/*1.Write a Java program for Creation of Object and print data members*/

```
public class CreateObjectExample1
{
void show()
{
System.out.println("Welcome to javaTpoint");
}
public static void main(String[] args)
{
//creating an object using new keyword
CreateObjectExample1 obj = new CreateObjectExample1();
//invoking method using the object
obj.show();
}
}
```

/*2.Write a Java program to Checking entered number is Even/odd */

```
import java.util.Scanner;

public class EvenOdd {

   public static void main(String[] args) {

      Scanner reader = new Scanner(System.in);

      System.out.print("Enter a number: ");
      int num = reader.nextInt();

      if(num % 2 == 0)
         System.out.println(num + " is even");
      else
         System.out.println(num + " is odd");
   }
}
```

/*3.Write a Java program to find out factorial of a number */

```
class FactorialExample{
 public static void main(String args[]){
  int i,fact=1;
  int number=5;//It is the number to calculate factorial
  for(i=1;i<=number;i++){
      fact=fact*i;
  }
  System.out.println("Factorial of "+number+" is: "+fact);
 }
}
```

/*4. Write a Java program to check that whether given string is palindrome or not */

```
import java.io.*;
class  palandrome
{
public static void main(String args[])throws IOException
{
String x;
int i,j,n,l,flag=0;
BufferedReader br=new BufferedReader(new InputStreamReader(System.in));
System.out.println("eneter any string");
x=br.readLine();
n=x.length();
l=n-1;
n=n/2;
i=0;
while(i<n)
{
if(x.charAt(i)!=x.charAt(l))
{
flag=1;
System.out.println("not a palandrome");
break;
}
i++;
l--;

}
if(flag==0)
System.out.println("palandrome");
}}
```

/*5.Write a Java program to find Fibonacci series of a given number */

Example :
Input - 8
Output - 1 1 2 3 5 8 13 21

```
import java.lang.*;
import java.io.*;
class fib
    {
    public static void main(String args[])
            {
            int num = Integer.parseInt(args[0]); //taking no. as command line argument.
                    System.out.println("*****Fibonacci Series*****");
            int f1=0, f2=1, f3=0;
            for(int i=1;i<=num;i++)
                    {
                    System.out.print(f1+" "+f2);
                    f3 = f1 + f2;
                    f1 = f2;
                    f2 = f3;

            }
          }

}
```

/*6.Write a Java program to Check that given number is Prime or Not*/

```
import java.util.Scanner;
 class Prime
{
   public static void main(String args[])
   {
      int num, i, count=0;
      Scanner scan = new Scanner(System.in);

      System.out.print("Enter a Number : ");
      num = scan.nextInt();

      for(i=2; i<num; i++)
      {
         if(num%i == 0)
         {
            count++;
            break;
         }
      }
      if(count == 0)
      {
         System.out.print("This is a Prime Number");
      }
      else
      {
         System.out.print("This is not a Prime Number");
      }
   }
}
```

/* 7. Write a Java program that prints all real solutions to the quadratic equation $ax^2+bx+c=0$.Read in a,b,c and use the quadratic formula.If the discriminant b^2-4ac is negative,display a message stating that there are no real roots*/

```
import java.util.Scanner;
 class solutions
{
    public static void main(String[] args)
    {
            int a,b,c;
            double x,y;
            Scanner s=new Scanner(System.in);
            System.out.println("Enter the values of a,b, and c");
            a=s.nextInt();
            b=s.nextInt();
            c=s.nextInt();
            int k=(b*b)-4*a*c;
            if(k<0)
            {
                    System.out.println("No real roots");
            }
            else
            {
                    double l=Math.sqrt(k);
                    x=(-b-l)/2*a;
                    y=(-b+l)/2*a;
                    System.out.println("Roots of given equation:"+x+" "+y);
            }
    }
}
```

Output:

```
Enter the values of a,b,c
1
5
6
Roots of given equation:-3.0   -2.0


Enter the values of a, b, c
1
2
2
No real solutions


Enter the values of a, b, c
1
3
2
Roots of given equation: -2.0     -1.0
```

/*8. Write a Java program that uses both recursive and non-recursive functions to print nth value in the Fibonacci sequence*/

/*without recursion*/

```
import java.util.Scanner;
class fibonacci
{
    public static void main(String[] input)
    {
            int x,y;
            x=Integer.parseInt(input[0]);
            y=Integer.parseInt(input[1]);
            Scanner s=new Scanner(System.in);
            System.out.println("Enter the value of n:");
            int n=s.nextInt();
            int z[]=new int[n];
            z[0]=x;
            z[1]=y;
            for(int i=2;i<n;i++)
            {
                    z[i]=z[i-1]+z[i-2];
            }
            for(int i=0;i<n;i++)
            {
                    System.out.println(z[i]);
            }
    }
}
```

