1) Class Complex

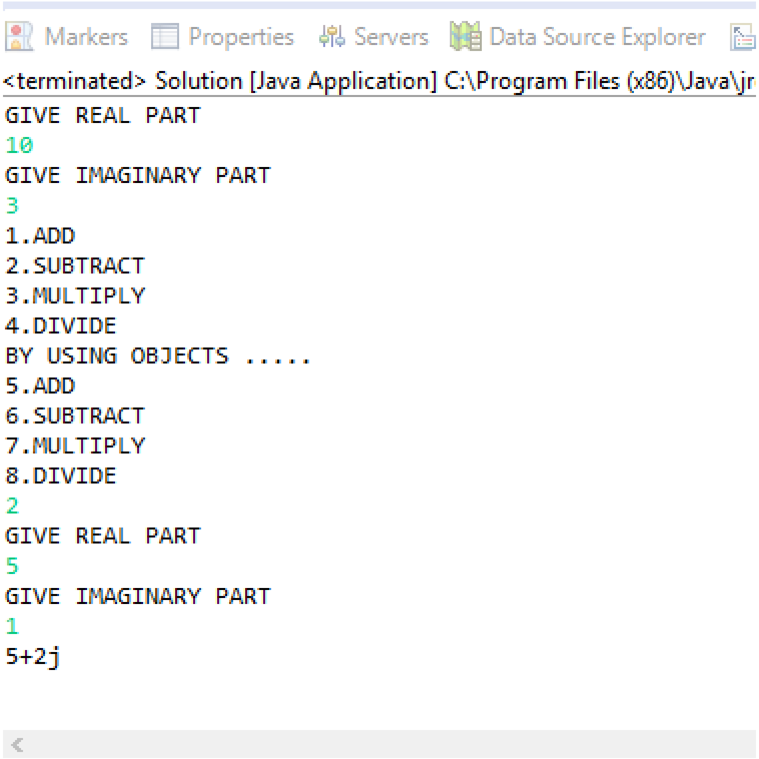
```
package com;

public class Complex {
        int real;
        int imaginary;
        public Complex() {
                real = 0;
                imaginary = 0;
        }
        public Complex(int real,int imaginary) {
                this.real = real;
                this.imaginary = imaginary;
        }
        public void set(int real,int imaginary) {
                this.real = real;
                this.imaginary = imaginary;
        }
        public String toString() {
                return this.real + "+" + this.imaginary + "j";
        }
        public Complex add(int real,int imaginary) {
                Complex output;
                int real1 = this.real + real;
                int imaginary1 = this.imaginary + imaginary;
                output = new Complex(real1,imaginary1);
                return output;
        }
public Complex subtract(int real,int imaginary) {
        Complex output;
        int real1 = this.real - real;
                int imaginary1 = this.imaginary - imaginary;
                output = new Complex(real1,imaginary1);
                return output;
        }
        public Complex multiplyWith(int real,int imaginary) {
                Complex output;
                int real1 = this.real * real - this.imaginary * imaginary;
                int imaginary1 = this.real * imaginary + this.imaginary * real;
                output = new Complex(real1,imaginary1);
                return output;
        }
        public Complex dividedBy(int real,int imaginary) {
                Complex output;
                int real1 = this.real / real - this.imaginary / imaginary;
                int imaginary1 = this.real / imaginary + this.imaginary / real;
                output = new Complex(real1,imaginary1);
                return output;
        }
        public Complex add(Complex another) {
                Complex output;
                real = this.real + another.real;
                imaginary = this.imaginary + another.imaginary;
                output = new Complex(real,imaginary);
                return output;
}
public Complex subtract(Complex another) {
	Complex output;
	int real1 = this.real - another.real;
	int imaginary1 = this.imaginary - another.imaginary;
		output = new Complex(real1,imaginary1);
		return output;
	}

	public Complex multiplyWith(Complex another) {
		Complex output;
		int real1 = this.real * another.real - this.imaginary * 
another.imaginary;
		int imaginary1 = this.real * another.imaginary + this.imaginary * 
another.real;
		output = new Complex(real1,imaginary1);
		return output;
	}
	public Complex dividedBy(Complex another) {
		Complex output;
		int real1 = this.real / another.real - this.imaginary / 
another.imaginary;
		int imaginary1 = this.real / another.imaginary + this.imaginary / 
another.real;
		output = new Complex(real1,imaginary1);
		return output;
	}
	public boolean isReal() {
		if(real != 0)
			return true;
		else
			return false;
	}
public boolean isImaginary() {
	if(imaginary != 0) return true;
else
	return false;
}
}
```

