

<i>function</i>	\Rightarrow	$\backslash\text{begin} \{ \text{eqcode} \} \{ \text{id} \}$ $\{ [id [, id]^*] \}$ $\{ [ext_type [, ext_type]^*] \} \{ ext_type \}$ <i>instr_list</i> $\backslash\text{end} \{ \text{eqcode} \}$
<i>indexes</i>	\Rightarrow	$([upper] [lower] \mid lower\ upper)$
<i>idx</i>	\Rightarrow	id <i>indexes</i>
<i>numx</i>	\Rightarrow	num \mid <i>divide</i>
<i>idx_numx</i>	\Rightarrow	$(idx \mid numx)$
<i>upper</i>	\Rightarrow	$\wedge \{ ([linear] \mid linear) \}$ \mid $\wedge (\text{id} \mid \text{num})$
<i>linear</i>	\Rightarrow	id $[(+ \mid -) \text{num}]$ \mid num
<i>lower</i>	\Rightarrow	$- \{ sexpr [, sexpr]^* \}$ \mid $- (\text{id} \mid \text{num})$
<i>type</i>	\Rightarrow	$\backslash\text{type} \{ (\text{Z} \mid \text{R} \mid \text{N} \mid \text{B}) \}$
<i>ext_type</i>	\Rightarrow	$type [\wedge (\{ sexpr \} \mid \text{num} \mid \text{id})$ $[- (\{ sexpr [, sexpr]^* \})] \mid \text{id} \mid \text{num})$
<i>instr_list</i>	\Rightarrow	$[instr \ \backslash\text{lend}]^*$
<i>instr</i>	\Rightarrow	<i>assign</i> \mid <i>declare</i> \mid <i>with_loop</i> \mid <i>return</i>
<i>assign</i>	\Rightarrow	<i>idx</i> $\backslash\text{gets}$ <i>expr</i>
<i>declare</i>	\Rightarrow	<i>idx</i> $\backslash\text{in}$ <i>ext_type</i>

<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	$\backslash\text{call} \{ \text{id} \} \{ [\text{idx_numx} [, \text{idx_numx}]^*] \}$
<i>sexpr</i>	\Rightarrow	$(\backslash\text{not} \mid -) \text{sexpr_op} [(\text{binop} \mid \text{boolop}) \text{sexpr_op}]^*$ (sexpr) $\{ \text{sexpr} \}$
<i>sexpr_op</i>	\Rightarrow	$(\text{idx_numx} \mid \text{function_call})$
<i>filter</i>	\Rightarrow	$\backslash\text{filter} \{ \text{id} ^ \{ [\text{id}] \} \}$ $[, \text{id} ^ \{ [\text{id}] \}]^*$ $\text{generator} \}$
<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> <i>filter</i> <i>genarray</i> <i>vector</i> <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	<code>\return { expr }</code>
<i>generator</i>	\Rightarrow	<code>\forall id [, id]*</code> <code>id [, id]* : sexpr [comp sexpr]+</code> <code>[set_op sexpr [comp sexpr]+]*</code>
<i>comp</i>	\Rightarrow	<code><</code> <code>></code> <code>\leq</code> <code>\geq</code> <code>[\not] =</code>
<i>set_op</i>	\Rightarrow	<code>(\land \lor)</code>