

<i>function</i>	\Rightarrow	$\begin{aligned} & \backslash\textbf{begin} \left\{ \textbf{eqcode} \right\} \left\{ \textbf{id} \right\} \\ & \quad \left\{ [idx [, idx]^*] \right\} \\ & \quad \left\{ [ext_type [, ext_type]^*] \right\} \left\{ ext_type \right\} \\ & \quad instr_list \\ & \quad \backslash\textbf{end} \left\{ \textbf{eqcode} \right\} \end{aligned}$
<i>idx</i>	\Rightarrow	$\textbf{id} [upper] [lower]$
<i>numx</i>	\Rightarrow	\textbf{num}
		<i>divide</i>
<i>idx-numx</i>	\Rightarrow	$(idx numx)$
<i>upper</i>	\Rightarrow	$\begin{aligned} & \wedge \left\{ ([linear] linear) \right\} \\ & \wedge (\textbf{id} \textbf{num}) \end{aligned}$
<i>linear</i>	\Rightarrow	$\begin{aligned} & \textbf{id} [(+ -) \textbf{num}] \\ & \textbf{num} \end{aligned}$
<i>lower</i>	\Rightarrow	$\begin{aligned} & - \left\{ sexpr [, sexpr]^* \right\} \\ & - (\textbf{id} \textbf{num}) \end{aligned}$
<i>type</i>	\Rightarrow	$\backslash\textbf{type} \left\{ (\textbf{Z} \textbf{R} \textbf{N} \textbf{B}) \right\}$
<i>ext-type</i>	\Rightarrow	$\begin{aligned} & type [\wedge \left\{ sexpr \right\} \\ & \quad [- \left\{ sexpr [, sexpr]^* \right\}]] \end{aligned}$
<i>instr-list</i>	\Rightarrow	$[instr \backslash\textbf{lend}]^*$
<i>instr</i>	\Rightarrow	<i>assign</i>
		<i>declare</i>
		<i>with-loop</i>
		<i>return</i>
<i>assign</i>	\Rightarrow	$idx \backslash\textbf{gets} \ expr$
<i>declare</i>	\Rightarrow	$idx \backslash\textbf{in} \ ext_type$
<i>boolop</i>	\Rightarrow	$\backslash\textbf{land}$
		$\backslash\textbf{lor}$
		$\backslash\textbf{oplus}$
<i>binop</i>	\Rightarrow	$+$
		$-$
		$\backslash\textbf{cdot}$
		$\backslash\textbf{ll}$
		$\backslash\textbf{gg}$
		$\backslash\textbf{mod}$

<i>divide</i>	\Rightarrow	$(\backslash \text{frac} \mid \backslash \text{dfrac}) \{ \text{expr} \} \{ \text{expr} \}$
<i>function_call</i>	\Rightarrow	$\backslash \text{call} \{ \text{id} \} \{ [\text{idx_numx} [, \text{idx_numx}]^*] \}$
<i>sexpr</i>	\Rightarrow	$(\backslash \text{not} \mid -) \text{sexpr_op} [(\text{binop} \mid \text{boolop}) \text{sexpr_op}]^*$ \mid (sexpr) \mid $\{ \text{sexpr} \}$
<i>sexpr_op</i>	\Rightarrow	$(\text{idx_numx} \mid \text{function_call})$
<i>filter</i>	\Rightarrow	$\backslash \text{filter} \{ \text{id} \} ^ \{ [\text{id}] \}$ $[, \text{id} \} ^ \{ [\text{id}] \}]^*$ $\mid \text{generator} \}$
<i>genarray</i>	\Rightarrow	$\backslash \text{genar} \backslash \text{limits} \} ^ \{ \text{sexpr} \} (\text{sexpr})$
<i>vector</i>	\Rightarrow	$\backslash \text{begin} \{ \text{tvector} \}$ $[\text{sexpr} \backslash \text{lend}]^+$ $\backslash \text{end} \{ \text{tvector} \}$
<i>matrix</i>	\Rightarrow	$\backslash \text{begin} \{ \text{tmatrix} \} \{ \text{id} \}$ $[\text{sexpr} [\& \text{sexpr}]^* \backslash \text{lend}]^+$ $\backslash \text{end} \{ \text{tmatrix} \}$
<i>expr</i>	\Rightarrow	<i>sexpr</i> \mid <i>filter</i> \mid <i>genarray</i> \mid <i>vector</i> \mid <i>matrix</i>
<i>with_loop</i>	\Rightarrow	$\text{idx} \mid \text{generator} \backslash \text{gets} (\text{expr} \mid \text{with_loop_cases})$
<i>with_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	$\backslash \text{return} \{ \text{expr} \}$
<i>generator</i>	\Rightarrow	$\backslash \text{forall} \text{id} [, \text{id}]^*$ \mid $\text{id} [, \text{id}]^* : \text{sexpr} [\text{comp} \text{sexpr}]^+$ $[\text{set_op} \text{sexpr} [\text{comp} \text{sexpr}]^+]^*$
<i>comp</i>	\Rightarrow	$<$ \mid $>$ \mid $\backslash \text{leq}$ \mid $\backslash \text{geq}$ \mid $[\backslash \text{not}] =$
<i>set_op</i>	\Rightarrow	$(\backslash \text{land} \mid \backslash \text{lor})$

