Documentation/Manual for Python Interpret
II. project
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Name: Gabriel Biel

Login: xbielg00

Introduction:

This Python program serves as an interpreter for XML documents. The implementation primarily consists of a Parser object, Instruction and its subclasses, and a Context object. In the following sections, we'll discuss the inner workings of each component and their interactions.

Parser:

The Parser object is responsible for parsing command line arguments and setting up input streams for both the source file and user input. It parses the source code in XML format and its main function is *getInstruction()*, which reads, validates, and creates instructions along with their arguments.

Instruction Factory:

The Parser utilizes a factory method called *instructionFactory* to create Instruction objects based on their names. This method implements the Factory Method pattern, which provides an interface for creating objects in a superclass but allows subclasses to alter the type of objects that will be created.

Instruction:

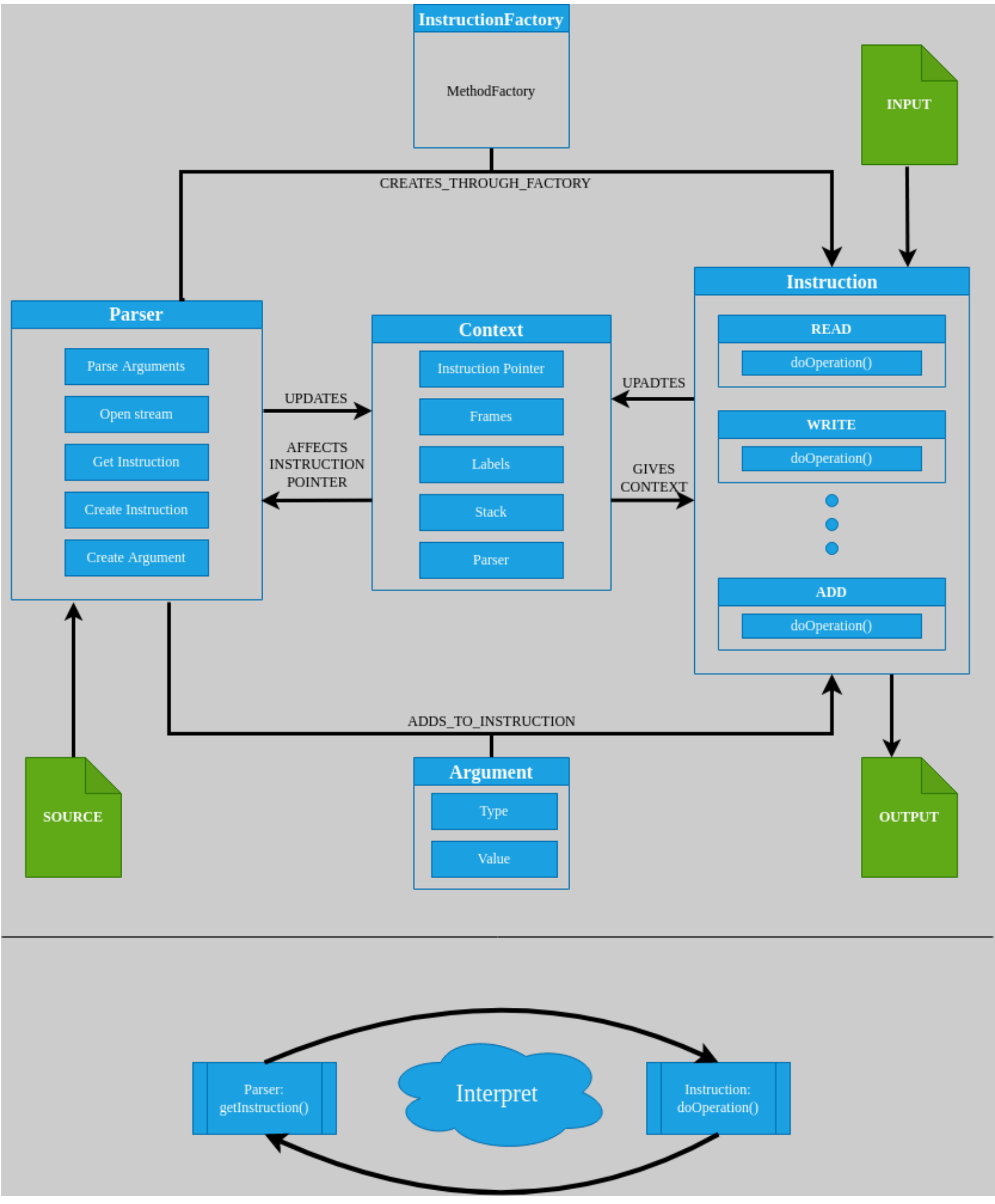
The Instruction class serves as a pseudo-interface for all instruction objects, as Python doesn't have built-in support for interfaces like other languages. Each instruction subclass inherits from the Instruction class and implements the *doOperation*() method, which contains the specific behavior for that instruction.

Context:

The Context object ties everything together by keeping track of variables, labels, stacks, frames, and more. It provides various methods to navigate and manipulate its attributes more easily. This object is responsible for maintaining the state of the interpreter and facilitating communication between different components.

Data-Flow Diagram:

On the next page there is a data-flow diagram that represents the inner workings of the interpreter and the relationships between the objects.


InstructionFactory
MethodFactory
INPUT
CREATES_THROUGH_FACTORY
Instruction
READ
doOperation()
WRITE
doOperation()
ADD
doOperation()
Parser
Parse Arguments
Open stream
Get Instruction
Create Instruction
Create Argument
Context
Instruction Pointer
Frames
Labels
Stack
Parser
UPDATES
AFFECTS INSTRUCTION POINTER
UPADTES
GIVES CONTEXT
ADDS_TO_INSTRUCTION
SOURCE
Argument
Type
Value
OUTPUT

Parser: getInstruction()
Interpret
Instruction: doOperation()