LAPORAN PRAKTIKUM 2
PEMROGRAMAN BERORIENTASI OBJEK

Laporan Ini Diajukan Untuk Memenuhi Tugas
Mata Kuliah Pemrograman Berorientasi Objek

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PERTANYAAN

1. Soal 1 (Input dan Output)

Given a string, ***s***, matching the regular expression [A-Za-z !,?._'@]+, split the string into tokens. We define a token to be one or more consecutive English alphabetic letters. Then, print the number of tokens, followed by each token on a new line.

Input Format
A single string ***s***.

Constraints

- $1 \leq$ length of $s \leq 4.10^5$
- ***s*** is composed of any of the following: English alphabetic letters, blank spaces, exclamation points (!), commas (,), question marks (?), periods (.), underscores (_), apostrophes ('), and at symbols (@).

Output Format
On the first line, print an integer, ***n***, denoting the number of tokens in string ***s*** (they do not need to be unique). Next, print each of the ***n*** tokens on a new line in the same order as they appear in input string ***s***.

Sample Input:

```
I wasn't home
```

Sample Output:

```
4
I
wasn
t
home
```

Explanation:
We consider a token to be a contiguous segment of alphabetic characters. There are a total of 4 such tokens in string ***s***, and each token is printed in the same order in which it appears in string ***s***.

A. Source Code

*Soal1.java | Soal2.java | Soal3.java | Soal4.java | Soal5.j

```java
/**
 * @author Ari Maulana Hardan
 * NIM: 211511007
 * Soal 1 (Input dan Output)
 */

import java.util.*;

public class Soal1 {

    public static void main(String[] args) {
        Scanner scan = new Scanner(System.in);
        String s = scan.nextLine();
        scan.close();

        // Write your code here.
        s = s.trim();
        if (s.length() == 0) {
            System.out.println(0);
        } else {
            String[] strings = s.split("['!?,._@ ]+");
            System.out.println(strings.length);
            for (String str : strings)
                System.out.println(str);
        }
    }
```

B. Hasil Output

C:\WINDOWS\system32\cmd.exe | C:\WINDOWS\system32\cmd.exe

```
E:\ari nitip\POLBAN\PBO\Praktikum Pertemuan 2\Soal1>java Soal1.java
it wasn't home
4
it
wasn
t
home
```

2. Soal 2 (Input dan Output 2)

Java's System.out.printf function can be used to print formatted output. The purpose of this exercise is to test your understanding of formatting output using printf.

To get you started, a portion of the solution is provided for you in the editor; you must format and print the input to complete the solution.

Input Format

Every line of input will contain a String followed by an integer.
Each String will have a maximum of **10** alphabetic characters, and each integer will be in the inclusive range from **0** to **999**.

Output Format

In each line of output there should be two columns:

- The first column contains the String and is left justified using exactly **15** characters.
- The second column contains the integer, expressed in exactly **3** digits; if the original input has less than three digits, you must pad your output's leading digits with zeroes.

Sample Input

```
C 82
python 90
java 100
```

Sample Output

```
================================
c               082
python          090
java            100
================================
```

Explanation

Each String is left-justified with trailing whitespace through the first **15** characters. The leading digit of the integer is the **16th** character, and each integer that was less than **3** digits now has leading zeroes.

A. Source Code

Soal1.java | *Soal2.java | Soal3.java | Soal4.java | Soal5.java

```java
/**
 * @author Ari Maulana Hardan
 * NIM: 211511007
 * Soal 2 (Input Output 2)
 */

import java.util.Scanner;

public class Soal2 {

    public static void main(String[] args) {
            Scanner sc =new Scanner(System.in);
            System.out.println("================================");
            for(int i=0;i<3;i++){
                String s1=sc.next();
                int x=sc.nextInt();
                System.out.printf("%-14s %03d\n", s1, x);
            }
            System.out.println("================================");
    }
}
```

B. Hasil Output

C:\WINDOWS\system32\cmd.exe

```
E:\ari nitip\POLBAN\PBO\Praktikum Pertemuan 2\Soal2>java Soal2.java
================================
C 82
python 90
java 100
C              082
python         090
java           100
================================
```

3. Soal 3 (Berhitung)

Terdapat 5 buah operator matematika:
1. Penjumlahan, direpresentasikan dengan '+'.
2. Pengurangan, direpresentasikan dengan '-'.
3. Perkalian, direpresentasikan dengan '*'.
4. Pembagian, direpresentasikan dengan '/'.
5. Sisa hasil bagi, direpresentasikan dengan '%'.

