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/*
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   Assignment No: 1

   Problem Statement:
      Design a class ‘Complex ‘with data members for real and imaginary part. Provide default and
      Parameterized constructors. Write a program to perform arithmetic operations of two complex
      numbers.
*/

import java.util.Scanner;

public class ComplexOperations {
   static void getInput() {
      int a1, a2, b1, b2, d, a, b;
      char operator;

      System.out.print("\tInput your first complex no: a + bi\n\ta: ");
      Scanner input = new Scanner(System.in);
      a1 = input.nextInt();
      System.out.print("\tb: ");
      b1 = input.nextInt();
      System.out.print("\tInput your second complex no: a + bi\n\ta: ");
      a2 = input.nextInt();
      System.out.print("\tb: ");
      b2 = input.nextInt();

      System.out.print("\tChoose an operator: +, -, *, or /: ");
      operator = input.next().charAt(0);
      input.close();

      switch (operator) {

         case '+':
            a = a1 + a2;
            b = b1 + b2;
            System.out.format("\tThe addition of the two complex numbers is: \n\t(%d + %di) + (%d
+ %di) = (%d + %di)", a1, b1, a2, b2, a, b);
            break;

         case '-':
            a = a1 - a2;
            b = b1 - b2;
            System.out.format("\tThe subtraction of the two complex numbers is: \n\t(%d + %di) -
(%d + %di) = (%d + %di)", a1, b1, a2, b2, a, b);
            break;

         case '*':
            a = (a1 * a2) - (b1 * b2);
            b = (a1 * b2) + (b1 * a2);
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            System.out.format("\tThe multiplication of the two complex numbers is: \n\t(%d + %di) *
(%d + %di) = (%d + %di)", a1, b1, a2, b2, a, b);
            break;

        case '/':
            d = (a2 * a2) + (b2 * b2);
            a = ((a1 * a2) + (b1 * b2)) / d;
            b = ((a2 * b1) - (a1 * b2)) / d;
            System.out.format("\tThe Division of the two complex numbers is: \n\t(%d + %di) * (%d
+ %di) = (%d + %di)", a1, b1, a2, b2, a, b);
            break;

        default:
            System.out.println("Invalid operator!");
            break;
      }

   }

   public static void main(String[] args) {
      getInput();
   }
}

/*
   Output 1: (Addition)

        Input your first complex no: a + bi
        a: 4
        b: 2
        Input your second complex no: a + bi
        a: 2
        b: 1
        Choose an operator: +, -, *, or /: +
        The addition of the two complex numbers is:
        (4 + 2i) + (2 + 1i) = (6 + 3i)


   Output 2: (Subtraction)

   Input your first complex no: a + bi
        a: 4
        b: 2
        Input your second complex no: a + bi
        a: 2
        b: 1
        Choose an operator: +, -, *, or /: -
        The subtraction of the two complex numbers is:
        (4 + 2i) - (2 + 1i) = (2 + 1i)


        Output 3: (Multiplication)
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Input your first complex no: a + bi
a: 4
b: 2
Input your second complex no: a + bi
a: 2
b: 1
Choose an operator: +, -, *, or /: *
The multiplication of the two complex numbers is:
(4 + 2i) * (2 + 1i) = (6 + 8i)


Output 4: (Division)

Input your first complex no: a + bi
a: 4
b: 2
Input your second complex no: a + bi
a: 2
b: 1
Choose an operator: +, -, *, or /: /
The Division of the two complex numbers is:
(4 + 2i) * (2 + 1i) = (2 + 0i)
*/
```