Nob output

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Abstract

Generated by Nob v0.1, written by Nicholas Cameron

T, U	$::=$	$\texttt{int} \mid T \to T$	*types*
e	$::=$	$n \mid \texttt{x} \mid e\ e \mid \lambda \texttt{x:}T\texttt{.}e$	*expressions*
v	$::=$	$n \mid \lambda \texttt{x:}T\texttt{.}e$	*values*
Γ	$::=$	$\overline{\texttt{x:}T}$	*environments*
n			*integers*
$\texttt{x}, \texttt{y}, \texttt{z}$			*variables*

Figure 1: Syntax of Calculus.

Type checking $\boxed{\Gamma \vdash e : T}$

$$\frac{\Gamma, \mathtt{x}{:}T \vdash e : U}{\Gamma \vdash \lambda \mathtt{x}{:}T.\, e : T \to U}$$

(T-Abs)

$$\frac{\Gamma(\mathtt{x}) = T}{\Gamma \vdash \mathtt{x} : T}$$

(T-Var)

$$\frac{\Gamma \vdash e : U \to T \qquad \Gamma \vdash e' : U}{\Gamma \vdash e\ e' : T}$$

(T-App)

$$\frac{}{\Gamma \vdash n : \mathtt{int}}$$

(T-Int)

Figure 2: Calculus type checking.

Well-formedness $\boxed{\vdash T\ \text{OK}}$

$$\frac{}{\vdash \mathtt{int}\ \text{OK}}$$

(F-Int)

$$\frac{\vdash T\ \text{OK} \qquad \vdash T'\ \text{OK}}{\vdash T \to T'\ \text{OK}}$$

(F-Fun)

Figure 3: Calculus well-formedness.

Reduction $\boxed{e \rightsquigarrow e}$

$$\frac{e_1 \rightsquigarrow e_1'}{e_1\ e_2 \rightsquigarrow e_1'\ e_2}$$

(RC-App1)

$$\frac{e \rightsquigarrow e'}{v\ e' \rightsquigarrow v\ e'}$$

(RC-App2)

$$\frac{}{(\lambda \mathtt{x}{:}T\,.\,e)\ v \rightsquigarrow [v/x]e}$$

(R-App)

$$\frac{}{\lambda \mathtt{x}{:}T\,.\,e\ v \rightsquigarrow [v/x]e}$$

(R-App-Alt)

Figure 4: Calculus reduction.