/*With recursion*/

```
import java.util.Scanner;
class fibonacci
{
    public static void main(String[] args)
    {
            Scanner s=new Scanner(System.in);
            System.out.println("Enter the value of n:");
            int n=s.nextInt();
            fiboni f1=new fiboni();
            System.out.println(f1.fibon(n));
    }
}
class fiboni
```

```
{
    public int fibon(int a)
    {
            if(a==0 || a==1)
                    return 1;
            else
                    return fibon(a-1)+fibon(a-2);
    }
}
```

Output:

```
10
1
1
2
3
5
8
13
21
34
55
```

/*9. Write a Java program that prompts the user for an integer and then prints out all prime numbers upto that integer */

```
import java.util.Scanner;
class prime
{
    public static void main(String[] args)
    {
        int n,p;
        Scanner s=new Scanner(System.in);
        System.out.println("Enter upto which number prime numbers are needed");
        n=s.nextInt();
        for(int i=2;i<n;i++)
        {
            p=0;
            for(int j=2;j<i;j++)
            {
                if(i%j==0)
                p=1;
            }
            if(p==0)
                System.out.println(i);
        }
    }
}
```

Output:

```
Enter upto which number prime numbers are needed:20
2
3
5
7
11
13
17
19
```

```
Enter upto which number prime numbers are needed:35

2
3
5
7
11
13
17
19
23
29
31
```

/*10.Write a Java program that checks whether the given string is palindrome or not*/

```
class palindrome
{
    public static void main(String[] args)
    {
            StringBuffer s1=new StringBuffer(args[0]);
            StringBuffer s2=new StringBuffer(s1);
            s1.reverse();
            System.out.println("Given String is:"+s2);
            System.out.println("Reverse String is"+s1);
            if(String.valueOf(s1).compareTo(String.valueOf(s2))==0)
                    System.out.println("Palindrome");
            else
                    System.out.println("Not Palindrome");
    }
}
```

Output:

```
Java palindrome madam
Given String is:madam
Reverse String is madam
Palindrome


Java palindrome harish
Given String is:harish
Reverse String is hsirah
Not Palindrome
```

/*11. Write a java program to display the employee details using Scanner class*/

```
import java.util.*;

class EmployeeDetails

{

public static void main(String args[])

{

System.out.println("enter name,id,age,salary");Scanner sc=new Scanner(System.in);

String n=sc.next();int i=sc.nextInt(); int a=sc.nextInt();

float s=sc.nextFloat();

System.out.println("name is"+n+"idis"+i+"ageis"+a+"salaryis"+s);

}

}
```

/*12.Write a Java program that Demonstrate two dimensional array */

```
class TwoDArray {
public static void main(String args[])
    {
int twoD[][]= new int[4][5];
int i, j, k = 0;
for(i=0; i<4; i++)
    for(j=0; j<5; j++)
    {
    twoD[i][j] = k;
    k++;
    }
for(i=0; i<4; i++)
    {
    for(j=0; j<5; j++)
    System.out.print(twoD[i][j] + " ");
    System.out.println();
    }
}
}
```

/*13. Write a Java Program to multiply two matrices*/

```
import java.util.Scanner;
class matmul
{
    public static void main(String args[])
    {
            int a[][]=new int[3][3];
            int b[][]=new int[3][3];
            int c[][]=new int[3][3];
            System.out.println("Enter the first matrix:");
            Scanner input=new Scanner(System.in);
            for(int i=0;i<3;i++)
                    for(int j=0;j<3;j++)
                       a[i][j]=input.nextInt();

            System.out.println("Enter the second matrix:");
            for(int i=0;i<3;i++)
                    for(int j=0;j<3;j++)
                            b[i][j]=input.nextInt();
            System.out.println("Matrix multiplication is as follows:");
            for(int i=0;i<3;i++)
            {
                    for(int j=0;j<3;j++)
                    {
                            c[i][j]=0;
                            for(int k=0;k<3;k++)
                            {
                              c[i][j]+=a[i][k]*b[k][j];
                            }
                    }
            }
            for(int i=0;i<3;i++)
            {
                    for(int j=0;j<3;j++)
                    {
                    System.out.print(a[i][j]+"\t");
                    }
                    System.out.println("\n");
                    }
                    System.out.println("\n");
                    for(int i=0;i<3;i++)
            {
                    for(int j=0;j<3;j++)
                    {
                    System.out.print(b[i][j]+"\t");
```

```
                }
                System.out.println("\n");
                }
                System.out.println("\n");
        for(int i=0;i<3;i++)
        {
                for(int j=0;j<3;j++)
                {
                System.out.print(c[i][j]+"\t");
                }
                System.out.println("\n");
                }
    }

}
```

Output:

```
Enter the first matrix:
1 2 3  4 5 6 7 8 9
Enter the second matrix:
9 8 7 6 5 4 3 2 1
Matrix multiplication is as follows:
    1       2       3
    4       5       6
    7       8       9

    9       8       7
    6       5       4
    3       2       1

    30      24      18
    84      69      54
    138     114     90
```

/*14. Write a java program to create inner classes*/

```
class A
{
int
a=10;
void
display(
)
{
B
b=new
B();
b.show(
);
}
class B
{
int
b=20;
void
show(
)
{
```

```
System.out.println(" a value is " +a);

System.out.println(" b value is " +b);

}

}

}

class InnerDemo

{

public static void main(String args[])

{

A

a=new

A( );

a.displa

y( );

}

}
```

