt(i);
            if(c1>='A' && c1<='Z')
            {
                if(c==c1)
                    cn++;
            }
            else if(c1>='a' && c1<='z')
```

```
                {
                        if(c==c1)
                                cn++;
                }
        }
        System.out.println("Total characters is:"+cn);
    }
    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("Enter the character");
        char c = sc.next().charAt(0);
        count(s,c);
    }
}
```

Output:

Enter the String

Strings

Enter the character

S

Total characters is:1

14. Write a java program to convert every word first character to upper case rest to lower case

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

```
class EveryWordUpper
{
	static String changer(String str)
	{
		char ch[]=str.toCharArray();
		for(int i=0;i<ch.length;i++)
		{
			if(i==0 && ch[i]!=' '||ch[i]!=' ' && ch[i-1]==' ')
			{
				if(ch[i]>='a' && ch[i]<='z')
				{
					ch[i]=(char)(ch[i]-32);
				}
			}
			else if(ch[i]>='A' && ch[i]<='Z')
			{
				ch[i]=(char)(ch[i]+32);
			}
		}
		String x=new String(ch);
		return x;
	}
	public static void main(String arg[])
	{
```

```
        Scanner s=new Scanner(System.in);
        System.out.println(" Enter the string ");
        String str=s.nextLine();

        String x=changer(str);
        System.out.println(x);
    }
}
```

Output:

Enter the string

word document

Word Document

15. Write a java program to convert every word last character to upper case rest to lower case

```
import java.util.Scanner;
class EveryWordLastUp
{
    static String changer(String str)
    {
        char ch[]=str.toCharArray();
        for(int i=0;i<ch.length;i++)
        {
            if(i==ch.length-1 && ch[i]!=' '||ch[i]!=' ' && ch[i+1]==' ')
            {
                if(ch[i]>='a' && ch[i]<='z')
                {
```

```
                    ch[i]=(char)(ch[i]-32);
                }
            }
            else if(ch[i]>='A' && ch[i]<='Z')
            {
                ch[i]=(char)(ch[i]+32);
            }
        }
        String x=new String(ch);
        return x;
    }
    public static void main(String arg[])
    {
        Scanner s=new Scanner(System.in);
        System.out.println(" Enter the string ");
        String str=s.nextLine();
        String x=changer(str);
        System.out.println(x);
    }
}
```

Output:

Enter the string

this is a book

thiS iS A book

16. Write a java program to swap first letter of each word to last letter

```
import java.util.Scanner;
class SwapCharacter
{
	static String changer(String str)
	{
		char ch[]=str.toCharArray();
		int f=0;
		for(int i=0;i<ch.length;i++)
		{
			if(i==0 && ch[i]!=' '||ch[i]!=' ' && ch[i-1]==' ')
			{
				f=i;
			}

			if(i==ch.length-1&&ch[i]!=' '||ch[i]!=' ' && ch[i+1]==' ')
			{
				char t=ch[i];
				ch[i]=ch[f];
				ch[f]=t;
			}
		}
		String x=new String(ch);
		return x;
	}
	public static void main(String arg[])
```

```
    {
        Scanner s=new Scanner(System.in);
        System.out.println(" Enter the string ");
        String str=s.nextLine();
        String x=changer(str);
        System.out.println(x);
    }
}
```

Output:

```
Enter the string
java program
aavj mrograp
```

17. Write a java program to check palindrome or not

```
import java.util.Scanner;
class Palindrome
{
    static boolean changer(String str)
    {
        char ch[]=str.toCharArray();
        int i=0,j=ch.length-1;
        while(i<=j)
        {
            if(ch[i]!=ch[j])
                return false;
            i++;
```

```
                j--;
            }
            return true;
        }
        public static void main(String arg[])
        {
            Scanner s=new Scanner(System.in);
            System.out.println(" Enter the string ");
            String str=s.nextLine();
            System.out.println("Palindrome : "+changer(str));
        }
}
```

Output:

Enter the string

aabaa

Palindrome : true

Enter the string

java

Palindrome : false

18. Write a java program to reverse the string

```
import java.util.Scanner;
class Reverse
{
```

```
    static String changer(String str)
    {
        char ch[]=str.toCharArray();
        int i=0,j=ch.length-1;
        while(i<=j)
        {
            char t = ch[i];
            ch[i] = ch[j];
            ch[j] = t;
            i++;
            j--;
        }
        str = new String(ch);
        return str;
    }
    public static void main(String arg[])
    {
        Scanner s=new Scanner(System.in);
        System.out.println(" Enter the string ");
        String str=s.nextLine();
        System.out.println("Reverse String : "+changer(str));
    }
}
```

Output:

Enter the string

java

Reverse String : avaj

19. Write a java program to reverse the words in a sentence (not each letter in a word)

```
import java.util.Scanner;


class SentenceReverse
{
	static String reverse(String str)
	{
		char ch[]=str.toCharArray();
		str="";
		for(int i=ch.length-1;i>=0;i--)
		{
			int j=i;
			while(i>=0&&ch[i]!=' ')
			{
				i--;
			}
			int k=i+1;


			while(k<=j)
```

```
                {
                        str=str+ch[k];
                        k++;
                }
                if(i>=0)
                        str=str+ch[i];
        }
        return str;
    }
    public static void main(String arg[])
    {
        Scanner s=new Scanner(System.in);
        System.out.println(" Enter the string ");
        String str=s.nextLine();
        String x=reverse(str);
        System.out.println(x);
    }
}
```

Output:

Enter the string

java program

program java

20. Write a java program to reverse the words in a sentence

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

```
class WordsReverse
{
	static String reverse(String str)
	{
		char ch[]=str.toCharArray();
		str="";
		for(int i=0;i<ch.length;i++)
		{
			int j=i;
			while(i<ch.length&&ch[i]!=' ')
			{
				i++;
			}
			int k=i-1;
			while(k>=j)
			{
				str=str+ch[k];
				k--;
			}
			if(i<ch.length)
				str=str+ch[i];
		}
		return str;
	}
	public static void main(String arg[])
```

```
    {
        Scanner s=new Scanner(System.in);
        System.out.println(" Enter the string ");
        String str=s.nextLine();
        String x=reverse(str);
        System.out.println(x);
    }
}
```

Output:

```
Enter the string
Java Programs
avaJ smargorP
```

21. Write a java program to define a method to return true if the second string (substring) is present in first string.

