

Programming III

Laboratory 2

Objectives

- Working with `String` class
- Working with arrays/matrixes in Java. `Arrays` class

Exercises

1. Create an array, a , containing n numbers random generated. The dimension of the array, n , is passed like argument on command line. Resolve the following requests using `Arrays` class from Java library:

- a) Display the array, a .
- b) Sort the array and display the sorted array, a .
- c) Find if a value, x , is contained in the array, a .
- d) Copy a subarray of the array, a , in a new array, the start and stop indexes for coping are random generated.

2. Get a sentence like an argument from command line and resolve the following requests:

- a) Find how many words are in the sentence. A word can be separated by one ore multiple spaces or tabs.
- b) Count the numbers of palindrome words from the sentence
- c) Display the last 10 characters from the sentence.
- d) Transform the sentence to uppercase and lowercase.
- e) Find if a substring is present in the sentence.
- f) Convert the sentence based on the following rule each vocal is replaced with vocal'p'vocal. Ex: i -> ipi, a->api

3. Initialize with constant values two arrays a and b of real numbers. Construct and display:

- a) The matrix m where the matrix elements are calculated in the following way
$$m[i,j]=a[i]*b[j]$$
- b) The vector v where the vector elements are calculated in the following way
$$v[i]=\min\{a[i], b[i]\}$$

4. Execute the following code sequence and explain the obtained results.

```
public class TestString{
    public static void main(String[] args) {

        System.out.println(new String("test").equals("test"));
    }
}
```

```
        System.out.println(new String("test") == "test");

        System.out.println(new String("test") == new String("test"));

        System.out.println("test" == "test");

        System.out.println("test" == "te" + "st");

        System.out.println("test" == "!test".substring(1));

    }

}
```