1 Literals

⟨*literal*⟩ ::= ⟨*integer-literal*⟩ | ⟨*string-literal*⟩ | ⟨*bool-literal*⟩

⟨*integer-literal*⟩ ::= [`-`], ⟨*digit*⟩, {⟨*digit*⟩}

⟨*digit*⟩ ::= `0` | ... | `9`

⟨*string-literal*⟩ ::= `"`, {⟨*ASCII-character*⟩}, `"`

⟨*bool-literal*⟩ ::= `true` | `false`

2 Types

⟨*type*⟩ ::= ⟨*simple-type*⟩ | ⟨*function-type*⟩

⟨*simple-type*⟩ ::= `Int` | `Bool` | `String` | ⟨*tuple-type*⟩

⟨*tuple-type*⟩ ::= `(` ⟨*type*⟩ `,` ⟨*type*⟩ {`,` ⟨*type*⟩ } `)`

⟨*function-type*⟩ ::= ⟨*function-type-no-arguments*⟩ | ⟨*function-type-with-arguments*⟩

⟨*function-type-no-arguments*⟩ ::= `Void` `->` ⟨*function-arg-type*⟩

⟨*function-type-with-arguments*⟩ ::= ⟨*function-arg-type*⟩ {`->` ⟨*function-arg-type*⟩} `->` ⟨*function-arg-type*⟩

⟨*function-arg-type*⟩ ::= ⟨*simple-type*⟩ | ⟨*function-arg-function-type*⟩

⟨*function-arg-function-type*⟩ ::= `(` ⟨*function-type*⟩ `)`

3 Expressions

⟨*expression*⟩ ::= ⟨*expression-0*⟩ {`::` ⟨*expression-0*⟩}

⟨*expression-0*⟩ ::= ⟨*expression-1*⟩ | ⟨*logical-expression*⟩

⟨*logical-expression*⟩ ::= ⟨*logical-expression-1*⟩ {`||` ⟨*logical-expression-1*⟩}

⟨*logical-expression-1*⟩ ::= ⟨*logical-expression-2*⟩ {`&&` ⟨*logical-expression-2*⟩}

⟨*logical-expression-2*⟩ ::= ⟨*expression-1*⟩ ⟨*logical-operator*⟩ ⟨*expression-1*⟩

⟨*logical-operator*⟩ ::= < | > | `<=` | `>=` | `==` | `!=`

⟨*expression-1*⟩ ::= ⟨*expression-2*⟩ {(`+` | `-`) ⟨*expression-2*⟩}

⟨*expression-2*⟩ ::= ⟨*term*⟩ {(`*` | `/` | `%`) ⟨*term*⟩}

⟨*term*⟩ ::= ⟨*literal*⟩ | ⟨*identifier*⟩ | ⟨*call-expression*⟩ | ⟨*parentheses-expression*⟩ | ⟨*lambda-expression*⟩ | ⟨*tuple-expression*⟩

⟨*tuple-expression*⟩ ::= `(` ⟨*expression*⟩ `,` ⟨*expression*⟩ { `,` ⟨*expression*⟩ } `)`

⟨*call-expression*⟩ ::= ⟨*term*⟩ `(` [⟨*expressions-list*⟩] `)`

⟨*expressions-list*⟩ ::= ⟨*expression*⟩ [`,` ⟨*expressions-list*⟩]

⟨*parentheses-expression*⟩ ::= `(` ⟨*expression*⟩ `)`

⟨*lambda-expression*⟩ ::= `lambda` ⟨*arguments-list*⟩ `->` ⟨*function-arg-type*⟩ ⟨*code-block*⟩

4 Statements

⟨*statement*⟩ ::= ⟨*statement-term*⟩ [⟨*statement*⟩]

⟨*statement-term*⟩ ::= ((⟨*simple-declaration*⟩ | ⟨*print-statement*⟩ | ⟨*assign-statement*⟩ | ⟨*postfix-statement*⟩ | ⟨*expression*⟩) `;`) | ⟨*flow-statement*⟩ | ⟨*function-declaration*⟩

⟨*print-statement*⟩ ::= `print` ⟨*expressions-list*⟩

⟨*assign-statement*⟩ ::= ⟨*tuple-assign-statement*⟩ | ⟨*var-assign-statement*⟩

⟨*tuple-assign-statement*⟩ ::= ⟨*tuple-identifiers*⟩ `=` ⟨*expression*⟩

⟨*var-assign-statement*⟩ ::= ⟨*identifier*⟩ ⟨*assign-operator*⟩ ⟨*expression*⟩

⟨*assign-operator*⟩ ::= `=` | `-=` | `+=` | `*=` | `/=` | `%=`

⟨*postfix-statement*⟩ ::= ⟨*identifier*⟩ (`++` | `--`)

⟨*flow-statement*⟩ ::= ⟨*if-statement*⟩ | ⟨*while-statement*⟩ | ⟨*for-statement*⟩ | ⟨*return-statement*⟩

⟨*if-statement*⟩ ::= `if` ⟨*expression*⟩ ⟨*code-block*⟩ [`else` ⟨*code-block*⟩]

⟨*while-statement*⟩ ::= `while` ⟨*expression*⟩ ⟨*code-block*⟩

⟨*for-statement*⟩ ::= `for` ⟨*identifier*⟩ `in` ⟨*range*⟩ ⟨*code-block*⟩

⟨*range*⟩ ::= ⟨*expression*⟩ (`...` | `..<`) ⟨*expression*⟩

⟨*return-statement*⟩ ::= `return` ⟨*expression*⟩

⟨*code-block*⟩ ::= `{` [⟨*statement*⟩] `}`

5 Declarations

⟨*simple-declaration*⟩ ::= ⟨*variable-declaration*⟩ | ⟨*constant-declaration*⟩

⟨*constant-declaration*⟩ ::= `let` (⟨*identifier*⟩ | ⟨*tuple-identifiers*⟩) [`:` ⟨*type*⟩] `=` ⟨*expression*⟩

⟨*variable-declaration*⟩ ::= `var` (⟨*identifier*⟩ | ⟨*tuple-identifiers*⟩) [`:` ⟨*type*⟩] `=` ⟨*expression*⟩

⟨*function-declaration*⟩ ::= `func` ⟨*identifier*⟩ ⟨*arguments-list*⟩ `->` ⟨*function-arg-type*⟩ ⟨*code-block*⟩

⟨*arguments-list*⟩ ::= `(` [⟨*typed-identifiers-list*⟩] `)`

⟨*typed-identifiers-list*⟩ ::= ⟨*typed-identifier*⟩ [`,` ⟨*typed-identifiers-list*⟩]

⟨*typed-identifier*⟩ ::= ⟨*identifier*⟩ `:` ⟨*type*⟩

⟨*tuple-identifiers*⟩ ::= `(` ⟨*identifier*⟩ `,` ⟨*identifier*⟩ { `,` ⟨*identifier*⟩ } `)`

⟨*identifier*⟩ ::= (⟨*letter*⟩ | `_`), {⟨*letter*⟩ | ⟨*digit*⟩ | `_`}

⟨*letter*⟩ ::= `a` | ... | `z` | `A` | ... | `Z`

6 Program

⟨*Program*⟩ ::= `main:` ⟨*code-block*⟩ [⟨*functions-list*⟩]

⟨*functions-list*⟩ ::= ⟨*function-declaration*⟩ [⟨*functions-list*⟩]