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Program3

```
import java.util.Scanner;

class ComplexNumbers
{
    int real;
    int imaginary;

    ComplexNumbers(int real,int imaginary)
    {
        this.real=real;
        this.imaginary=imaginary;
    }

    static ComplexNumbers addComplex(ComplexNumbers num1,ComplexNumbers num2)
    {
        ComplexNumbers num3=new ComplexNumbers(0,0);
        num3.real=num1.real+num2.real;
        num3.imaginary=num1.imaginary+num2.imaginary;
        return num3;
    }

    static ComplexNumbers subtractComplex(ComplexNumbers num1,ComplexNumbers
num2)
    {
        ComplexNumbers num4=new ComplexNumbers(0,0);
        num4.real=num1.real-num2.real;
        num4.imaginary=num1.imaginary-num2.imaginary;
        return num4;
    }

    static void compareComplex(ComplexNumbers num1,ComplexNumbers num2)
    {
        double value1=0.0;
        double value2=0.0;

        value1=Math.sqrt((num1.real*num1.real)+
(num1.imaginary*num1.imaginary));
        value2=Math.sqrt((num2.real*num2.real)+
(num2.imaginary*num2.imaginary));
        if(value1==value2)
            System.err.println("Equal Complex numbers");
    }
}
```

```

        else if(value1<value2)
        {
            System.err.println(num1.real+" "+num1.imaginary+"i"+ " is less than "+num2.real+" "+num2.imaginary+"i");
        }
        else
        {
            System.err.println(num1.real+" "+num1.imaginary+"i"+ " is greater than "+num2.real+" "+num2.imaginary+"i");
        }
    }
}

```

```

public static void main(String args[])
{
    ComplexNumbers num1=new ComplexNumbers(0,0);
    ComplexNumbers num2=new ComplexNumbers(0,0);
    Scanner sc=new Scanner(System.in);
    System.out.println("Input two complex numbers:");
    System.out.println("Enter first number:");
    num1.real=sc.nextInt();
    num1.imaginary=sc.nextInt();
    System.out.println("Enter second number:");
    num2.real=sc.nextInt();
    num2.imaginary=sc.nextInt();
    int choice=0;
    while (true) {
        System.out.println("1.Add\n2.Subtract\n3.Compare\n4.Exit");
        System.out.println("Enter choice:");
        choice=sc.nextInt();
        if (choice==1)
        {
            ComplexNumbers num3=addComplex(num1, num2);

            System.out.println("Addition:"+num3.real+" "+num3.imaginary+"i");
        }
        else if(choice==2)
        {
            ComplexNumbers num4=subtractComplex(num1, num2);

            System.out.println("Subtraction:"+num4.real+" "+num4.imaginary+"i");
        }
        else if(choice==3)
        {
            compareComplex(num1, num2);
        }
        else if(choice==4)
        {
            System.exit(0);
        }
        else
        {

```

```

        System.out.println("Wrong choice, enter again");
    }
}
}

```

Output:

```

Input two complex numbers:
Enter first number:
2
3
Enter second number:
1
2
1.Add
2.Subtract
3.Compare
4.Exit
Enter choice:
1
Addition:3+5i
1.Add
2.Subtract
3.Compare
4.Exit
Enter choice:
2
Subtraction:1+1i
1.Add
2.Subtract
3.Compare
4.Exit
Enter choice:
3
2+3i is greater than 1+2i
1.Add
2.Subtract
3.Compare
4.Exit
Enter choice:
4

```