Tugas anda adalah menggunakan operator-operator tersebut.

Input Format
Satu baris berisi A, operator, dan B, masing-masing dipisahkan sebuah spasi, yang menyatakan terdapat operasi "A operator B".

Output Format
Satu baris berisi sebuah bilangan bulat, hasil "A operator B".

Sample Input

```
1 + 1
```

Sample Output

```
2
```

Sample Input 1

```
1000 * 1000
```

Sample Output 1

```
1000000
```

Batasan
- $1 \leq A, B \leq 1.000$
- Operator dijamin salah satu dari '+', '-', '*', '/', atau '%'.
- Jika operator adalah '/', dijamin A habis dibagi B.

A. Source Code

```java
/**
 * @author Ari Maulana Hardan
 * NIM: 211511007
 * Soal 3 (Berhitung)
 */

package eksplor;

import java.util.Scanner;

public class Soal3 {
    public static void main (String[] args) {
        Scanner input = new Scanner(System.in);
        while(true) {
            String s = input.nextLine();
            String[] splitted = s.split(" ",-1);
            int A = Integer.parseInt(splitted[0]);
            int B = Integer.parseInt(splitted[2]);
            if (A < 1 || B > 1000) {
                System.out.println("Melebihi Batas Input!");
            } else {

                switch(splitted[1]) {
                    case "+":
                        System.out.print(A+B);
                        break;

                    case "/":
                        if (A % B != 0 ) {
                            System.out.println("Hasil tidak habis bagi");
                        } else {
                            System.out.print(A/B);
                        }
                        break;

                    case "%":
                        System.out.print(A%B);


                    case "-":
                        System.out.print(A-B);
                        break;

                    case "*":
                        System.out.print(A*B);
                        break;

                    default: System.out.println("Operator tidak dikenali");
                }
                break;
            }
        }
    }
}
```

B. Hasil Output

```
E:\ari nitip\POLBAN\PBO\Praktikum Pertemuan 2\Soal3>java Soal3.java
1 + 1
2
```

```
E:\ari nitip\POLBAN\PBO\Praktikum Pertemuan 2\Soal3>java Soal3.java
1000 * 1000
1000000
```

4. Soal 4 (Gaji Agent)

Dalam sebuah agent penjualan. Agent akan menerima gaji pokok sebesar Rp.500.000,00 perbulan. Agent akan menerima bonus penjualan sebesar 25% dari total penjualan item jika berhasil menjual minimal 40 item. Agent akan menerima bonus penjualan 35% dari total penjualan jika berhasil menjual diatas 80 item. Namun, Jika Agent menjual dibawah 15 item akan menerima denda pemotongan gajih pokok sebesar 15% dari total minus penjualan ke 15 item. Selain itu agen hanya menerima bonus 10% setiap itemnya. Harga setiap item adalah Rp. 50.000,00

Input Format
Satu baris berupa jumlah penjualan bulan ini.

Output Format
Satu baris berisi sebuah bilangan berupa gajih yang diterima.