```
import java.util.Scanner;
class SubString
{
    static boolean subString(String str1,String str2)
    {
        char ch1[]=str1.toCharArray();
        char ch2[]=str2.toCharArray();
        for(int i=0;i<ch1.length;i++)
        {
            int j=i;
            int k=0;
```

```
                while(j<ch1.length&&k<ch2.length)
                {
                        if(ch1[j]!=ch2[k])
                                break;
                        j++;
                        k++;
                }
                if(k==ch2.length)
                        return true;
        }
        return false;
    }
    public static void main(String arg[])
    {
        Scanner s=new Scanner(System.in);
        System.out.println(" Enter the string ");
        String str1=s.nextLine();
        System.out.println(" Enter the substring ");
        String str2=s.nextLine();
        System.out.println(subString(str1,str2));
    }
}
```

Output:

Enter the string

Chitradurga is a fort city

Enter the substring

durga

true

22. Write a java program to define a method to return how many time second string (substring) is present in first string.

```
import java.util.Scanner;


class SubStringCount
{
	static int countSubString(String str1,String str2)
	{
		int count=0;
		char ch1[]=str1.toCharArray();
		char ch2[]=str2.toCharArray();
		for(int i=0;i<ch1.length;i++)
		{
			int j=i;
			int k=0;

			while(j<ch1.length&&k<ch2.length)
			{
				if(ch1[j]!=ch2[k])
					break;
				j++;
				k++;
```

```
                }
                if(k==ch2.length)
                {
                        count++;
                        i=j-1;
                }
        }
        return count;
    }
    public static void main(String arg[])
    {
        Scanner s=new Scanner(System.in);
        System.out.println(" Enter the string ");
        String str1=s.nextLine();
        System.out.println(" Enter the substring ");
        String str2=s.nextLine();
        System.out.println(countSubString(str1,str2));
    }
}
```

Output:

Enter the string

aaabbba

Enter the substring

a

4

23. Write a java program to define a method to display first occurrence index of a substring

```
import java.util.Scanner;
class FirstIndex
{
	static int index(String str1,String str2)
	{
		int count=0;
		char ch1[]=str1.toCharArray();
		char ch2[]=str2.toCharArray();
		for(int i=0;i<ch1.length;i++)
		{
			int j=i;
			int k=0;
			while(j<ch1.length&&k<ch2.length)
			{
				if(ch1[j]!=ch2[k])
					break;
				j++;
				k++;
			}
			if(k==ch2.length)
			{
				i=j-1;
				return i;
			}
```

```
            }
            return -1;
        }
        public static void main(String arg[])
        {
            Scanner s=new Scanner(System.in);
            System.out.println(" Enter the string ");
            String str1=s.nextLine();
            System.out.println(" Enter the substring ");
            String str2=s.nextLine();
            int in=index(str1,str2);
            if(in>=0)
                System.out.println(" index is "+in );
            else
                System.out.println(" invalid " );
        }
}
```

Output:

Enter the string

aabaaba

Enter the substring

aa

index is 1

Enter the string

asdfgh

Enter the substring

c

invalid

24. Write a java program to define a method to display last occurrence index of a substring

```
import java.util.Scanner;
class LastIndex
{
	static int index(String str1,String str2)
	{
		int index=-1;
		char ch1[]=str1.toCharArray();
		char ch2[]=str2.toCharArray();
		for(int i=0;i<ch1.length;i++)
		{
			index=0;
			int j=i;
			int k=0;
			while(j<ch1.length&&k<ch2.length)
			{
				if(ch1[j]!=ch2[k])
					break;
				j++;
				k++;
```

```
                }
                if(k==ch2.length)
                {
                        i=j-1;
                        index=i;
                }
        }
        return index;
}
public static void main(String arg[])
{
        Scanner s=new Scanner(System.in);
        System.out.println(" Enter the string ");
        String str1=s.nextLine();
        System.out.println(" Enter the substring ");
        String str2=s.nextLine();
        int in=index(str1,str2);
        if(in>0)
                System.out.println(" index is "+in );
        else
                System.out.println(" invalid " );
}
}
```

Output:

Enter the string

aabaava

Enter the substring

a

index is 6

Enter the string

asdf

Enter the substring

b

invalid

25. Write a java program to define a method to display Nth occurrence index of a substring

```
import java.util.Scanner;


class NthOccurence
{
	static int index(String str1,String str2,int in)
	{
		int count=0;
		char ch1[]=str1.toCharArray();
		char ch2[]=str2.toCharArray();
		for(int i=0;i<ch1.length;i++)
		{
			int j=i;
			int k=0;
			while(j<ch1.length&&k<ch2.length)
```

```
                {
                        if(ch1[j]!=ch2[k])
                                break;
                        j++;
                        k++;
                }
                if(k==ch2.length)
                {

                        count++;
                        if(count==in)
                                return i;
                        i=j-1;
                }
        }
        return -1;
}
public static void main(String arg[])
{
        Scanner s=new Scanner(System.in);
        System.out.println(" Enter the string ");
        String str1=s.nextLine();
        System.out.println(" Enter the substring ");
        String str2=s.nextLine();
        System.out.println(" Enter the occurance ");
```

```
                int n=s.nextInt();
                int in=index(str1,str2,n);
                if(in>=0)
                        System.out.println(" index is "+in );
                else
                        System.out.println(" invalid " );
        }
}
```

Output:

