

Structured and Object Oriented Programming
Laboratory #5
Recursive vs Iteration Methods

Task 1. (obligatory)

Implement the following methods to calculate:

1. The factorial for a given number;
`public static int factorial(int x) {`
2. The sum number of values from x to y inclusive.
`public static int sumXY(int x, int y) {`
3. The number of occurrences of a digit in an integer value; it should work for all values of x > 0
`public static int numberDigit(int x, int digit) {`
For numberDigit(12322,2) should return 2
4. The number of digits in an integer value; it should work for all values of x > 0
`public static int numberLength(int x) {`

All of the above methods must be implemented in two versions: iterative and recursive.
Append 'R' to the names of recursive versions.

Task 2. (optional)

1. Calculate the total length of all *.txt files in a given folder
2. Calculate the total length of all *.txt files in a given folder and all of its subfolders.

Remarks:

1. In the Task 2 you may use the FILE class and example presented in the during the 5th lecture
2. To see if a file name ends with ".txt" you can use the :
 - a. The getName() method of the File class
 - b. The endsWith method of the String class:
`if (fileItem.getName().endsWith(".txt"))`
3. Do not forget about calling the methods to test their behaviour
4. Prepare data to test your methods and demonstrate the solutions to the teacher.

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