Sample Input

```
35
```

Sample Output

```
675000
```

Sample Input 1

```
14
```

Sample Output 1

```
492500
```

A. Source Code

```java
/**
 * @author Ari Maulana Hardan
 * NIM: 211511007
 * Soal 4 Gaji Agent
 */

package eksplor;
import java.util.Scanner;

public class Soal4 {
    public static void main (String[] args)
    {
        //deklarasi variabel
        Scanner input = new Scanner(System.in);
        int gaji_pokok = 500000;
        float bonus = 0.1f;
        int harga_item = 50000;
        int penjualan = 0;
        int gaji_akhir = 0;

        penjualan = input.nextInt();
        if (penjualan > 40)
            bonus = 0.25f;
        else if (penjualan > 80)
            bonus = 0.35f;
        else if (penjualan < 15)
        {
            gaji_pokok-=(((15-penjualan)*50000)*0.15);
            bonus=0f;
        }
        System.out.println(gaji_pokok + (int)(bonus*(penjualan*harga_item)));
    }
}
```

B. Hasil Output

```
E:\ari nitip\POLBAN\PBO\Praktikum Pertemuan 2\Soal4>java Soal4.java
35
675000
```

```
E:\ari nitip\POLBAN\PBO\Praktikum Pertemuan 2\Soal4>java Soal4.java
14
492500
```

5. Soal 5 (Buka Tutup Jalan)

Buka tutup jalan merupakan hal yang lumrah ada di pengaturan jalan khususnya di Indonesia. Buka tutup jalan kali ini memiliki aturan yang disempurnakan. Setiap empat mobil yang lewat digabung setiap angkanya. Jika (gabungan angka tersebut dikurangi 999999) hasilnya dibagi 5 sisa bagi hasilnya 0 maka 4 mobil tersebut harus berhenti, dan memperbolehkan mobil lainnya dari arah bersebrangan untuk jalan. Begitu terus sebaliknya.

Input Format
Satu baris berupa plat number untuk 4 mobil

Output Format
Berupa tulisan "Jalan" atau "Berhenti

Sample Input

```
3555 2333 4555 6660
```

Sample Output

```
berhenti
```

Sample Input 1

```
1223 1111 2222 4449
```

Sample Output 1

```
jalan
```

A. Source Code

```java
/**
 * @author Ari Maulana Hardan
 * NIM: 211511007
 * Soal 5 (Buka Tutup Jalan)
 */

package eksplor;

import java.util.Scanner;

public class Soal5 {
    public static void main (String[] args) {
        Scanner input = new Scanner(System.in);
        String plat4 = input.nextLine();
        String[] split = plat4.split(" ");
        String plat = split[0] + split[1] + split[2] + split[3];

        long sum = Long.parseLong(plat);
        sum -= 999999;

        if(sum % 5 == 0) {
            System.out.println("jalan");
        } else {
            System.out.println("berhenti");
        }
    }
}
```

B. Hasil Output

```
E:\ari nitip\POLBAN\PBO\Praktikum Pertemuan 2\Soal5>java Soal5.java
3555 2333 4555 6660
berhenti
```

```
E:\ari nitip\POLBAN\PBO\Praktikum Pertemuan 2\Soal5>java Soal5.java
1223 1111 2222 4449
jalan
```

6. Soal 6 (Big Number)

In this problem, you have to add and multiply huge numbers! These numbers are so big that you can't contain them in any ordinary data types like a long integer.

Use the power of Java's BigInteger class and solve this problem.

Input Format
There will be two lines containing two numbers, ***a*** and ***b***.

Constrains
a and ***b*** are non-negative integers and can have maximum **200** digits.

Output Format
Output two lines. The first line should contain ***a*** + ***b***, and the second line should contain ***a*** x ***b***. Don't print any leading zeros.

Sample Input

```
2345
35
```

Sample Output

```
2380
82075
```

Explanation

2345 + 35 = 2380
2345 x 35 = 82075

A. Source Code

```java
/**
 * @author Ari Maulana Hardan
 * NIM: 211511007
 * Soal 6 (Big Number)
 */

package eksplor;
import java.util.Scanner;
import java.math.*;

public class Soal6 {
    public static void main(String[] args){
        Scanner scan = new Scanner(System.in);
        BigInteger a = new BigInteger(scan.nextLine());
        BigInteger b = new BigInteger(scan.nextLine());
        BigInteger tambah = a.add(b);
        BigInteger kali = a.multiply(b);

        System.out.println(tambah+"\n"+kali);
    }
}
```

