

Documentation of Project Implementation for IPP 2022/2023

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1. Design concept

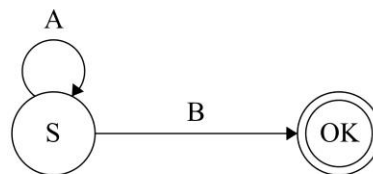
The analysis of the `IPPcode23` code is based on a simple combination of finite-state control and regular expressions. The parser only needs to read lines from the `STDIN`, extract the words, and process them, creating a XML representation. A scanned keyword in the first position in a string defines an instruction. Unlike a keyword, each subsequent operand is matched against a regular expression. This controls the syntax of a single instruction.

The script has one allowed parameter `--help`, which displays description with return codes.

2. Specific solution method

a. Header search

Before parsing instructions, a separate loop was created to look for the `.IPPcode23` header. If it fails, the script is terminated. Its work is reflected in the FSM below:



Where

OK – the header found

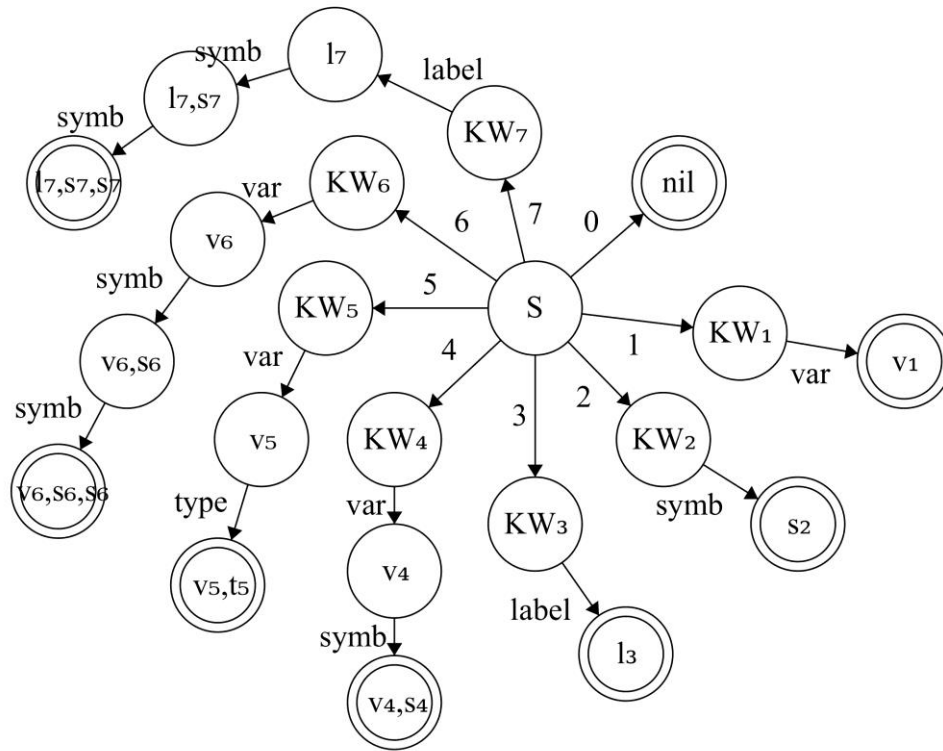
A – `/^\s*(#.*)?$/`

B – `/^\s*\s.ippcode23\s*(#.*)?$/`

b. Line-by-line processing of instructions

A loop that reads and parses a single line. Its task, in particular, is to get rid of and ignore comments, multiple white characters and blank lines. Depending on the keyword, the XML representation of the instruction is checked and generated. Keywords are grouped by the set of operands they belong to.

The work of the cycle is reflected in the machine below.



Where

v, s, l, t – variable, symbol, label or type

1-7 – groups

KW_n – a specific word from the group

var, sym, label, type – variable, symbol, label or type token