Grammar v0.4

November 7, 2019

$$
\begin{aligned}
INT &:= \text{'int'} \\
FLOAT &:= \text{'float'} \\
ID &:= alpha \ + \ (alphanum)^* \\
VOID &:= \text{'void'} \\
(&:= \text{'('} \\
) &:= \text{')'} \\
\{ &:= \text{'\{'} \\
\} &:= \text{'\}'} \\
[&:= \text{'['} \\
] &:= \text{']'} \\
, &:= \text{','} \\
+ &:= \text{'+'} \\
++ &:= \text{'++'} \\
- &:= \text{'-'} \\
\text{'/'} &:= \text{'/'} \\
* &:= \text{'*'} \\
> &:= \text{'>'} \\
< &:= \text{'<'} \\
; &:= \text{';'} \\
= &:= \text{'='} \\
NUM &:= (num)^+ \\
&| \quad (num)^* \ + \ \text{'.'} \ + \ (num)^+ \\
&| \quad (num)^+ \ + \ \text{'.'} \\
FOR &:= \text{'for'} \\
IF &:= \text{'if'} \\
RETURN &:= \text{'return'} \\
STRING &:= \text{'"'} \ + \ (stuff)^* \ + \ \text{'"'}
\end{aligned}
$$

$$
\begin{aligned}
< goal > &:= < funcs > \\
< funcs > &:= \epsilon \\
&\mid \ < func >< funcs > \\
< func > &:= INT/FLOAT\ ID\ (\ < args > \{< stmts >\} \\
< args > &:= VOID\ ) \\
&\mid \ \epsilon\ ) \\
&\mid \ INT/FLOAT\ \epsilon/*\ ID\ :,\ INT/FLOAT\ \epsilon/*\ ID\ :^*\ ) \\
< stmts > &:= \epsilon \\
&\mid \ < stmt >< stmts > \\
< stmt > &:= \ < instr > ; \\
&\mid \ < forst > \\
&\mid \ < ifst > \\
&\mid \ \{< stmts >\} \\
&\mid \ < retst > \\
< instr > &:= \ < decl > \\
&\mid \ < expr > \\
&\mid \ \epsilon \\
< decl > &:= INT/FLOAT\ ID/ID[NUM]\ :,\ ID/ID[NUM]\ :^* \\
< expr > &:= \ < expr > +/- < term > \\
&\mid \ < term > \\
&\mid \ ID/ID[< expr >]\ = < expr > \\
< term > &:= \ < factor > \\
&\mid \ < term > */'/'\ < factor > \\
< factor > &:= ID \\
&\mid \ ID/ID[< expr >]\ \ ++ \\
&\mid \ \ ++\ ID/ID[< expr >] \\
&\mid \ ID[< expr >] \\
&\mid \ ID(< call >) \\
&\mid \ NUM \\
&\mid \ (< expr >) \\
&\mid \ \ +/-\ factor \\
< call > &:= \epsilon \\
&\mid \ \ < expr > :, < expr >:^* \\
< forst > &:= FOR\ (\ < instr > ;\ < comp > ;\ < expr >\ )\ < stmt > \\
< ifst > &:= IF\ (\ < comp >\ )\ < stmt > \\
< comp > &:= \ < expr > \ \ > / < \ \ < expr > \\
< retst > &:= RETURN\ \ < expr > ;
\end{aligned}
$$

1. $< stmt > := \ < instr >;$
2. $\mid \ < forst >$
3. $\mid \ < ifst >$
4. $\mid \ \{< stmts >\}$
5. $\mid \ < retst >$

1. $< instr > :=$
2. $\quad | \quad INT/FLOAT\ ID/ID[NUM]\ :,\ ID/ID[NUM]\ :^*$
3. $\quad | \quad < expr >$
4. $\quad | \quad \epsilon$

1. $< expr > :=\ < term > | < expr > +/- < term >$
2. $\quad | \quad lhs =< expr >$

1. $< factor > := lhs| + +lhs|lhs + +$
2. $\quad | \quad ID(< call >)$
3. $\quad | \quad NUM$
4. $\quad | \quad NUM2$
5. $\quad | \quad (< expr >)$
6. $\quad | \quad +/- < factor >$