Evaluation 1 - Set 1

CB.SC.I5DAS20032

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```
/*
1. Write a program to convert from one unit scale to another. Accepting the numeric in
put and the base unit from the user, get the targeted unit choice also from the user a
nd do the conversion.(For example Enter the number: 1, Enter the unit: km, Enter the u
nit to be converted : Meter Output: 1000).
2. Write a program to find the cartesian product of numbers belonging to two arrays. A
ccept the arrays and their elements from the user. (For example, if arr1 = [1, 2, 3] a
nd arr2 = [4, 5]; Then their cartesian product will be = [[1, 4], [1, 5], [2, 4], [2,
 5], [3, 4], [3, 5]];
3. Given two complex numbers, you have to print the result of their addition, subtract
ion, multiplication, and modulus operation on the first complex number (Note: Modulus
 of a complex number is the square root of the sum of squares of real and imaginary pa
rts) ( If the input is 2 1 5 6, the output should be 7.00 + 7.00j, -3.00-5.00j, 4.00+1
7.00j, 2.24+0.00j)
 */
```

```
import java.util.Scanner;
import java.lang.String;

public class Q1 {

    public static double convert (double num, String base, String target) {
        double result = 0;
        switch (base) {
            case "m":
                switch (target) {
                    case "km":
                        result = num / 1000;
                        break;
                    case "cm":
                        result = num * 100;
                        break;
                }
            case "f":
                switch (target) {
                    case "km":
                        result = num * 3 / 10000;
                        break;
                    case "cm":
                        result = num * 3 * 100 / 10;
                        break;
                }
        }

        return result;
```

```
    }

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

        System.out.println("Enter quantity: ");
        double num = input.nextDouble();
        System.out.println("Enter base unit: ");
        String base = input.next();
        System.out.println("Enter target unit: ");
        String target = input.next();
        System.out.println("Converted: " + String.valueOf(convert(num, base, targe
t)));

        input.close();
    }
}
```

```
import java.util.Scanner;
import java.lang.String;

public class Q2 {

    public static int[][] cartProd (int[] arr1, int[] arr2) {
        int[][] result = new int[arr1.length * arr2.length][];

        int k = 0;

        for (int i = 0; i < arr1.length; i++) {
            for (int j = 0; j < arr2.length; j++) {
                int[]  temp = {arr1[i], arr2[j]};

                result[k] = temp;

                k += 1;
            }
        }
        return result;
    }

    public static void main (String[] args){

        Scanner input2 = new Scanner(System.in);

        System.out.println("Enter array 1 length: ");
        int arr1Len = input2.nextInt();
        int[] arr1 = new int[arr1Len];
        System.out.println("Enter array 1 elements: ");
        for (int i = 0; i < arr1Len; i++) {
            arr1[i] = input2.nextInt();
        }

        System.out.println("Enter array 2 length: ");
        int arr2Len = input2.nextInt();
        int[] arr2 = new int[arr1Len];
```

```
        System.out.println("Enter array 2 elements: ");
        for (int i = 0; i < arr2Len; i++) {
            arr2[i] = input2.nextInt();
        }

        int[][] out = cartProd(arr1, arr2);
        for (int[] prod : out) {
            System.out.println("[ " + String.valueOf(prod[0]) + " , " + String.valueOf
(prod[1]) + " ]");
        }

        input2.close();

    }
}
```

```
import java.util.Scanner;
import java.lang.String;

public class Q3 {

    public static double[] complexCalc(int i1, int j1, int i2, int j2) {
        double sumI = i1 + i2;
        double sumJ = j1 + j2;

        double diffI = i1 - i2;
        double diffJ = j1 - j2;

        double prodI = i1 * i2 - j1 * j2;
        double prodJ = i1 * j2 + i2 * j1;

        double mod1 = Math.pow(Math.pow(i1, 2) + Math.pow(j1,2), 0.5);
        double mod2 = Math.pow(Math.pow(i2, 2) + Math.pow(j2,2), 0.5);

        double[] result = {sumI, sumJ, diffI, diffJ, prodI, prodJ, mod1, mod2};

        return result;
    }

    public static void main (String[] args){

        Scanner input3 = new Scanner(System.in);

        System.out.println("Enter real coeff of num1: ");
        int i1 = input3.nextInt();

        System.out.println("Enter imaginary coeff of num1: ");
        int j1 = input3.nextInt();


        System.out.println("Enter real coeff of num2: ");
        int i2 = input3.nextInt();

        System.out.println("Enter imaginary coeff of num2: ");
        int j2 = input3.nextInt();
```

```
        double outs[] = complexCalc(i1, j1, i2, j2);

        System.out.println("Sum: " + String.valueOf(outs[0]) + " + " + String.valueOf
(outs[2]) + "j");

        System.out.println("Difference: " + String.valueOf(outs[2]) + " + " + String.v
alueOf(outs[3]) + "j");

        System.out.println("Product: " + String.valueOf(outs[4]) + " + " + String.valu
eOf(outs[5]) + "j");

        System.out.println("Modulus 1: " + String.valueOf(outs[6]));
        System.out.println("Modulus 1: " + String.valueOf(outs[7]));

        input3.close();

    }
}
```