

<i>function</i>	\Rightarrow	$\begin{aligned} & \backslash\textbf{begin} \{ \textbf{eqcode} \} \{ \textbf{id} \} \\ & \{ [id [, id]^*] \} \\ & \{ [ext_type [, ext_type]^*] \} \{ ext_type \} \\ & instr_list \\ & \backslash\textbf{end} \{ \textbf{eqcode} \} \end{aligned}$
<i>indexes</i>	\Rightarrow	$([upper] [lower] \mid lower\ upper)$
<i>idx</i>	\Rightarrow	$\textbf{id} \ indexes$
<i>numx</i>	\Rightarrow	$(\textbf{num} \mid divide) \ indexes$
<i>idx_numx</i>	\Rightarrow	$(idx \mid numx)$
<i>upper</i>	\Rightarrow	$\begin{aligned} & \wedge \{ ([\textit{expr}] \mid \textit{expr}) \} \\ & \mid \\ & \wedge (\textbf{id} \mid \textbf{num}) \end{aligned}$
<i>linear</i>	\Rightarrow	$\begin{aligned} & \textbf{id} [(+ \mid -) \textbf{num}] \\ & \mid \\ & \textbf{num} \end{aligned}$
<i>lower</i>	\Rightarrow	$\begin{aligned} & - \{ \textit{expr} [, \textit{expr}]^* \} \\ & \mid \\ & - (\textbf{id} \mid \textbf{num}) \end{aligned}$
<i>type</i>	\Rightarrow	$\backslash\textbf{type} \{ (\textbf{Z} \mid \textbf{R} \mid \textbf{N} \mid \textbf{B}) \}$
<i>ext_type</i>	\Rightarrow	$\begin{aligned} & type [\wedge (\{ \textit{sexpr} \} \mid \textbf{num} \mid \textbf{id}) \\ & [- (\{ \textit{sexpr} [, \textit{sexpr}]^* \})] \mid \textbf{id} \mid \textbf{num}) \end{aligned}$
<i>instr_list</i>	\Rightarrow	$[instr \ \backslash\textbf{lend}]^*$
<i>instr</i>	\Rightarrow	$\begin{aligned} & assign \\ & \mid \\ & declare \\ & \mid \\ & index_loop \\ & \mid \\ & comment \\ & \mid \\ & if_cond \\ & \mid \\ & return \end{aligned}$
<i>if_cond</i>	\Rightarrow	$\begin{aligned} & \backslash\textbf{qif} \{ \textit{cond_block} \} \\ & \textit{instr_list} \\ & [\backslash\textbf{qelseif} \{ \textit{cond_block} \} \\ & \textit{instr_list}]^* [\backslash\textbf{qelse} \\ & \textit{instr_list}]^* \backslash\textbf{qendif} \end{aligned}$
<i>cond_block</i>	\Rightarrow	$\begin{aligned} & \textit{expr} [\textit{comp} \textit{expr}]^+ \\ & [\textit{set_op} \textit{expr} [\textit{comp} \textit{expr}]^+]^* \end{aligned}$
<i>assign</i>	\Rightarrow	$idx [\textit{generator}] \backslash\textbf{gets} \textit{expr}$
<i>declare</i>	\Rightarrow	$idx \backslash\textbf{in} \textit{ext_type}$

<i>boolop</i>	\Rightarrow	$\backslash\text{land}$ $\backslash\text{lor}$ $\backslash\text{oplus}$
<i>binop</i>	\Rightarrow	$+$ $-$ $\backslash\text{cdot}$ $\backslash\text{ll}$ $\backslash\text{gg}$ $\backslash\text{mod}$
<i>divide</i>	\Rightarrow	$(\backslash\text{frac} \mid \backslash\text{dfrac}) \{ \text{expr} \} \{ \text{expr} \}$
<i>function_call</i>	\Rightarrow	$\backslash\text{call} \{ \text{id} \} \{ [\text{expr} [, \text{expr}]^*] \}$
<i>sexpr</i>	\Rightarrow	$(\backslash\text{lnot} \mid -) \text{sexpr_op} [(\text{binop} \mid \text{boolop}) \text{sexpr_op}]^*$ (expr) $\{ \text{expr} \}$
<i>sexpr_op</i>	\Rightarrow	$(\text{idx_numx} \mid \text{function_call} \mid \text{matrix})$
<i>filter</i>	\Rightarrow	$\backslash\text{filter} \{ \text{id} \wedge \{ [\text{id}] \} \}$ $[, \text{id} \wedge \{ [\text{id}] \}]^*$ $\text{generator} \}$
<i>genarray</i>	\Rightarrow	$\backslash\text{genar} \backslash\text{limits} \wedge \{ \text{expr} \} (\text{expr})$
<i>matrix</i>	\Rightarrow	$\backslash\text{begin} \{ \text{tmatrix} \}$ $[\text{expr} [\& \text{expr}]^* \backslash\text{lend}] +$ $\backslash\text{end} \{ \text{tmatrix} \}$
<i>expr</i>	\Rightarrow	$(\text{sexpr} \mid \text{filter} \mid \text{genarray}) \text{indexes}$
<i>index_loop</i>	\Rightarrow	$\text{idx} \mid \text{generator} \backslash\text{gets} (\text{expr} \mid \text{index_loop_cases})$
<i>index_loop_cases</i>	\Rightarrow	$\backslash\text{begin} \{ \text{cases} \}$ $[\text{expr} \& \text{generator}]^+$ $[\text{expr} \& \backslash\text{otherwise}] +$ $\backslash\text{end} \{ \text{cases} \}$

<i>return</i>	\Rightarrow	<code>\return { <i>expr</i> }</code>
<i>generator</i>	\Rightarrow	<code>\forall id [, id]*</code>
		<code>id [, id]* : cond_block</code>
<i>comp</i>	\Rightarrow	<code><</code>
		<code>></code>
		<code>\leq</code>
		<code>\geq</code>
		<code>[\not] =</code>
<i>set_op</i>	\Rightarrow	<code>(\cup \cap)</code>