

<i>function</i>	\Rightarrow	$\begin{aligned} & \backslash\text{begin} \left\{ \text{eqcode} \right\} \left\{ id \right\} \\ & \left\{ [idx [, idx]^*] \right\} \\ & \left\{ [ext_type [, ext_type]^*] \right\} \left\{ ext_type \right\} \\ & instr_list \\ & \backslash\text{end} \left\{ \text{eqcode} \right\} \end{aligned}$
<i>idx</i>	\Rightarrow	$\begin{aligned} & id [upper] [lower] \\ & \\ & num \\ & \\ & divide \end{aligned}$
<i>upper</i>	\Rightarrow	$\wedge \left\{ ([linear] linear) \right\}$
<i>linear</i>	\Rightarrow	$\begin{aligned} & id [(+ -) num] \\ & \\ & num \end{aligned}$
<i>lower</i>	\Rightarrow	$- \left\{ sepr [, sepr]^* \right\}$
<i>type</i>	\Rightarrow	$\backslash\text{type} \left\{ (\mathbf{Z} \mathbf{R} \mathbf{N} \mathbf{B}) \right\}$
<i>ext_type</i>	\Rightarrow	$\begin{aligned} & type [\wedge \left\{ sepr \right\} \\ & [- \left\{ sepr [, sepr]^* \right\}]] \end{aligned}$
<i>instr_list</i>	\Rightarrow	$[instr \backslash\text{endl}]^*$
<i>instr</i>	\Rightarrow	$\begin{aligned} & definition \\ & \\ & declaration \\ & \\ & with_loop \\ & \\ & return \end{aligned}$
<i>definition</i>	\Rightarrow	$[idx]^+ expr$
<i>boolop</i>	\Rightarrow	$\begin{aligned} & \backslash\text{land} \\ & \\ & \backslash\text{lor} \\ & \\ & \backslash\text{oplus} \end{aligned}$
<i>binop</i>	\Rightarrow	$\begin{aligned} & + \\ & \\ & - \\ & \\ & \backslash\text{cdot} \\ & \\ & \backslash\text{ll} \\ & \\ & \backslash\text{gg} \\ & \\ & \backslash\text{mod} \end{aligned}$
<i>divide</i>	\Rightarrow	$(\backslash\text{frac} \backslash\text{dfrac}) \left\{ expr \right\} \left\{ expr \right\}$
<i>function_call</i>	\Rightarrow	$\backslash\text{call} \left\{ id \right\} \left\{ [idx [, idx]^*] \right\}$

<i>sexpr</i>	\Rightarrow	$(\backslash\text{not} \mid -) (\textit{idx} \mid \textit{function_call}) [(\textit{binop} \mid \textit{boolop})$ $(\textit{idx} \mid \textit{function_call})]^*$ \mid (\textit{sexpr})
<i>filter</i>	\Rightarrow	$\backslash\text{filter} \{ \textit{id} \wedge \{ [\textit{id}] \} $ $[, \textit{id} \wedge \{ [\textit{id}] \}]^*$ $\mid \textit{condition} \}$
<i>genarray</i>	\Rightarrow	$\backslash\text{genar} \backslash\text{limits} \wedge \{ \textit{expr} \} (\textit{sexpr})$
<i>vector</i>	\Rightarrow	$\backslash\text{begin} \{ \textit{tvector} \}$ $[\textit{sexpr} \backslash\text{endl}]^+$ $\backslash\text{end} \{ \textit{tvector} \}$
<i>matrix</i>	\Rightarrow	$\backslash\text{begin} \{ \textit{tmatrix} \} \{ [\textit{id}]^+ \}$ $[\textit{sexpr} [\textit{sexpr} \&]^* \backslash\text{endl}]^+$ $\backslash\text{end} \{ \textit{tmatrix} \}$
<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	<i>with_loop_wbr</i> \mid <i>with_loop_wobr</i>
<i>with_loop_wbr</i>	\Rightarrow	<i>idx</i> \mid <i>condition</i> = $\backslash\text{begin} \{ \textit{cases} \}$ $[\textit{expr} \& \textit{condition}]^+$ $[\textit{expr} \& \backslash\text{otherwise}]^+$ $\backslash\text{end} \{ \textit{cases} \}$
<i>with_loop_wobr</i>	\Rightarrow	<i>idx</i> \mid <i>condition</i> = <i>expr</i>
<i>return</i>	\Rightarrow	$\backslash\text{return} \{ \textit{expr} \}$
<i>condition</i>	\Rightarrow	$\backslash\text{forall} \textit{id} [, \textit{id}]^*$ \mid $\textit{id} [, \textit{id}]^* : \textit{sexpr} [\textit{comp} \textit{sexpr}]^+$ $[\textit{set_op} \textit{sexpr} [\textit{comp} \textit{sexpr}]^+]^*$
<i>comp</i>	\Rightarrow	$<$ \mid $>$ \mid $\backslash\text{leq}$ \mid $\backslash\text{geq}$ \mid $[\backslash\text{not}] =$
<i>set_op</i>	\Rightarrow	$(\backslash\text{land} \mid \backslash\text{lor})$

