# CILA

Language specification

Jakub Mendyk

April 25, 2019

## 1 Grammar

| | | |
|---|---|---|
| integer | ::= | *digit* \| integer *digit* |
| keyword | ::= | if \| then \| else \| fi \| while \| do \| od \| div \| mod \| or \| and \| not |
| alfanum | ::= | *letter* \| alfanum *letter* \| alfanum *digit* |
| ident | ::= | alfanum (not in keyword) |
| ⟨program⟩ | ::= | ⟨instruction⟩\| ⟨program⟩⟨instruction⟩ |
| ⟨instruction⟩ | ::= | **ident** := ⟨arith_expr⟩; |
| | \| | **if** ⟨logic_expr⟩**then** ⟨program⟩**fi** |
| | \| | **if** ⟨logic_expr⟩**then** ⟨program⟩**else** ⟨program⟩**fi** |
| | \| | **while** ⟨logic_expr⟩**do** ⟨program⟩**od** |
| ⟨logic_expr⟩ | ::= | ⟨logic_summand⟩\| ⟨logic_expr⟩**or** ⟨logic_summand⟩ |
| ⟨logic_summand⟩ | ::= | ⟨logic_multiplicand⟩\| ⟨logic_summand⟩**and** ⟨logic_multiplicand⟩ |
| ⟨logic_multiplicand⟩ | ::= | ⟨rel_expr⟩\| **not** ⟨logic_multiplicand⟩ |
| ⟨rel_expr⟩ | ::= | ⟨arith_expr⟩⟨rel_op⟩⟨arith_expr⟩\| ( ⟨logic_expr⟩) |
| ⟨rel_op⟩ | ::= | = \| < \| > \| <= \| >= \| <> |
| ⟨arith_expr⟩ | ::= | ⟨arith_summand⟩\| ⟨arith_expr⟩⟨summ_op⟩⟨arith_summand⟩ |
| ⟨arith_summand⟩ | ::= | ⟨arith_multiplicand⟩\| ⟨arith_summand⟩⟨mult_op⟩⟨arith_multiplicand⟩ |
| ⟨arith_multiplicand⟩ | ::= | ⟨simple_expr⟩\| ⟨simple_expr⟩^ ⟨arith_multiplicand⟩ |
| ⟨simple_expr⟩ | ::= | ( ⟨arith_expr⟩) \| **integer** \| **ident** |
| ⟨summ_op⟩ | ::= | + \| − |
| ⟨mult_op⟩ | ::= | ***** \| **div** \| **mod** |