$termvar,\ x,\ y$
$funcname,\ \texttt{name}$
$indecies,\ i,\ j$

| $program,\ p$ | ::= | | Programs |
|---|---|---|---|
| | \| | $\texttt{func name}(x_1,\ ...,\ x_i)\{b\}$ | |
| | \| | $p_1\ p_2$ | |
| | \| | $(p)$ | |

| $b$ | ::= | | Terms |
|---|---|---|---|
| | \| | $x$ | |
| | \| | $\textsf{T}$ | |
| | \| | $\textsf{F}$ | |
| | \| | $\textsf{if } b_1 \textsf{ then } b_2 \textsf{ else } b_3$ | |
| | \| | $\texttt{name}(b_1,\ ...,\ b_i)$ | |
| | \| | $\textsf{return } b$ | |

| $v$ | ::= | | Values |
|---|---|---|---|
| | \| | $\textsf{T}$ | |
| | \| | $\textsf{F}$ | |

| $\Delta$ | ::= | | Contexts of Function Definitions |
|---|---|---|---|
| | \| | $p_1$ | |
| | \| | $\Delta_1, \Delta_2$ | |

$\boxed{\Delta \vdash b_1 \rightsquigarrow b_2}$    Single-Step Reduction for Terms

$$\frac{}{\Delta \vdash \textsf{if T then } b_1 \textsf{ else } b_2 \rightsquigarrow b_1} \quad \textsc{IfT}$$

$$\frac{}{\Delta \vdash \textsf{if F then } b_1 \textsf{ else } b_2 \rightsquigarrow b_2} \quad \textsc{IfF}$$

$$\frac{\Delta \vdash b_1 \rightsquigarrow b_1'}{\Delta \vdash \textsf{if } b_1 \textsf{ then } b_2 \textsf{ else } b_3 \rightsquigarrow \textsf{if } b_1' \textsf{ then } b_2 \textsf{ else } b_3} \quad \textsc{If}1$$

$$\frac{}{\Delta \vdash \textsf{return } b \rightsquigarrow b} \quad \textsc{Return}$$

$$\frac{(\texttt{func name}(x_1,\ ...,\ x_i)\{b\}) \in \Delta}{\Delta \vdash \texttt{name}(v_1,\ ...,\ v_i) \rightsquigarrow [v_1,\ ...,\ v_i/x_1,\ ...,\ x_i]b} \quad \textsc{Beta}$$

$$\frac{\Delta \vdash b_j \rightsquigarrow b_j' \quad 1 \leq j \leq i}{\Delta \vdash \texttt{name}(b_1, \ldots, b_j, \ldots, b_i) \rightsquigarrow \texttt{name}(b_1, \ldots, b_j', \ldots, b_i)} \quad \textsc{App}$$

$\boxed{\Delta \vdash b_1 \rightsquigarrow^* b_2}$    Multi-Step Reduction for Terms

$$\frac{\Delta \vdash b_1 \rightsquigarrow b_2}{\Delta \vdash b_1 \rightsquigarrow^* b_2} \quad \textsc{Step}$$

$$\frac{\Delta \vdash b_1 \rightsquigarrow b_2 \quad \Delta \vdash b_2 \rightsquigarrow^* b_3}{\Delta \vdash b_1 \rightsquigarrow^* b_3} \quad \textsc{Mult}$$

```
Definition rules:        8 good     0 bad
Definition rule clauses: 13 good     0 bad
```