```
Enter the string
aabaab
 Enter the substring
b
 Enter the occurance
2
 index is 5
```

26. Write a java program to define a method to return true if word is present in string

```
import java.util.Scanner;
class CheckSubstringIsWord
{
        static boolean isword(String str1,String str2)
        {
                char ch1[]=str1.toCharArray();
                char ch2[]=str2.toCharArray();
                for(int i=0;i<ch1.length;i++)
```

```
        {
                int j=i;
                int k=0;
                while(j<ch1.length&&k<ch2.length)
                {
                        if(ch1[j]!=ch2[k])
                                break;
                        j++;
                        k++;
                }
                if(k==ch2.length)
                {
                        if((i==0||ch1[i-1]==' ')&&(j==ch1.length||ch1[j]==' '))
                                return true;
                }
        }
        return false;
}
public static void main(String arg[])
{
        Scanner s=new Scanner(System.in);
        System.out.println(" Enter the string ");
        String str1=s.nextLine();
        System.out.println(" Enter the substring ");
        String str2=s.nextLine();
```

```
        System.out.println(isword( str1, str2));
    }
}
```

Output:

```
Enter the string
a is good
 Enter the substring
o
false


Enter the string
a is good
 Enter the substring
is
true
```

27. Write a java program to define a method to convert vowels into uppercase and consonants to lower case

```
import java.util.*;
class ConvertStr
{
    static void toconvert(String s)
    {
        for(int i=0;i<s.length();i++)
        {
            char c = s.charAt(i);
```

```
                if(c=='A' ||c=='E' ||c=='I' ||c=='O' ||c=='U' ||c=='a' ||c=='e' ||c=='i' ||c=='o' || c=='u')
                        System.out.print(Character.toUpperCase(c));
                else
                        System.out.print(Character.toLowerCase(c));
        }
    }
    public static void main(String args[])
    {
        Scanner sc  = new Scanner(System.in);
        System.out.println("Enter the string ");
        String st = sc.nextLine();
        toconvert(st);
    }
}
```

Output:

Enter the string

consoNaNTS

cOnsOnAnts

2D ARRAY

1. Write a java program to display number of elements in a row.

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

```
        int a[][]={{1,2,3},{4,5,6},{7,8,9}};
        for(int i=0;i<a.length;i++)
        {
            System.out.println(i+1+" Rows has "+a[i].length+" Elements");
        }
    }

}
```

Output:

1 Rows has 3 Elements

2 Rows has 3 Elements

3 Rows has 3 Elements

2. Write a java program to define a method to return the Biggest element from the array

```
import java.util.*;
class BigElement
{
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the rows and columns");
        int r = sc.nextInt();
        int c = sc.nextInt();
        int a[][]=new int[r][c];
        System.out.println("Enter the elements");
        for(int i=0;i<r;i++)
```

```
            {
                for(int j=0;j<c;j++)
                {
                    a[i][j]=sc.nextInt();
                }
            }
            System.out.println("Biggest elemenet is: "+isbig(a));

        }
        static int isbig(int x[][])
        {
            int big=x[0][0];
            for(int i=0;i<x.length;i++)
            {
                for(int j=0;j<x[i].length;j++)
                {
                    if(x[i][j]>big)
                        big = x[i][j];
                }
            }
            return big;
        }
}
```

Output:

Enter the rows and columns

3 2

Enter the elements

1 2

4 5

8 9

Biggest elemenet is: 9

3. Write a java program to define a method to return the sum of element from the array

```
import java.util.*;
class SumElement
{
	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter the rows and columns");
		int r = sc.nextInt();
		int c = sc.nextInt();
		int a[][]=new int[r][c];
		System.out.println("Enter the elements");
		for(int i=0;i<r;i++)
		{
			for(int j=0;j<c;j++)
			{
				a[i][j]=sc.nextInt();
			}
		}
```

```
            System.out.println("Sum of elemenets is: "+issum(a));


    }
    static int issum(int x[][])
    {
            int sum=0;
            for(int i=0;i<x.length;i++)
            {
                    for(int j=0;j<x[i].length;j++)
                    {
                            sum+=x[i][j];
                    }
            }
            return sum;
    }
}
```

Output:

Enter the rows and columns

3 3

Enter the elements

1 2 3

4 5 6

7 8 9

Sum of elemenets is: 45

4. Write a java program to define a method to return the smallest element from the array

```
import java.util.*;
class SmallElement
{
	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter the rows and columns");
		int r = sc.nextInt();
		int c = sc.nextInt();
		int a[][]=new int[r][c];
		System.out.println("Enter the elements");
		for(int i=0;i<r;i++)
		{
			for(int j=0;j<c;j++)
			{
				a[i][j]=sc.nextInt();
			}
		}
		System.out.println("Smallest elemenet is: "+issmall(a));

	}
	static int issmall(int x[][])
	{
		int small=x[0][0];
		for(int i=0;i<x.length;i++)
```

```
        {
            for(int j=0;j<x[i].length;j++)
            {
                if(small>x[i][j])
                    small = x[i][j];
            }
        }
        return small;
    }
}
```

Output:

```
Enter the rows and columns
3 3
Enter the elements
7 5 3
9 6 1
0 2 4
Smallest elemenet is: 0
```

5. Write a java program to define a method to return the count of even and odd elements from the array

```
import java.util.*;
class EvenOdd
{
```

```
public static void main(String args[])
{
	Scanner sc = new Scanner(System.in);
	System.out.println("Enter the rows and columns");
	int r = sc.nextInt();
	int c = sc.nextInt();
	int a[][]=new int[r][c];
	System.out.println("Enter the elements");
	for(int i=0;i<r;i++)
	{
		for(int j=0;j<c;j++)
		{
			a[i][j]=sc.nextInt();
		}
	}
	int a1[]=ischeck(a);
	System.out.println("Even Count: "+a1[0]);
	System.out.println("Odd Count: "+a1[1]);

