

Programming I - Laboratory lesson 4

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Array

A

Index	0	1	2	3	...	n-4	n-3	n-2	n-1
value	a_1	a_2	a_3	a_4	...	a_{n-3}	a_{n-2}	a_{n-1}	a_n

Exercise

Suppose that we have string *primorska* = "University of Primorska".

- Create array that will consist of words from string *primorska*.
- Create array that will consist of all characters from string *primorska*.

Print:

- UNIVERSITY OF PRIMORSKA
- University
of
Primorska

Exercise

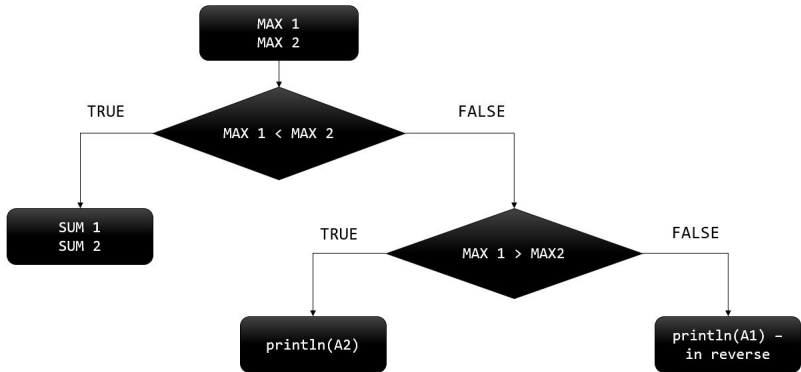
Create two arrays with same length n :

- *Array A with integer numbers that user will insert*
- *Array B with random numbers from 0 to 100.*
- *Find sum of both arrays,*
- *Find maximum values of both array and compare them*
 - *if maximum of 1st is lower then maximum of 2nd array:
print sums of both arrays*
 - *if maximum of 1st is greater then maximum of 2nd array
print 2nd array (use println)*
 - *otherwise print first array in reverse.*

A

Index	0	1	2	3	4	5	6	7	8
value	3	10	-4	12	24	2	0	0	5

int max = 3;			
1	max = 3	max < 10	max = 10
2	max = 10	max < -4	-
3	max = 10	max < 12	max = 12
4	max = 12	max < 24	max = 24
5	max = 24	max < 2	-
6	max = 24	max < 0	-
7	max = 24	max < 0	-
8	max = 24	max < 5	-
return max (max = 24)			



Exercise

Implement program that check if given word (sentence) is palindrome. (simple way - including sum that is used in for-loop)

Explanation: *Every time when we check equality of first and last letter we add 1 to our sum. On the end of for-loop if sum is same as length of array we have palindrome.*

A palindrome is a word, number, phrase, or other sequence of characters which reads the same backward as forward, such as *madam* or *race car* or the number *10201*. Sentence-length palindromes may be written when allowances are made for adjustments to capital letters, punctuation, and word dividers.

- input string, make array from string (deal: *in sentences there is no capital letters, punctuation and word dividers*)
- use for loop to check if first letter is same as last, second as last-1 ...
hint: first element of string is on position 0.
- print if something is or is not palindrome.

The complete syntax for defining a Java method is:

```
modifier static returnType nameOfMethod (Parameter List)
{ // method body }
```

- **modifier** - defines access type whether the method is public, private and so on.
- **static** - If you use static keyword in a method then it becomes a static method. Static methods can be called without creating an instance of a class. For example, the `sqrt()` method `Math.sqrt()`.
- **returnType** - A method can return a value. (exmpl: int, float, double etc.), native objects (String, Map, List etc.), or any other built-in and user defined objects.
- **nameOfMethod** - The name of the method is an identifier.
- **Parameters (arguments)** - Parameters are the values passed to a method. You can pass any number of arguments to a method.
- **Method body** - It defines what the method actually does, how the parameters are manipulated with programming

Exercise

Create methods that:

- form an array with length n and random elements
- sum elements on same position in two arrays and print final array
- produce dot product of two vectors

A	10	-3	25	7	0
+					
B	1	14	0	32	-3
=					
C	11	11	25	39	-3

Dot product of two vectors $\vec{a} = a_1, a_2, \dots, a_n$ and $\vec{b} = b_1, b_2, \dots, b_n$ is defined as:

$$\vec{a} \cdot \vec{b} = \sum_{i=1}^n a_i \cdot b_i = a_1 \cdot b_1 + a_2 \cdot b_2 + \dots + a_n \cdot b_n.$$