Primitive Types

⟨*singleQuote*⟩ ::= '

⟨*doubleQuote*⟩ ::= "

⟨*int*⟩ ::= [integer]

⟨*bool*⟩ ::= '`true`' | '`false`'

⟨*char*⟩ ::= ⟨*singleQuote*⟩[character]⟨*singleQuote*⟩

⟨*string*⟩ ::= ⟨*doubleQuote*⟩[character*]⟨*doubleQuote*⟩

⟨*null*⟩ ::= '`null`'

Algebraic Data Types and Type-Traits

⟨*adt*⟩ ::= '`type`' ⟨*ident*⟩ '`{`'[⟨*ident*⟩'`:`'⟨*type*⟩['`,`' ⟨*ident*⟩'`:`'⟨*type*⟩]*]'`}`'

⟨*trait*⟩ ::= '`trait`' '`{`'⟨*type*⟩['`,`' ⟨*type*⟩]*'`}`'

Types

⟨*type*⟩ ::= '`int`' | '`bool`' | '`char`' | '`string`' | '`null`'
| ⟨*type*⟩ '`->`' ⟨*type*⟩
| '`(`'[⟨*type*⟩['`,`' ⟨*type*⟩]*]'`)`' '`->`' '`(`'[⟨*type*⟩['`,`' ⟨*type*⟩]*]'`)`'
| '`List`' | '`Array`' '`[`'⟨*type*⟩'`]`'
| '`Tuple`' '`[`'⟨*type*⟩['`,`' ⟨*type*⟩]*'`]`'
| '`Dict`' '`[`'⟨*type*⟩'`,`' ⟨*type*⟩'`]`'
| ⟨*ident*⟩

Arithmetic and Boolean Operators

⟨*arithOp*⟩ ::= '`+`' | '`-`' | '`*`' | '`/`' | '`%`'

⟨*boolOp*⟩ ::= '`<`' | '`>`' | '`<=`' | '`>=`' | '`!`' | '`!=`' | '`==`' | '`&&`' | '`||`'

⟨*op*⟩ ::= ⟨*arithOp*⟩ | ⟨*boolOp*⟩

Functions

⟨*arg*⟩ ::= ⟨*ident*⟩'`:`'⟨*type*⟩['`=`'⟨*atom*⟩]

⟨*templateTypes*⟩ ::= '`[`'⟨*type*⟩'`:>`'⟨*ident*⟩['`,`' ⟨*type*⟩'`:>`'⟨*ident*⟩]*'`]`'

⟨*prog*⟩ ::= ['`fn`' ⟨*ident*⟩[⟨*templateTypes*⟩]'`(`'[⟨*arg*⟩ ['`,`' ⟨*arg*⟩]*]'`)`'['`->`'⟨*type*⟩]'`=`'⟨*smp*⟩'`;`']*

Pattern Matching and Switches

⟨*match*⟩ ::= '`match`' '`(`'⟨*ident*⟩'`)`' '`{`'`case`' ⟨*type*⟩'`=>`' ⟨*smp*⟩['`,`' '`case`' ⟨*type*⟩ '`=>`' ⟨*smp*⟩]*'`}`'

⟨*switch*⟩ ::= '`switch`' '`(`'⟨*atom*⟩'`)`' '`{`'`case`' ⟨*atom*⟩'`=>`' ⟨*smp*⟩['`,`' '`case`' ⟨*atom*⟩ '`=>`' ⟨*smp*⟩]*'`}`'

⟨*matchSwitch*⟩ ::= ⟨*match*⟩ | ⟨*switch*⟩

Expressions

⟨*smp*⟩ ::= ⟨*utight*⟩[⟨*op*⟩⟨*utight*⟩]
  | '`if`' '`(`'⟨*smp*⟩'`)`' ⟨*smp*⟩ ['`else`' ⟨*smp*⟩]
  | '`List`' | '`Tuple`' | '`Array`' '`{`'[⟨*smp*⟩['`,`' ⟨*smp*⟩]*]'`}`'
  | '`Dict`' '`{`'[⟨*smp*⟩'`:`'⟨*smp*⟩['`,`' ⟨*smp*⟩'`:`'⟨*smp*⟩]*]'`}`'
  | ⟨*matchSwitch*⟩
  | ⟨*trait*⟩
  | ⟨*adt*⟩
  | ⟨*prog*⟩
  | ⟨*arg*⟩ '`=>`' ⟨*smp*⟩

⟨*exp*⟩ ::= ⟨*smp*⟩['`;`' ⟨*exp*⟩]
  | '`val`' ⟨*ident*⟩['`:`'⟨*type*⟩] '`=`' ⟨*smp*⟩'`;`' ⟨*exp*⟩