}
static int[] ischeck(int x[][])
{
	int a[]=new int[2];
	for(int i=0;i<x.length;i++)
	{
```

```
                for(int j=0;j<x[i].length;j++)
                {
                        a[(x[i][j]%2)]++;
                }
        }
        return a;
    }
}
```

Output:

Enter the rows and columns

3 3

Enter the elements

1 2 3

4 5 6

7 8 9

Even Count: 4

Odd Count: 5

6. Write a java program to define a method to return row wise biggest element from the array

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

```
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the rows and columns");
        int r = sc.nextInt();
        int c = sc.nextInt();
        int a[][]=new int[r][c];
        System.out.println("Enter the elements");
        for(int i=0;i<r;i++)
        {
                for(int j=0;j<c;j++)
                {
                        a[i][j]=sc.nextInt();
                }
        }
        int a1[]=ischeck(a);
        for(int i:a1)
        {
                System.out.println("Biggest Element Row wise is: "+i);
        }
}
static int[] ischeck(int x[][])
{
        int big[]=new int[x.length];
        for(int i=0;i<x.length;i++)
        {
                big[i]=x[i][0];
```

```
                for(int j=0;j<x[i].length;j++)
                {
                        if(x[i][j]>big[i])
                                big[i]=x[i][j];
                }
        }
        return big;
    }
}
```

Output:

```
Enter the rows and columns
3 3
Enter the elements
7 8 9
6 5 4
1 3 2
Biggest Element Row wise is: 9
Biggest Element Row wise is: 6
Biggest Element Row wise is: 3
```

7. Write a java program to define a method to return the addition of 2 arrays

```
import java.util.*;
class AddMatrix
{
    static void display(int x[][])
    {
```

```
        for(int i=0;i<x.length;i++)
        {
                for(int j=0;j<x[i].length;j++)
                {
                        System.out.print(x[i][j]+" ");
                }
                System.out.println();
        }
}
public static void main(String args[])
{
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the rows and columns for 2 matrix");
        int r = sc.nextInt();
        int c = sc.nextInt();
        int a[][]=new int[r][c];
        System.out.println("Enter the matrix 1");
        for(int i=0;i<r;i++)
        {
                for(int j=0;j<c;j++)
                {
                        a[i][j]=sc.nextInt();
                }
        }
        int a1[][]=new int[r][c];
```

```
        System.out.println("Enter the matrix 2");
        for(int i=0;i<r;i++)
        {
                for(int j=0;j<c;j++)
                {
                        a1[i][j]=sc.nextInt();
                }
        }
        System.out.println("Matrix After addition");
        int z[][]=add(a,a1);
        display(z);

}
static int[][] add(int x[][],int y[][])
{
        int sum[][]=new int[x.length][x[0].length];
        for(int i=0;i<x.length;i++)
        {
                for(int j=0;j<x[i].length;j++)
                {
                        sum[i][j]=x[i][j]+y[i][j];
                }
        }
        return sum;
}
```

```
}
```

Output:

```
Enter the rows and columns for 2 matrix

3 3

Enter the matrix 1

7 8 9

6 5 4

1 2 3

Enter the matrix 2

1 2 3

7 8 9

4 5 6

Matrix After addition

8 10 12

13 13 13

5 7 9
```

8. Write a java program to define a method to return the row wise sum of element from the array

```
import java.util.*;

class RowSum

{

        public static void main(String args[])

        {

                Scanner sc = new Scanner(System.in);

                System.out.println("Enter the rows and columns");
```

```
        int r = sc.nextInt();
        int c = sc.nextInt();
        int a[][]=new int[r][c];
        System.out.println("Enter the elements");
        for(int i=0;i<r;i++)
        {
                for(int j=0;j<c;j++)
                {
                        a[i][j]=sc.nextInt();
                }
        }
        int a1[]=ischeck(a);
        for(int i:a1)
        {
                System.out.println(" Row wise sum is: "+i);
        }
}
static int[] ischeck(int x[][])
{
        int sum[]=new int[x.length];
        for(int i=0;i<x.length;i++)
        {
                for(int j=0;j<x[i].length;j++)
                {
                        sum[i]+=x[i][j];
```

```
                }
            }
            return sum;
        }
}
```

Output:

```
Enter the rows and columns
3 3
Enter the elements
1 2 3
4 5 6
7 8 9
 Row wise sum is: 6
 Row wise sum is: 15
 Row wise sum is: 24
```

9. Write a java program to define a method to return row wise biggest element from the array

```
import java.util.*;
class ColumnBiggest
{
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the rows and columns");
        int r = sc.nextInt();
        int c = sc.nextInt();
```

```
        int a[][]=new int[r][c];
        System.out.println("Enter the elements");
        for(int i=0;i<r;i++)
        {
                for(int j=0;j<c;j++)
                {
                        a[i][j]=sc.nextInt();
                }
        }
        int a1[]=ischeck(a);
        for(int i:a1)
        {
                System.out.println("Biggest Element Column wise is: "+i);
        }
}
static int[] ischeck(int x[][])
{
        int big[]=new int[x[0].length];
        for(int i=0;i<x.length;i++)
        {
                big[i]=x[0][i];
                for(int j=0;j<x[i].length;j++)
                {
                        if(x[j][i]>big[i])
                                big[i]=x[j][i];
```

```
                }
            }
            return big;
        }
}
```

Output:

```
Enter the rows and columns
3 3
Enter the elements
7 8 9
9 8 10
3 9 1
Biggest Element Column wise is: 9
Biggest Element Column wise is: 9
Biggest Element Column wise is: 10
```

10. Write a java program to define a method to return row wise reverse elements from the matrix

```
import java.util.Scanner;
class RowReverse
{
    static int[][] Rowreversea(int mat[][])
    {
        for(int i=0;i<mat.length; i++)
        {
            for(int j=0; j<mat[i].length/2; j++)
```

