

Implementation Documentation for Task 1 of IPP 2023/2024

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1 Code Analysis and Argument Handling

I wrote a Python script to handle Task 1 of IPP 2023/2024. This script made for analyzing source code in the IPPcode24 format. It goes through the code line by line, making sure it adheres to lexical and syntactic rules using regular expressions. I ensured that the script checks operand counts and types, including variables, constants, labels, and types. To manage command-line arguments efficiently, I implemented the `argparse` module. If there are too many arguments provided after `--help`, the script handles exit with an error code of 10 using `action="store_true"`.

2 Instruction Validation and Error Handling

I defined functions to add argument elements to instructions and validate variables and scopes. These functions utilize regex patterns that align with IPPcode24 specifications. Afterward, the script constructs a well-formed XML representation of the program and prints out the prettified XML output. To handle various error scenarios effectively, I implemented custom exceptions such as `HeaderEx (21)`, `OpCodeEx (22)`, and `LexEx (23)`. Whenever these exceptions are encountered, I ensured that the script terminates with the appropriate error code.