CSPB 3155 - Reckwerdt - Principles of Programming Languages

Mython Grammar

$$
\begin{array}{rcll}
\textbf{Program} & \longrightarrow & \textbf{Declaration}^{*}\,\textbf{Statement}^{*}\,ReturnStmt(\textbf{Expr}) & \\
\textbf{Declaration} & \longrightarrow & VarDecl(\textbf{Identifier}, \textbf{Expr}) & \\
\textbf{Statement} & \longrightarrow & Assign(\textbf{Identifier}, \textbf{Expr}) & \\
 & | & While(\textbf{CondExpr}, \textbf{Statement}^{*}) & \\
 & | & IfThenElse(\textbf{CondExpr}, \textbf{Statement}^{*}, \textbf{Statement}^{*}) & \\
 & | & ReturnStmt(\textbf{Expr}) & \\
\textbf{CondExpr} & \longrightarrow & ConstTrue & \\
 & | & ConstFalse & \\
 & | & Geq(\textbf{Expr}, \textbf{Expr}) & e_1 \geq e_2 \\
 & | & Leq(\textbf{Expr}, \textbf{Expr}) & e_1 \leq e_2 \\
 & | & Eq(\textbf{Expr}, \textbf{Expr}) & e_1 = \; = e_2 \\
 & | & And(\textbf{CondExpr}, \textbf{CondExpr}) & c_1 \; c_2 \\
 & | & Or(\textbf{CondExpr}, \textbf{CondExpr}) & c_1 \; c_2 \\
 & | & Not(\textbf{CondExpr}) & c_1 \\
\textbf{Expr} & \longrightarrow & Const(\textbf{Integer}) & \\
 & | & Ident(\textbf{Identifier}) & \\
 & | & Plus(\textbf{Expr}, \textbf{Expr}^{+}) & \textbf{Expr}^{+}\text{denotes one or more occurrences of an expression} \\
 & | & Minus(\textbf{Expr}, \textbf{Expr}^{+}) & e_1 - e_2 - e_3 - e_4 \cdots \\
 & | & Mult(\textbf{Expr}, \textbf{Expr}^{+}) & e_1 * e_2 * e_3 * \cdots \\
 & | & Div(\textbf{Expr}, \textbf{Expr}) & \\
 & | & Log(\textbf{Expr}) & \\
 & | & Exp(\textbf{Expr}) & \\
 & | & Sine(\textbf{Expr}) & \\
 & | & Cosine(\textbf{Expr}) & \\
\textbf{Integer} & \longrightarrow & \cdots | -2 | -1 | 0 | 1 | 2 | \cdots & \\
\textbf{Identifier} & \longrightarrow & [a-z\,A-Z][a-z\,A-Z\,0-9\,\_]* &
\end{array}
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