```
                {
                        int temp=mat[i][j];
                        mat[i][j]=mat[i][mat[i].length-1-j];
                        mat[i][mat[i].length-1-j]=temp;
                }
        }
        return mat;
}
public static void main(String[] args)
{
        System.out.println("Enter the row and column of the array");
        Scanner s=new Scanner(System.in);
        int r=s.nextInt();
        int c=s.nextInt();
        int mat[][]=new int[r][c];
        System.out.println("Enter the Elements");
        for(int i=0;i<r;i++)
        {
                for(int j=0;j<c;j++)
                {
                        mat[i][j]=s.nextInt();
                }
        }
        int res[][]=Rowreversea(mat);
        System.out.println("Reverse Matrix Elements");
```

```
            for(int i=0;i<res.length;i++)
            {
                for(int j=0;j<res.length;j++)
                {
                    System.out.print(res[i][j]+ " ");
                }
                System.out.println();
            }
        }
}
```

Output:

Enter the row and column of the array

3 3

Enter the Elements

1 2 3

4 5 6

7 8 9

Reverse Matrix Elements

3 2 1

6 5 4

9 8 7

11. Write a java program to define a method to return column wise reverse elements from the matrix

```
import java.util.Scanner;

class ColumnReverse{
```

```
static int[][] columnwisereversea(int mat[][])
{
	for(int i=0;i<mat.length/2;i++)
	{	for(int j=0;j<mat[i].length;j++)
	{
		int temp=mat[i][j];
		mat[i][j]=mat[mat.length-1-i][j];
		mat[mat.length-1-i][j]=temp;
	}
	}
	return mat;
}
public static void main(String[] args)
{
	System.out.println("Enter the size of the array");
	Scanner s=new Scanner(System.in);
	int r=s.nextInt();
	int c=s.nextInt();

	int mat[][]=new int[r][c];
	System.out.println("Enter the Elements");
	for(int i=0;i<r;i++)
	{
		for(int j=0;j<c;j++)
		{
```

```
                    mat[i][j]=s.nextInt();
                }
            }
            int res[][]=columnwisereversea(mat);
            System.out.println("After Column Wise Reverse");
            for(int i=0;i<res.length;i++)
            {
                for(int j=0;j<res.length;j++)
                {
                    System.out.print(res[i][j]+ " ");
                }
                System.out.println();
            }
        }
}
```

Output:

Enter the size of the array

3 3

Enter the Elements

1 2 3

4 5 6

7 8 9

After Column Wise Reverse

7 8 9

4 5 6

1 2 3

12. Write a java program to define a method to return Diagonal wise biggest element from the array

```
import java.util.Scanner;

class BigDiagonal

{

	static int[] digonalwisereverse(int mat[][])

	{

		int big[]=new int[2];

		for(int i=0;i<mat.length; i++)

		{

			for(int j=0; j<mat[i].length; j++)

			{

				if(i==j)

				{

					if(mat[i][j]>big[0])

						big[0]=mat[i][j];

				}

				if(i+j==mat.length-1)

				{

					if(mat[i][j]>big[1])

						big[1]=mat[i][j];

				}

			}

		}
```

```
        return big;
}
public static void main(String[] args)
{
        System.out.println("Enter the size of the array");
        Scanner s=new Scanner(System.in);
        int r=s.nextInt();
        int c=s.nextInt();

        int mat[][]=new int[r][c];
        System.out.println("Enter the Elements");
        for(int i=0;i<r;i++)
        {
                for(int j=0;j<c;j++)
                {
                        mat[i][j]=s.nextInt();
                }
        }

        System.out.println("Diagonal Reverse Matrix is:");
        int res[]=digonalwisereverse(mat);
        for(int i=0;i<res.length;i++)
        {

                System.out.println(res[i]+" ");
```

```
            }
        }
}
```

Output:

Enter the size of the array

3 3

Enter the Elements

1 2 3

4 5 6

7 8 9

Diagonal Reverse Matrix is:

9

7

13. Write a java program to define a method to return Diagonal wise sum from the array

```
import java.util.Scanner;
class SumDiagonal
{
        static int[] digonal(int mat[][])
        {
                int sum[]=new int[2];
                for(int i=0;i<mat.length; i++)
                {
                        for(int j=0; j<mat[i].length; j++)
                        {
                                if(i==j)
```

```
                {
                        sum[0]+=mat[i][j];
                }
                if(i+j==mat.length-1)
                {
                        sum[1]+=mat[i][j];
                }
        }
    }
    return sum;
}
public static void main(String[] args)
{
    System.out.println("Enter the size of the array");
    Scanner s=new Scanner(System.in);
    int r=s.nextInt();
    int c=s.nextInt();

    int mat[][]=new int[r][c];
    System.out.println("Enter the Elements");
    for(int i=0;i<r;i++)
    {
        for(int j=0;j<c;j++)
        {
                mat[i][j]=s.nextInt();
```

```
                }
            }

            System.out.println("Diagonal Sum Matrix is:");
            int res[]=digonal(mat);
            for(int i=0;i<res.length;i++)
            {

                System.out.println(res[i]+" ");
            }
        }
}
```

Output:

Enter the size of the array

3 3

Enter the Elements

1 2 3

4 5 6

7 8 9

Diagonal Sum Matrix is:

15

15

14. Write a java program to multiply 2 matrix

```
import java.util.*;
class MatrixMul
```

```
{
	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter the rows and columns for 2 matrix");
		int r = sc.nextInt();
		int c = sc.nextInt();
		int a[][]=new int[r][c];
		System.out.println("Enter the matrix 1");
		for(int i=0;i<r;i++)
		{
			for(int j=0;j<c;j++)
			{
				a[i][j]=sc.nextInt();
			}
		}
		int a1[][]=new int[r][c];
		System.out.println("Enter the matrix 2");
		for(int i=0;i<r;i++)
		{
			for(int j=0;j<c;j++)
			{
				a1[i][j]=sc.nextInt();
			}
		}
```

