(Object Oriented) Programming Techniques

2 laboratory work „Basics of Java language“

Aim of the work – get know the principles of Java language and to be able creating not complex calculations.

Workflow and tasks or the work:

1. Create a class (name it LW2) with main() method.
2. In the class file create a comment of multiple lines and write Your name, surname, group code and list of task, from 7 to 15 tasks.
3. In source code to apply several one line comments, which explain code
4. In the main() method create a two-dimensional array of integer type and one-dimensional array.
5. Two-dimensional array should have n rows and m columns. n and m values should be gathered from Your student name and surname: n – how much letters has you name; m – – how much letters has you surname. For example, if Your name and surname is Alex Kondrat, the n value is 4, while m value is 7.
6. Fill the two-dimensional array with random numbers (from n to m). *After filling it with a random numbers – print it in a form of table (rows and columns).*
7. One-dimensional array, which would store the average values or each row. Print all the averages to the screen. (if n number is even)
8. One-dimensional array, which would store the average values or each column. Print all the averages to the screen. (if n number is odd)
9. Calculate and output how many values in the two-dimensional array are equal to n (count letters of you name)
10. Find and print the maximum value of one-dimensional array, excluding the n element (if n number is even)
11. Find and print the minimum value of one-dimensional array, excluding the m element (if n number is odd)
12. Find is the average of n row greater than the average of m column (if n number is even)
13. Find is the average of n row greater than the average of m column (if n number is odd)
14. Find and print how many values in the two-dimensional array are odd number, excluding the n element (if n number is odd)
15. Find and print how many values in the two-dimensional array are even number, excluding the m element (if n number is even)
16. Upload the .java file or archive file of project into the course (Moodle system).

Additional material:

For random number generation some solutions can be used:

- Math.random() generates a floating point value from 0 to 1. You should use mathematical actions to convert it to interval [min; max] and after getting the value – convert it to integer.
- You can create an object of class Random (Random rand = new Random();). Then by using the object variable the random integer can be generated by using rand.netInt(max), where max is the maximum value-1, ant the minimum value is 0.
- Formatting Numeric Print Output. https://docs.oracle.com/javase/tutorial/java/data/numberformat.html
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Additional task:

1. *Print two-dimensional array in a form of table (rows and columns).*
2. *Create several methods for each action: generateArray, printArray, calculateAverage and etc.*