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Wintersemester 21/22

Exercises for the Class

Elements of Computer Science: Programming

Live Assignment 04

Submission of solutions until 6:00 p.m.
at `moodle.uni-trier.de`

- Submission that can't be compiled are rated with **0** points!
- Please comment your solutions, otherwise you can lose points!

Exercise 1 (Evaluation: predefined `main` method) (10 Points)

Implement a method

```
public static String rearrange(String word, int[] sequence)
```

that is able to rearrange the characters in a given word `word` according to the given index values in the sequence array `sequence`. In case `sequence` contains numbers < 0 or $>=$ $word.length()$ return the String "Invalid Sequence".

Examples:

Word: juiceApple

Sequence: 5 6 7 8 9 0 1 2 3 4

Result: Applejuice

Word: juiceApple

Sequence: 5 6 7 8 9 0 1 2 3 10

Result: Invalid Sequence (since the highest index in the given word is 9)

Exercise 2 (Evaluation: predefined `main` method) (10 Points)

Implement a **recursive method**

```
public static String reverse(String string)
```

that is able to reverse the String (`string`). For example the call `reverse("1234")` should lead to `"4321"` as output. Note that it is important that you implement the method in a recursive way. Other solutions are not accepted.

Hint: Use the methods charAt() and substring() of the `String` class.

Exercise 3 (Evaluation: predefined `main` method) (15 Points)

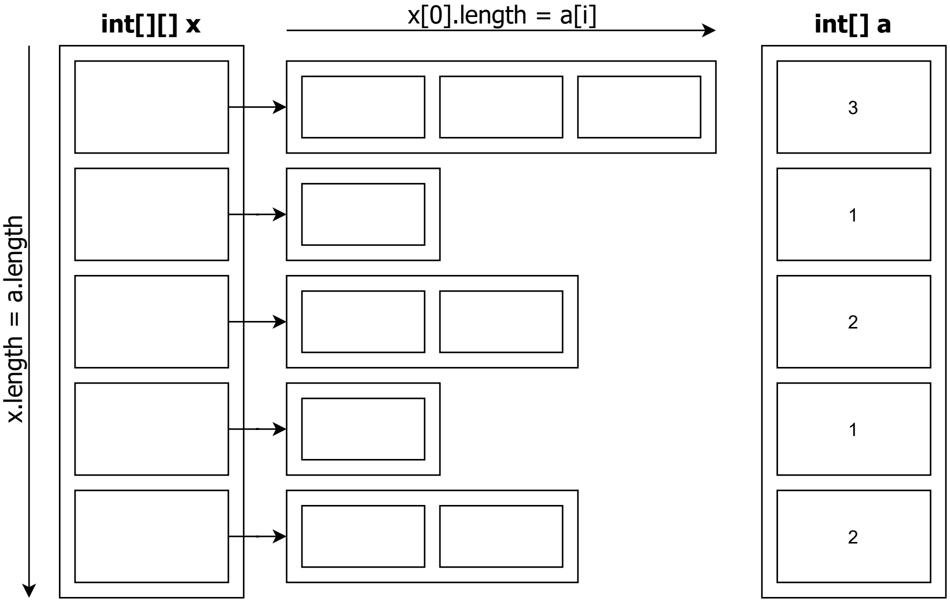
Implement the method

```
static int[][] createArray(int[] a)
```

A call of the form `int[][] x = createArray(...)` shall generate in array `x` a two-dimensional array. The size of the "first" dimension is defined by `a.length`. The size of each individual array, that will be contained in each entry of x (e.g. x[i] for $i = 0, 1, ...,$`a.length`), is defined by a[i].

Hint: The concrete contents of `m` are unimportant, it is here only about the allocation in correct form and size.

Visual Example:



Exercise 4 (Evaluation: predefined `main` method) (15 Points)

Implement the method

```
static int countUniqueWords(String s)
```

The method receives as String parameter `s` a sentence and shall count the contained unique words. Words in a String are always split by a blank space. The method should be case insensitive, which means `"this"` and `"This"` are the same word.

Example:

`countUniqueWords("This␣is␣an␣example")` ⇝ 4

	0	1	2	3
`words`	*This*	*is*	*an*	*example*

`countUniqueWords("This␣this␣is␣is␣a␣Test")` ⇝ 4

	0	1	2	3	4	5
`words`	*This*	*this*	*is*	*is*	*a*	*Test*

`countUniqueWords("Computer␣Science␣is␣Is␣iS␣fun")` ⇝ 4

	0	1	2	3	4	5
`words`	*Computer*	*Science*	*is*	*Is*	*iS*	*fun*