```
        System.out.println("Matrix After Multiplication");
        int z[][]=Mul(a,a1);
        for(int i=0;i<z.length;i++)
        {
                for(int j=0;j<z[i].length;j++)
                {
                        System.out.print(z[i][j]+" ");
                }
                System.out.println();
        }

}
static int[][] Mul(int x[][],int y[][])
{
        int c[][]=new int[x.length][x[0].length];
        for(int i=0;i<x.length;i++)
        {
                for(int j=0;j<x[i].length;j++)
                {
                        for(int k=0;k<x[i].length;k++)
                        {
                                c[i][j]+=x[i][k]*y[k][j];
                        }
                }
        }
```

```
        return c;
    }
}
```

Output:

Enter the rows and columns for 2 matrix

3 3

Enter the matrix 1

1 2 3

4 5 6

7 8 9

Enter the matrix 2

1 2 3

4 5 6

7 8 9

Matrix After Multiplication

30 36 42

66 81 96

102 126 150

15. Write a java program to transpose the matrix

a. **Without creating new Matrix**

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

```
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the rows and columns for matrix");
        int r = sc.nextInt();
        int c = sc.nextInt();
        int a[][]=new int[r][c];
        System.out.println("Enter the matrix ");
        for(int i=0;i<r;i++)
        {
            for(int j=0;j<c;j++)
            {
                a[i][j]=sc.nextInt();
            }
        }
        System.out.println("Matrix After Transpose");
        int z[][]=Trans(a);
        for(int i=0;i<z.length;i++)
        {
            for(int j=0;j<z[i].length;j++)
            {
                System.out.print(z[i][j]+" ");
            }
            System.out.println();
        }

}
```

```
    static int[][] Trans(int x[][])
    {
        for(int i=0;i<x.length;i++)
        {
            for(int j=i+1;j<x[i].length;j++)
            {
                int t=x[i][j];
                x[i][j]=x[j][i];
                x[j][i] = t;
            }
        }
        return x;
    }
}
```

Output:

Enter the rows and columns for matrix

3 3

Enter the matrix

1 2 3

4 5 6

7 8 9

Matrix After Transpose

1 4 7

2 5 8

3 6 9

b. **With creating new Matrix**

```
import java.util.*;

class Transpose

{

        public static void main(String args[])

        {

                Scanner sc = new Scanner(System.in);

                System.out.println("Enter the rows and columns for 2 matrix");

                int r = sc.nextInt();

                int c = sc.nextInt();

                int a[][]=new int[r][c];

                System.out.println("Enter the matrix 1");

                for(int i=0;i<r;i++)

                {

                        for(int j=0;j<c;j++)

                        {

                                a[i][j]=sc.nextInt();

                        }

                }

                System.out.println("Matrix After Transpose");

                int z[][]=Trans(a);

                for(int i=0;i<z.length;i++)

                {

                        for(int j=0;j<z[i].length;j++)

                        {
```

```
                        System.out.print(z[i][j]+" ");
                    }
                    System.out.println();
                }

        }
        static int[][] Trans(int x[][])
        {
            int c[][]=new int[x.length][x[0].length];
            for(int i=0;i<x.length;i++)
            {
                for(int j=0;j<x[i].length;j++)
                {
                    c[i][j]=x[j][i];
                }
            }
            return c;
        }
}
```

Output:

Enter the rows and columns for 2 matrix

3 3

Enter the matrix 1

1 2 3

4 5 6

7 8 9

Matrix After Transpose

1 4 7

2 5 8

3 6 9

16. Write a java program to rotate the given square matrix into 90^0 Left

```
import java.util.*;
class RotationLeft
{
	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter the rows and columns for 2 matrix");
		int r = sc.nextInt();
		int c = sc.nextInt();
		int a[][]=new int[r][c];
		System.out.println("Enter the matrix");
		for(int i=0;i<r;i++)
		{
			for(int j=0;j<c;j++)
			{
				a[i][j]=sc.nextInt();
			}
		}
		System.out.println("Matrix After Rotation Left");
```

```
        int z[][]=RotationLeft(a);
        for(int i=0;i<z.length;i++)
        {
                for(int j=0;j<z[i].length;j++)
                {
                        System.out.print(z[i][j]+" ");
                }
                System.out.println();
        }
}
static void Trans(int mat[][])
{
        for(int i=0;i<mat.length;i++)
        {
                for(int j=i+1;j<mat[i].length;j++)
                {
                        int t=mat[i][j];
                        mat[i][j]=mat[j][i];
                        mat[j][i] = t;
                }
        }
}
static void Columnreverse(int mat[][])
{
        for(int i=0;i<mat.length/2;i++)
```

```
        {       for(int j=0;j<mat[i].length;j++)
                {
                        int temp=mat[i][j];
                        mat[i][j]=mat[mat.length-1-i][j];
                        mat[mat.length-1-i][j]=temp;
                }
        }
    }
    static int[][] RotationLeft(int x[][])
    {
        Trans(x);
        Columnreverse(x);
        return x;
    }
}
```

Output:

Enter the rows and columns for 2 matrix

3 3

Enter the matrix

2 3 5

6 7 8

9 4 1

Matrix After Rotation Left

5 8 1

3 7 4

2 6 9

(OR)

```
import java.util.*;
class RotationLeft
{
	static void display(int x[][])
	{
		for(int i=0;i<x.length;i++)
		{
			for(int j=0;j<x[i].length;j++)
			{
				System.out.print(x[i][j]+" ");
			}
			System.out.println();
		}
	}
	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter the rows and columns for 2 matrix");
		int r = sc.nextInt();
		int c = sc.nextInt();
		int a[][]=new int[r][c];
		System.out.println("Enter the matrix");
```

```
        for(int i=0;i<r;i++)
        {
            for(int j=0;j<c;j++)
            {
                a[i][j]=sc.nextInt();
            }
        }
        System.out.println("Matrix After Rotation Left");
        int z[][]=RotationL(a);
        display(z);

