Documentation of Project Implementation for IPP 2022/2023

Name and surname: Jan Osuský
Login: xosusk00

Task:

The task of the first part of the project to IPP was a complier parse.php that is suppose to convert IPPcode23 to its XML representation.

Solution:

For my solution I decided to implement extension of the OOP design. Therefore the final solution consist of 6 classes linked to the main file of parse.php; In file parse.php are loaded and parsed arguments from STDIN, created instances of classes ErrHandler and StatsHandler. Parsed arguments are checked in function checkArgument(). Checked arguments are put into a array and that is given to StatsHandler instance. Afterwards instance of Parser is created and the main function of parse() is called. Instance of Parser repeatedly calls instance of Scanner that loads the IPPcode23 by lines. Scanner returns an array of objects Token. Afterwards Parser parse the lines by checking the Token attributes. Token has an attribute of type and two attributes of Value A and B, due to behavior of constants in IPPcode23. For checking the right amount and type of arguments that follow instructions in IPPcode23 parser utilizes methods for the class CheckArgs. If the line/set of tokens passes the parsers test a Xml element is generated using the DomDocument class.

Design patters

Almost all of the classes implements a design pattern. Mainly the singleton pattern is applied as it is implemented by all the classes except Token class. For the case of a compiler I find quite hard to implement other patterns. We just need more require just one instance of scanner, parser etc. Thankfully I found one spot where an other patter could be applied and it is in Scanner. Scanner it self implements Singleton patter, but at the same time Scanner implements Factory pattern for the Class Token at least partially.

Resume

Overall parse.php an fully working program that suits all the requirements, however it’s definitely not perfect. The design could be better performed, because at the end of the project it leaded to a lot of duplicated code.