Class Solution

```
package org;
import java.io.BufferedReader;
import java.io.IOException;
import java.io.InputStreamReader;

import com.Complex;
public class Solution {
	public static void main(String args[]) throws IOException {
		BufferedReader bf = new BufferedReader(new 
InputStreamReader(System.in));
		System.out.println("GIVE REAL PART");
		int real = Integer.parseInt(bf.readLine());
		System.out.println("GIVE IMAGINARY PART");
		int imaginary = Integer.parseInt(bf.readLine());
		Complex complex = new Complex();
```

```
        complex = new Complex(real,imaginary);
        complex.set(real,imaginary);
        System.out.println("1.ADD\n2.SUBTRACT\n3.MULTIPLY\n4.DIVIDE");
        System.out.println("BY USING OBJECTS
.....\n5.ADD\n6.SUBTRACT\n7.MULTIPLY\n8.DIVIDE");
        int choice = Integer.parseInt(bf.readLine());
        System.out.println("GIVE REAL PART");
        int real1 = Integer.parseInt(bf.readLine());
        System.out.println("GIVE IMAGINARY PART");
        int imaginary1 = Integer.parseInt(bf.readLine());
        switch(choice) {
        case 1:
            Complex c1 = complex.add(real1,imaginary1);
            System.out.println(c1);
            break;
        case 2:
            Complex c2 = complex.subtract(real1,imaginary1);

            System.out.println(c2);
            break;
        case 3:
            Complex c3 = complex.multiplyWith(real1,imaginary1);

            System.out.println(c3);
            break;
        case 4:
            Complex c4 = complex.dividedBy(real1,imaginary1);
            System.out.println(c4);
            break;
        case 5:
            Complex c5 = new Complex(real1,imaginary1);
            Complex cm5 = complex.add(c5);
            System.out.println(cm5);
            break;
        case 6:
            Complex c6 = new Complex(real1,imaginary1);
            Complex cm6 = complex.subtract(c6);
            System.out.println(cm6);
            break;
        case 7:
            Complex c7 = new Complex(real1,imaginary1);
            Complex cm7 = complex.multiplyWith(c7);
            System.out.println(cm7);
            break;
        case 8:
            Complex c8 = new Complex(real1,imaginary1);
            Complex cm8 = complex.dividedBy(c8);
            System.out.println(cm8);
            break;
}
    }
}
```

Output



```
<terminated> Solution [Java Application] C:\Program Files (x86)\Java\jr
GIVE REAL PART
10
GIVE IMAGINARY PART
3
1.ADD
2.SUBTRACT
3.MULTIPLY
4.DIVIDE
BY USING OBJECTS .....
5.ADD
6.SUBTRACT
7.MULTIPLY
8.DIVIDE
2
GIVE REAL PART
5
GIVE IMAGINARY PART
1
5+2j
```

2) CLASS POINT

```
package in;

public class Point {
        int x;
        int y;
        public String toString() {
                return "(" + x + "," +y + ")";
        }
        public Point() {
                x = 0;
                y = 0;
        }
        public Point(int axis) {
                this.x = axis;
                this.y = axis;
        }
        public Point(int x,int y) {
                this.x = x;
                this.y = y;
}
        public void setXY(int x,int y) {
```