/*15. Write a Java program that illustrates the concept of this reference */

```
class Student{
   int id;
   String name;

   Student(int id,String name)
            {
   this.id = id;
   this.name = name;
   }
   void display(){
            System.out.println(id+" "+name);
            }
   public static void main(String args[]){
   Student s1 = new Student(111,"Kiran");
   Student s2 = new Student(222,"Aryan");
   s1.display();
   s2.display();
}
}
```

/*16. Write a Java program that illustrates the concept of method overloading and Constructor overloading*/

method overloading

```
import java.io.*;
class MethodOverloadingEx {
 static int add(int a, int b)
 {
 return a + b;
 }
 static int add(int a, int b, int c)
 {
 return a + b + c;
 }
 public static void main(String args[])
 {
 System.out.println("add() with 2 parameters");
 System.out.println(add(4, 6));

 System.out.println("add() with 3 parameters");
 System.out.println(add(4, 6, 7));
 }
}
```

Constructor overloading

```
public class Student {
//instance variables of the class
int id;
String name;

Student(){
System.out.println("this a default constructor");
}
Student(int i, String n){
id = i;
name = n;
}

public static void main(String[] args) {
//object creation
Student s = new Student();
System.out.println("\nDefault Constructor values: \n");
System.out.println("Student Id : "+s.id + "\nStudent Name : "+s.name);

System.out.println("\nParameterized Constructor values: \n");
Student student = new Student(10, "Kalpana");
System.out.println("Student Id : "+student.id + "\nStudent Name : "+student.name);
}
}
```

/*17. Write a Java program that illustrates the concept of constructor parameter passing */

```
/* Here, Box uses a parameterized constructor to initialize the dimensions of a box.
*/
class Box {
    double width;
    double height;
    double depth;
 // This is the constructor for Box.
Box(double w, double h, double d)
     {
width = w;
height = h;
depth = d;
}

// compute and return volume
double volume()
    {
return width * height * depth;
    }
}

class constructorparameter
    {
public static void main(String args[])
    {
// declare, allocate, and initialize Box objects
Box mybox1 = new Box(10, 20, 15);
Box mybox2 = new Box(3, 6, 9);
```

```
double vol;

// get volume of first box
vol = mybox1.volume();
System.out.println("Volume is " + vol);

// get volume of second box
vol = mybox2.volume();
System.out.println("Volume is " + vol);
}
}
```

```
//The output from this program is shown here:

//Volume is 3000.0
//Volume is 162.0
```

/*18. Write a JAVA program to demonstrate execution of static blocks ,static variables & static methods. */

```
public class StaticDemo
{
 static int x = 10;
 static int y;
 static void func(int z) {
 System.out.println("x = " + x);
 System.out.println("y = " + y);
 System.out.println("z = " + z);
 }
 static {
 System.out.println("Running static initialization block.");
 y = x + 5;
 }
 public static void main(String args[]) {
 func(8);
 }
}
```

/*19.Write a Java program to sort a given list of names in ascending order*/

```
class sorting
{
    public static void main(String[] input)
    {
            int k=input.length;
            String temp=new String();
            String names[]=new String[k+1];
            for(int i=0;i<k;i++)
            {
                    names[i]=input[i];
            }
            for(int i=0;i<k;i++)
                    for(int j=i+1;j<k;j++)
                    {
                            if(names[i].compareTo(names[j])<0)
                            {
                                    temp=names[i];
                                    names[i]=names[j];
                                    names[j]=temp;
                            }
                    }
            System.out.println("Sorted order is");
            for(int i=0;i<k;i++)
            {
                    System.out.println(names[i]);
            }
    }
}
```

Output:

```
Java sorting Harish  Ramesh  Mahesh  Rakesh
Sorted order is
Ramesh
Rakesh
Mahesh
Harish


Java sorting sai hari teja ravi sandeep
Sorted order is
teja
sandeep
sai
ravi
hari
```

/*20.Write a Java program that reads a line of integers and displays each integer and sum of all integers using StringTokenizer class*/

```
import java.util.StringTokenizer;
import java.util.Scanner;
class tokens
{
    public static void main(String[] args)
    {
            Scanner input=new Scanner(System.in);
            String sentence=input.nextLine();
            String temp;
            int k,total=0;
            StringTokenizer s1=new StringTokenizer(sentence);
            System.out.println("Total Number of tokens:"+s1.countTokens());
            while(s1.hasMoreTokens())
            {
                    temp=s1.nextToken();
                    k=Integer.parseInt(temp);
                    total+=k;
                    System.out.print(k+"\t");
            }
            System.out.println("Sum of tokens :"+total);
    }
}
```

Output:

```
12  43  78  98
Total Number of tokens:4
    12      43      78      98
Sum of tokens : 231


123 456 798
Total number of tokens:3
    123     456     798
Sum of tokens:1377
```