

Syntax Specification

Structs

$\text{TypeDec} \rightarrow \mathbf{struct} \text{ ID } \{ \text{VarDec} \};$

Variable Declarations

$\text{VarDec} \rightarrow \text{Type ID}; \mid \text{VarDec}$

Type

$\text{Type} \rightarrow \mathbf{int} \mid \mathbf{float} \mid \mathbf{char}$

Functions

$\text{FunctionDec} \rightarrow \text{Type ID}(\text{FormalList}) \{ \text{VarDec Statement } \mathbf{return} \text{ Exp}; \}$

Statement

$\begin{aligned} \text{Statement} \rightarrow & \text{ID} = \text{Exp}; \\ & \mid \text{ID.ID} = \text{Exp}; \\ & \mid \mathbf{if}(\text{Exp})\text{Statement } \mathbf{else} \text{ Statement} \\ & \mid \mathbf{while}(\text{Exp})\text{Statement} \\ & \mid \mathbf{cout} << \text{Exp}; \\ & \mid \mathbf{cout} << \text{Exp} << \mathbf{endl}; \\ & \mid \{ \text{Statement} \} \\ & \mid \text{Statement} \end{aligned}$

Expressions

$$\begin{aligned} \text{Exp} \rightarrow & \text{INT} \\ & | \text{FLOAT} \\ & | \text{CHAR} \\ & | \text{ID} \\ & | (\text{Exp}) \\ & | - \text{Exp} \\ & | \text{Exp Op Exp} \\ & | \text{Exp.ID} \\ & | \text{ID}(\text{ExpList}) \\ & | !\text{Exp} \\ & | \text{sizeof}(\text{Exp}) \end{aligned}$$

Operations

$$\begin{aligned} \text{Op} \rightarrow & + \\ & | - \\ & | * \\ & | / \\ & | \% \\ & | == \\ & | != \\ & | < \\ & | > \\ & | <= \\ & | >= \\ & | \&\& \\ & | || \end{aligned}$$

Expression List

$$\begin{aligned} \text{ExpList} & \rightarrow \text{Exp ExpRest} \mid \varepsilon \\ \text{ExpRest} & \rightarrow \rightarrow, \text{Exp} \mid \text{ExpRest} \end{aligned}$$