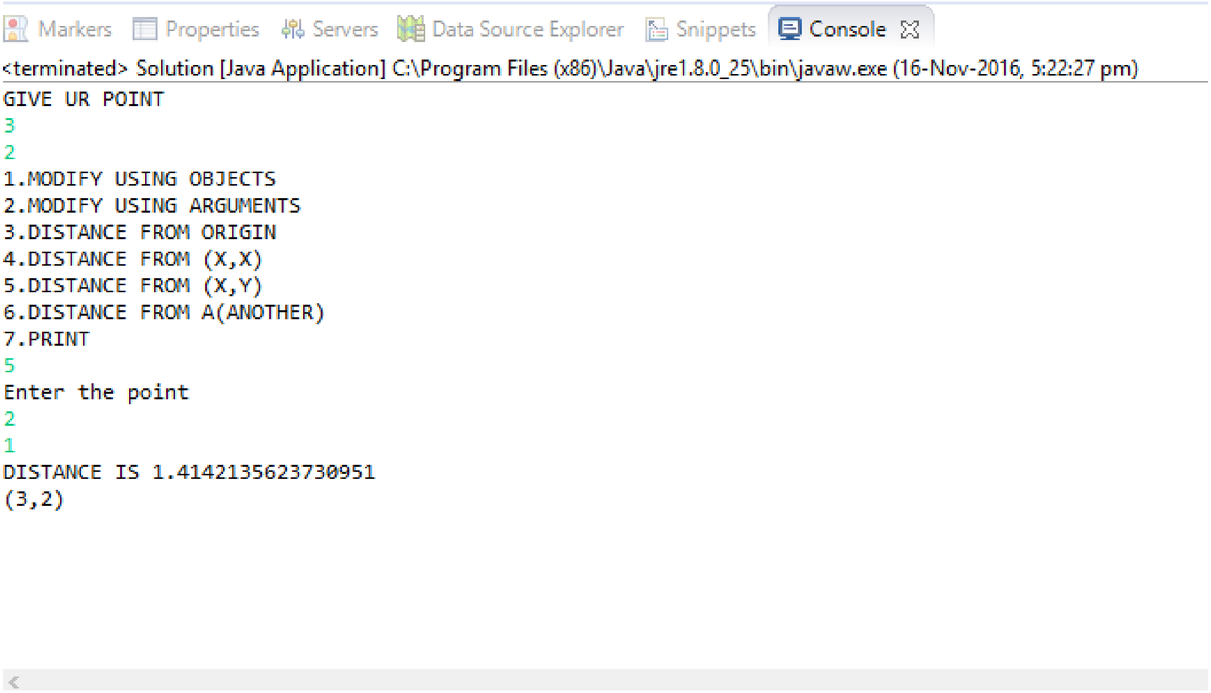
```
		this.x = x;
		this.y = y;
	}
	public void setXY(Point another) {
		this.x = another.x;
		this.y = another.y;
	}
	public double distance() {
		return Math.sqrt((this.x*this.x)+(this.y*this.y));
	}
	public double distance(int axis) {
		int distance = ((this.x - axis) * (this.x - axis)) + ((this.y -
axis) * (this.y - axis));
		return Math.sqrt(distance);
	}
	public double distance(int x,int y) {
		int distance = ((x - this.x) * (x - this.x)) + ((y - this.y) * (y -
this.y));
		return Math.sqrt(distance);
	}
	public double distance(Point another) {
		int distance = ((another.x - this.x) * (another.x - this.x)) +
((another.y - this.y) *
(another.y - this.y));
		return Math.sqrt(distance);
	}
	public void print() {
		System.out.println("co-ordinates (" + x + "," + y + ")" );
}
}
```

CLASS SOLUTION.JAVA

```
package org;

import in.Point;
import java.io.BufferedReader;
import java.io.IOException;
import java.io.InputStreamReader;
public class Solution {
	public static void main(String args[]) throws IOException {
		BufferedReader bf = new BufferedReader(new
InputStreamReader(System.in));
		int x;
		int y;
		System.out.println("GIVE UR POINT");
		x = Integer.parseInt(bf.readLine());
		y = Integer.parseInt(bf.readLine());
		System.out.println("1.MODIFY USING OBJECTS");
		System.out.println("2.MODIFY USING ARGUMENTS");
		System.out.println("3.DISTANCE FROM ORIGIN");
		System.out.println("4.DISTANCE FROM (X,X)");
		System.out.println("5.DISTANCE FROM (X,Y)");
		System.out.println("6.DISTANCE FROM A(ANOTHER) \n7.PRINT");
		int choice = Integer.parseInt(bf.readLine());
		Point point = new Point();
```

```java
        switch(choice) {
        case 1:
            point = new Point(x,y);
            point.setXY(x,y);
            break;
        case 2:
            //point = new Point(x,y);
            point.setXY(point);
        case 3:
            //point = new Point(x,y);
            point.setXY(x,y);
            System.out.println("DISTANCE IS " + point.distance());

            break;
         case 4:
            //point = new Point(x);
            point.setXY(x,x);
            System.out.println("Enter the value of x");
            int axis = Integer.parseInt(bf.readLine());
            System.out.println("DISTANCE IS " + point.distance(axis));
            break;
         case 5:
            //point = new Point(x,y);
            point.setXY(x,y);
            System.out.println("Enter the point");
            int x1 = Integer.parseInt(bf.readLine());

            int y1 = Integer.parseInt(bf.readLine());
            System.out.println("DISTANCE IS " + point.distance(x1,y1));

            break;
         case 6:
            //point = new Point(x,y);
            point.setXY(point);
            System.out.println("Enter the point");

            int x2 = Integer.parseInt(bf.readLine());
            int y2 = Integer.parseInt(bf.readLine());
            Point point1 = new Point(x2,y2);
            System.out.println("DISTANCE IS " + point.distance(point1));

            break;
         case 7:
            //Point = new Point(x,y);
            point.print();
            break;
                }
        System.out.println(point);
    }
}
```

OUTPUT



```
<terminated> Solution [Java Application] C:\Program Files (x86)\Java\jre1.8.0_25\bin\javaw.exe (16-Nov-2016, 5:22:27 pm)
GIVE UR POINT
3
2
1.MODIFY USING OBJECTS
2.MODIFY USING ARGUMENTS
3.DISTANCE FROM ORIGIN
4.DISTANCE FROM (X,X)
5.DISTANCE FROM (X,Y)
6.DISTANCE FROM A(ANOTHER)
7.PRINT
5
Enter the point
2
1
DISTANCE IS 1.4142135623730951
(3,2)
```