B. Hasil Output

```
E:\ari nitip\POLBAN\PBO\Praktikum Pertemuan 2\Soal6>java Soal6.java
2345
35
2380
82075
```

7. Soal 7 (Array)

```
public class MDArrayJava
{
    public static void main(String[] args)
    {
        //One Dimensional Arrays
        int[] fisrtArray = {2, 5, 3};
        int[] secondArray = {9, 5, 3};
        int[] thirdArray = {2, 4, 9};
        int[] fourthArray = {10, 11, 12};
        int[] fifthArray = {13, 14, 15};
        int[] sixthArray = {16, 17, 18};
        int[] seventhArray = {19, 20, 21};
        int[] eighthArray = {22, 23, 24};
        int[] ninthArray = {25, 26, 27};

        //Two Dimensional Arrays
        int[][] twoDimensionalArray1 = {fisrtArray, secondArray,
thirdArray};

        int[][] twoDimensionalArray2 = {fourthArray, fifthArray,
sixthArray};

        int[][] twoDimensionalArray3 = {seventhArray, eighthArray,
ninthArray};

        //Three Dimensional Array
        int[][][] threeDimensionalArray = {twoDimensionalArray1,
twoDimensionalArray2, twoDimensionalArray3};

        _____

    }
}
```

Tambahkan kode agar output yang dihasilkan adalah sebagai berikut :

```
{{2 5 3 } {9 5 3 } {2 4 9 } }
{{10 11 12 } {13 14 15 } {16 17 18 } }
{{19 20 21 } {22 23 24 } {25 26 27 } }
```

A. Source Code

```
package eksplor;

/**
 * @author Ari Maulana Hardan
 * NIM: 211511007
 * Soal 7 (Array)
 */

public class Soal7
{
    public static void main(String[] args)
    {
        //One Dimensional Arrays
        int[] fisrtArray = {2, 5, 3};
        int[] secondArray = {9, 5, 3};
        int[] thirdArray = {2, 4, 9};
        int[] fourthArray = {10, 11, 12};
        int[] fifthArray = {13, 14, 15};
        int[] sixthArray = {16, 17, 18};
        int[] seventhArray = {19, 20, 21};
        int[] eighthArray = {22, 23, 24};
        int[] ninthArray = {25, 26, 27};
        //Two Dimensional Arrays
        int[][] twoDimensionalArray1 = {fisrtArray, secondArray,
                thirdArray};
        int[][] twoDimensionalArray2 = {fourthArray, fifthArray,
                sixthArray};
        int[][] twoDimensionalArray3 = {seventhArray, eighthArray,
                ninthArray};
        //  Three Dimensional Array
        int[][][] threeDimensionalArray = {twoDimensionalArray1,
                twoDimensionalArray2, twoDimensionalArray3};
        //Nested loop for display
        for(int z=0; z < 3; z+=1) {
            System.out.print("{");
            for(int y=0; y < 3; y+=1) {
                System.out.print("{");
                for(int x=0; x < 3; x+=1) {
                    System.out.print(threeDimensionalArray[z][y][x]+" ");
                }
                System.out.print("} ");
            }
            System.out.print("}");
            System.out.println();
        }

    }
}
```

B. Hasil Output

```
E:\ari nitip\POLBAN\PBO\Praktikum Pertemuan 2\Soal7>java Soal7.java
{{2 5 3 } {9 5 3 } {2 4 9 } }
{{10 11 12 } {13 14 15 } {16 17 18 } }
{{19 20 21 } {22 23 24 } {25 26 27 } }
```

Lampiran

Link GitHub *https://github.com/arimaulanahardan/LearnJava-Praktikum2.git*

Nama-nama teman yang membantu untuk menyelesaikan persoalan diatas adalah teman yang melakukan presentasi didepan diantaranya :

- Fathur : Soal 1 dan 3
- Ardi : Soal 2
- Rofi : Soal 4
- Hilman : Soal 6
- Fathan : Soal 5
- Aldrin : Soal 7