    }
    static int[][] RotationL(int x[][])
    {
        int c[][]=new int[x.length][x[0].length];
        for(int i=x.length-1;i>=0;i--)
        {
            for(int j=0;j<x.length;j++)
            {
                c[x.length-(i+1)][j]=x[j][i];
            }
        }
        return c;
    }
}
```

17. Write a java program to rotate the given square matrix into 90^0 Right

```
import java.util.*;
class RotationRight
{
	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter the rows and columns for 2 matrix");
		int r = sc.nextInt();
		int c = sc.nextInt();
		int a[][]=new int[r][c];
		System.out.println("Enter the matrix");
		for(int i=0;i<r;i++)
		{
			for(int j=0;j<c;j++)
			{
				a[i][j]=sc.nextInt();
			}
		}
		System.out.println("Matrix After Rotation Right");
		int z[][]=RotationRight(a);
		for(int i=0;i<z.length;i++)
		{
			for(int j=0;j<z[i].length;j++)
			{
```

```
                System.out.print(z[i][j]+" ");
            }
            System.out.println();
        }
    }
    static void Trans(int mat[][])
    {
        for(int i=0;i<mat.length;i++)
        {
            for(int j=i+1;j<mat[i].length;j++)
            {
                int t=mat[i][j];
                mat[i][j]=mat[j][i];
                mat[j][i] = t;
            }
        }
    }
    static void Rowreverse(int mat[][])
    {
        for(int i=0;i<mat.length; i++)
        {
            for(int j=0; j<mat[i].length/2; j++)
            {
                int temp=mat[i][j];
                mat[i][j]=mat[i][mat[i].length-1-j];
```

```
                        mat[i][mat[i].length-1-j]=temp;
                    }
                }
            }
            static int[][] RotationRight(int x[][])
            {
                Trans(x);
                Rowreverse(x);
                return x;
            }
}
```

Output:

```
Enter the rows and columns for 2 matrix
3 3
Enter the matrix
2 3 5
6 7 8
9 4 1
Matrix After Rotation Right
9 6 2
4 7 3
1 8 5
```

(OR)

```
import java.util.*;
class RotationRight
{
	static void display(int x[][])
	{
		for(int i=0;i<x.length;i++)
		{
			for(int j=0;j<x[i].length;j++)
			{
				System.out.print(x[i][j]+" ");
			}
			System.out.println();
		}
	}
	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter the rows and columns for 2 matrix");
		int r = sc.nextInt();
		int c = sc.nextInt();
		int a[][]=new int[r][c];
		System.out.println("Enter the matrix");
		for(int i=0;i<r;i++)
		{
			for(int j=0;j<c;j++)
```

```
                {
                        a[i][j]=sc.nextInt();
                }
        }
        System.out.println("Matrix After Rotation Right");
        int z[][]=RotationR(a);
        display(z);

    }
    static int[][] RotationR(int x[][])
    {
        int c[][]=new int[x.length][x[0].length];
        for(int i=0;i<x.length;i++)
        {
            for(int j=x[i].length-1;j>=0;j--)
            {
                c[i][x.length-(j+1)]=x[j][i];
            }
        }
        return c;
    }
}
```

18. Write a java program to display the matrix elements in spiral order clockwise

```
import java.util.*;
class SpiralClockWise
```

```
{
	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter the rows and columns for matrix");
		int r = sc.nextInt();
		int c = sc.nextInt();
		int a[][]=new int[r][c];
		System.out.println("Enter the matrix");
		for(int i=0;i<r;i++)
		{
			for(int j=0;j<c;j++)
			{
				a[i][j]=sc.nextInt();
			}
		}
		System.out.println("Spiral Matrix");
		SpiralMat(a);

	}
	static void SpiralMat(int matrix[][])
	{
		int n=matrix.length;
		for(int i=0,j=n-1;i<j;i++,j--)
		{
```

```
                for (int k = i; k < j; k++) {
                        System.out.print(matrix[i][k] + " ");
                }
                for (int k = i; k <j; k++) {
                        System.out.print(matrix[k][j] + " ");
                }
                for (int k = j; k >i; k--) {
                        System.out.print(matrix[j][k] + " ");
                }
                for (int k = j; k > i; k--) {
                        System.out.print(matrix[k][i] + " ");
                }
                if(n%2==1)
                        System.out.print(matrix[n/2][n/2]);
            }
        }
}
```

Output:

Enter the rows and columns for matrix

3 3

Enter the matrix

1 2 3

4 5 6

7 8 9

Spiral Matrix

1 2 3 6 9 8 7 4 5

19. Write a java program to display the matrix elements in spiral order anticlockwise

```
import java.util.*;
class SpiralAntiClockWise
{
	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter the rows and columns for matrix");
		int r = sc.nextInt();
		int c = sc.nextInt();
		int a[][]=new int[r][c];
		System.out.println("Enter the matrix");
		for(int i=0;i<r;i++)
		{
			for(int j=0;j<c;j++)
			{
				a[i][j]=sc.nextInt();
			}
		}
		System.out.println("Spiral Matrix");
		SpiralMat(a);

	}
	static void SpiralMat(int matrix[][])
```

```
    {
        int n=matrix.length;
        for(int i=0,j=n-1;i<j;i++,j--)
        {
            for (int k = i; k < j; k++) {
                System.out.print(matrix[k][i] + " ");
            }
            for (int k = i; k <j; k++) {
                System.out.print(matrix[j][k] + " ");
            }
            for (int k = j; k >i; k--) {
                System.out.print(matrix[k][j] + " ");
            }
            for (int k = j; k > i; k--) {
                System.out.print(matrix[i][k] + " ");
            }
            if(n%2==1)
                System.out.print(matrix[n/2][n/2]);
        }
    }
}
```

Output:

Enter the rows and columns for matrix

3 3

Enter the matrix

2 3 5

6 7 8

9 4 1

Spiral Matrix

2 6 9 4 1 8 5 3 7

20. Write a java program to define a method to return how many prime number present in the matrix

