Implementation Documentation for 1. Task to IPP 2018/2019

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Program

Script `parse.php` is reading code in IPPcode19 from stdin, perform lexical and syntactical analysis and prints XML representation of code on stdout. Solution also include extension STAT allowing to gather information about input code.

Error handling

In case of any error during lexical or syntactical check is called function `error()`, which prints error message on stderr and exits program with error code.

Input

For reading stdin is implemented function `readWord()`. This function returns next word from stdin (word == string without white-space). All white-spaces and comments between words are ignored.

Main body

Main body of program is in function `parse()`, which is calling `readWord()` and sending it to `handleInstruction()` until stdin is empty or an error occurred.

Syntactical analysis

`handleInstruction()` is made of switch with all instructions. Based on instruction are called expect functions (`expectVar(), expectSymb(),` …) to check arguments by reading word from stdin, gather info about them and store it using `Instruction` class(`Instruction.php`).

Lexical analysis

Instructions are checked in `handleInstruction()` using switch. If word is not in switch an `error()` is called. For lexical analysis on arguments is used series of function (`isInt(), isString(),` …). Those functions are using regular expressions returning bool result.

XML output

In the beginning is printed on stdout XML header. Instructions and all their data are printed right after they are checked. In the end of program if no error occurred, XML foot is printed on stdout.

STAT extension

For this functionality is implemented Stats class (`Stats.php`) used for storing data about input code and printing them to output file in the end of program. Also check of program arguments had to be extended. Implemented in function `handleStatsArguments()`.