1.

import java.util.Scanner;

class Complex{

int real,imag;

Scanner sc = new Scanner(System.in);

void read(){

real=sc.nextInt();

imag=sc.nextInt();

}

void display(){

System.out.println(real+" +i"+imag);

}

Complex add(Complex b){

Complex c = new Complex();

c.real=real+b.real;

c.imag=imag+b.imag;

return c;

}

Complex subtract(Complex b){

Complex c = new Complex();

c.real=real-b.real;

c.imag=imag-b.imag;

return c;

}

}

public class Main

{

public static void main (String[] args)

{

System.out.print("Enter the first complex number ");

Complex a = new Complex();

a.read();

System.out.print("Enter the second complex number ");

Complex b = new Complex();

b.read();

System.out.print("The first complex number is ");

a.display();

System.out.print("The second complex number is ");

b.display();

System.out.print("The sum of these 2 complex numbers is ");

Complex c=a.add(b);

c.display();

System.out.print("The subtraction of these 2 complex numbers is ");

c=a.subtract(b);

c.display();

}

}

2.

import java.util.Scanner;

class Time{

int hours,seconds,minutes;

Scanner sc= new Scanner(System.in);

void read(){

hours=sc.nextInt();

minutes=sc.nextInt();

seconds=sc.nextInt();

}

void display(){

System.out.println(hours+":"+minutes+":"+seconds);

}

Time add(Time t){

Time sum=new Time();

sum.seconds=t.seconds+seconds;

sum.minutes=t.minutes+minutes;

sum.hours=t.hours+hours;

if(sum.seconds>=60)

{

sum.minutes++;

sum.seconds-=60;

}

if(sum.minutes>=60){

sum.hours++;

sum.minutes-=60;

}

if(sum.hours>=24)

sum.hours-=24;

return sum;

}

Time subtract(Time t){

Time sub=new Time();

int res = this.compare(t);

if(res==0)

{

sub.seconds=0;

sub.minutes=0;

sub.hours=0;

return sub;

}

Time max=new Time();

Time min=new Time();

if(res==1){

max=t;

min=this;

}

else{

max=this;

min=t;

}

sub.seconds=max.seconds-min.seconds;

sub.minutes=max.minutes-min.minutes;

sub.hours=max.hours-min.hours;

if(sub.seconds<0)

{

sub.minutes--;

sub.seconds+=60;

}

if(sub.minutes<0){

sub.hours--;

sub.minutes+=60;

}

return sub;

}

int compare(Time t){

if(t.hours==hours&&t.seconds==seconds&&t.minutes==minutes)

{

return 0;

}

if(t.hours>hours){

return 1;

}

else if(t.hours<hours){

return 2;

}

else if(t.minutes>minutes){

return 1;

}

else if(t.minutes<minutes){

return 2;

}

else if(t.seconds>seconds){

return 1;

}

else {

return 2;

}

}

}

public class Main

{

public static void main(String[] args) {

Time s=new Time();

Time t=new Time();

System.out.print("Enter the first time in 24 hour format ");

s.read();

System.out.print("Enter the second time in 24 hour format ");

t.read();

int res=s.compare(t);

if(res==0)

System.out.println("The 2 times are equal ");

else if(res==1)

System.out.println("The second time is greater than the first ");

else System.out.println("The first time is greater than the second ");

System.out.println("The sum of the 2 times is "+s.add(t).hours+":"+s.add(t).minutes+":"+s.add(t).seconds);

System.out.println("The difference of the 2 times is "+s.subtract(t).hours+":"+s.subtract(t).minutes+":"+s.subtract(t).seconds);

}

}

3.

import java.util.Scanner;

class Complex{

int real,imag;

Scanner sc = new Scanner(System.in);

Complex(){

real=0;

imag=0;

}

Complex(int x,int y){

real=x;

imag=y;

}

void read(){

real=sc.nextInt();

imag=sc.nextInt();

}

void display(){

System.out.println(real+" +i"+imag);

}

Complex add(Complex b){

Complex c = new Complex();

c.real=real+b.real;

c.imag=imag+b.imag;

return c;

}

Complex subtract(Complex b){

Complex c = new Complex();

c.real=real-b.real;

c.imag=imag-b.imag;

return c;

}

}

public class Main

{

public static void main (String[] args)

{

Complex p=new Complex(); // default constructor invoked

Complex q= new Complex(3,5); // parameterized constructor invoked

System.out.print("Complex number created by default constructor is ");

p.display();

System.out.print("Complex number created by parameterized constructor is ");

q.display();

System.out.print("Enter the first complex number ");

Complex a = new Complex();

a.read();

System.out.print("Enter the second complex number ");

Complex b = new Complex();

b.read();

System.out.print("The first complex number is ");

a.display();

System.out.print("The second complex number is ");

b.display();

System.out.print("The sum of these 2 complex numbers is ");

Complex c=a.add(b);

c.display();

System.out.print("The subtraction of these 2 complex numbers is ");

c=a.subtract(b);

c.display();

}

}