

Documentation implementation for the first task in the IPP 2018/2019
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1 Problem description

The task was to create a script type of filter, which performs code analysis. This script loads source code from standard input. This code is written in non-structured imperative language IPPcode19.

The script checks the lexical and syntactical correctness of the code and generates an XML representation of the program on the standard output.

2 Description of the problem solution

The program contains two classes. `Class Parser` and `class CheckArgumentAndError`.

2.1 Class CheckArgumentAndError

`Class CheckArgumentAndError` contains public method `parseArguments`, that is for check and parse arguments. In this class is another public methods. Method `showHelp` for printing help and method `errorMessage`, which print to the standard error output error code and error message according to the error.

2.2 Class Parser

`Class parser` contains one main method `parse` and several helpers methods. The `parse` method reads the input using `fgets(STDIN)` function and saves it to the `$line` variable. Subsequently, comments and whitespaces are removed and the header `IPPcode19` is checked if the header is not in the source file, it is an error and on the standard error output is printed `Missing header`.

We use the while cycle, the condition will read the input until it is the end of the file. In this while cycle, whitespaces and comments are deleted on each line and input is split with `preg_split` into the word. `Preg_split` creates an array that has one word stored in each index of the array.

Index number zero has to be the name of the instructions if the index number zero is not the name of the instruction it is an error and error code is 22.

Lexical and syntactic analysis is performed in the switch statement. Lexical analysis is performed by regular expressions. Regular expressions are stored as public attributes of the `Parser` class. The `parser` class contains several helpers method. Method `checkSymbol` for better readable code and deleting duplicates of the code and several method for working with XML `addSymbToXML`, `addVarToXML`, `addLabelToXML`, `addTypeToXML`

3 Generating of XML

The `DOMDocument` is used to generate XML. `DOMDocument` is very good for simple work with XML elements and attributes. Statement `formatOutput = true` enabled correct indent of individual elements.