```
import java.util.*;

class Prime

{

	public static void main(String args[])

	{

		Scanner sc = new Scanner(System.in);

		System.out.println("Enter the rows and columns for 2 matrix");

		int r = sc.nextInt();

		int c = sc.nextInt();

		int a[][]=new int[r][c];

		System.out.println("Enter the matrix");

		for(int i=0;i<r;i++)

		{

			for(int j=0;j<c;j++)

			{

				a[i][j]=sc.nextInt();

			}

		}
```

```
        isprime(a);
    }
    static void isprime(int x[][])
    {
        int count=0;
        for(int i=x.length-1;i>=0;i--)
        {
            for(int j=0;j<x.length;j++)
            {
                int c=0;
                int n=x[i][j];
                for(int k=2;k<n;k++)
                {
                    if(n%k==0)
                        c++;
                }
                if(c==0)
                    count++;
            }
        }
        System.out.println("Total prime numbers is: "+count);
    }
}
```

Output:

Enter the rows and columns for 2 matrix

3 3

Enter the matrix

1 2 3

4 5 6

7 8 9

Total prime numbers is: 5

21. Write a java program to define a method to return how many happy number present in the matrix

```
import java.util.*;

class Happy

{

	public static void main(String args[])

	{

		Scanner sc = new Scanner(System.in);

		System.out.println("Enter the rows and columns for 2 matrix");

		int r = sc.nextInt();

		int c = sc.nextInt();

		int a[][]=new int[r][c];

		System.out.println("Enter the matrix");

		for(int i=0;i<r;i++)

		{

			for(int j=0;j<c;j++)

			{

				a[i][j]=sc.nextInt();

			}
```

```
        }
        ishappy(a);
}
static void ishappy(int x[][])
{
        int count=0;
        for(int i=x.length-1;i>=0;i--)
        {
                for(int j=0;j<x.length;j++)
                {
                        int n=x[i][j];
                        while(n>9)
                        {
                                int sum =0;
                                do
                                {
                                        int r = n%10;
                                        sum = sum+r*r;
                                        n = n/10;
                                }while(n!=0);
                                n = sum;
                        }
                        if(n==1||n==7) count++;
                }
        }
```

```
            System.out.println("Total Happy numbers is: "+count);
        }
}
```

Output:

Enter the rows and columns for 2 matrix

3 3

Enter the matrix

1 2 89

176 175 153

154 7 9

Total Happy numbers is: 3

22. Write a java program to define a method to return how many special 2 digit number present in the matrix

```
import java.util.*;
class Special2Digit
{
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the rows and columns for 2 matrix");
        int r = sc.nextInt();
        int c = sc.nextInt();
        int a[][]=new int[r][c];
        System.out.println("Enter the matrix");
        for(int i=0;i<r;i++)
```

```
            {
                for(int j=0;j<c;j++)
                {
                    a[i][j]=sc.nextInt();
                }
            }
            isSpecial(a);
        }
        static void isSpecial(int x[][])
        {
            int count=0;
            for(int i=x.length-1;i>=0;i--)
            {
                for(int j=0;j<x.length;j++)
                {
                    int n=x[i][j];
                    if(((n/10)+(n%10))+((n/10)*(n%10))==n)
                        count++;
                }
            }
            System.out.println("Total Special 2 digits number is: "+count);
        }
}
```

Output:

Enter the rows and columns for 2 matrix

3 3

Enter the matrix

1 89 54

6 55 74

15 25 23

Total Special 2 digits number is: 3

23. Write a java program to define a method to return Average of the matrix

```
import java.util.*;
class AvgElement
{
	public static void main(String args[])
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter the rows and columns");
		int r = sc.nextInt();
		int c = sc.nextInt();
		int a[][]=new int[r][c];
		System.out.println("Enter the elements");
		for(int i=0;i<r;i++)
		{
			for(int j=0;j<c;j++)
			{
				a[i][j]=sc.nextInt();
			}
		}
```

```
            System.out.println("Sum of elemenets is: "+(issum(a)/(r*c)));


    }
    static int issum(int x[][])
    {
            int sum=0;
            for(int i=0;i<x.length;i++)
            {
                    for(int j=0;j<x[i].length;j++)
                    {
                            sum+=x[i][j];
                    }
            }
            return sum;
    }
}
```

Output:

Enter the rows and columns

3 3

Enter the elements

1 2 3

4 5 6

7 8 9

Sum of elemenets is: 5

24. Write a java program to define a method to return row wise smallest number present in the matrix

```
/* Return the row wise smallest element from tha array*/

import java.util.*;

class RowSmallest

{

        public static void main(String args[])

        {

                Scanner sc = new Scanner(System.in);

                System.out.println("Enter the rows and columns");

                int r = sc.nextInt();

                int c = sc.nextInt();

                int a[][]=new int[r][c];

                System.out.println("Enter the elements");

                for(int i=0;i<r;i++)

                {

                        for(int j=0;j<c;j++)

                        {

                                a[i][j]=sc.nextInt();

                        }

                }

                int a1[]=ischeck(a);

                for(int i:a1)

                {

                        System.out.println("Smallest Element Row wise is: "+i);
```

```
        }
    }
    static int[] ischeck(int x[][])
    {
        int a[]=new int[x.length];
        for(int i=0;i<x.length;i++)
        {
            int big=x[i][0];
            for(int j=0;j<x[i].length;j++)
            {
                if(x[i][j]<big)
                    big=x[i][j];
            }
            a[i]= big;
        }
        return a;
    }
}
```

Output:

Enter the rows and columns

3 3

Enter the elements

7 5 1

9 4 2

4 2 3

Smallest Element Row wise is: 1

Smallest Element Row wise is: 2

Smallest Element Row wise is: 2