x variables

i integer literals

$\tau,\ \sigma$	$::=$		types
	$\mid$	$\mathbb{Z}$	
	$\mid$	$\texttt{void}$	
	$\mid$	$\tau_1 \to \tau_2$	
	$\mid$	(τ)	S
e	$::=$		annotated terms
	$\mid$	u^τ	
u	$::=$		raw terms
	$\mid$	x	
	$\mid$	i	
	$\mid$	$\lambda(x : \tau).e$	bind x in e
	$\mid$	$e_1\ e_2$	
	$\mid$	$e_1\ p\ e_2$	
	$\mid$	$\mathsf{if0}(e_1, e_2, e_3)$	
	$\mid$	$\mathsf{let}\ x = e\ \mathsf{in}\ u$	bind x in u
	$\mid$	$\mathsf{halt}\ e$	
	$\mid$	(u)	S
p	$::=$		primitives
	$\mid$	$+$	
	$\mid$	$-$	
Γ	$::=$		contexts
	$\mid$		
	$\mid$	$\Gamma, x : \tau$	

$\boxed{\Gamma \vdash_{\mathrm{T}} e : \tau}$ annotated typing

$$\frac{\Gamma \vdash_{\mathrm{T}} u : \tau}{\Gamma \vdash_{\mathrm{T}} u^\tau : \tau}\ \mathrm{T\_ANT\_ANN}$$

$\boxed{\Gamma \vdash_{\mathrm{T}} u : \tau}$ typing

$$\frac{\Gamma(x) = \tau}{\Gamma \vdash_{\mathrm{T}} x : \tau}\ \mathrm{T\_TERM\_VAR}$$

$$\frac{}{\Gamma \vdash_{\mathrm{T}} i : \mathbb{Z}}\ \mathrm{T\_TERM\_INT}$$

$$\frac{\Gamma, x_1 : \tau_1 \vdash_{\mathrm{T}} e : \tau_2}{\Gamma \vdash_{\mathrm{T}} \lambda(x_1 : \tau_1).e : \tau_1 \to \tau_2}\ \mathrm{T\_TERM\_LAM}$$

$$\frac{\Gamma \vdash_{\mathrm{T}} e_1 : \tau_1 \to \tau_2 \quad \Gamma \vdash_{\mathrm{T}} e_2 : \tau_1}{\Gamma \vdash_{\mathrm{T}} e_1\ e_2 : \tau_2}\ \mathrm{T\_TERM\_APP}$$

$$\frac{\Gamma \vdash_{\mathrm{T}} e_1 : \mathbb{Z} \quad \Gamma \vdash_{\mathrm{T}} e_2 : \mathbb{Z}}{\Gamma \vdash_{\mathrm{T}} e_1\ p\ e_2 : \mathbb{Z}}\ \mathrm{T\_TERM\_PRIM}$$

$$\frac{\Gamma \vdash_{\mathrm{T}} e_1 : \mathbb{Z} \quad \Gamma \vdash_{\mathrm{T}} e_2 : \tau \quad \Gamma \vdash_{\mathrm{T}} e_3 : \tau}{\Gamma \vdash_{\mathrm{T}} \mathsf{if0}(e_1, e_2, e_3) : \tau}\ \textsc{T_term_if0}$$

$\boxed{\Gamma \vdash_{\mathrm{K}} e : \tau}$ annotated typing

$$\frac{\Gamma \vdash_{\mathrm{K}} u : \tau}{\Gamma \vdash_{\mathrm{K}} u^{\tau} : \tau}\ \textsc{K_ant_ann}$$

$\boxed{\Gamma \vdash_{\mathrm{K}} u : \tau}$ typing

$$\frac{\Gamma(x) = \tau}{\Gamma \vdash_{\mathrm{K}} x : \tau}\ \textsc{K_term_var}$$

$$\frac{}{\Gamma \vdash_{\mathrm{K}} i : \mathbb{Z}}\ \textsc{K_term_int}$$

$$\frac{\Gamma, x : \tau \vdash_{\mathrm{K}} e : \mathtt{void}}{\Gamma \vdash_{\mathrm{K}} \lambda(x : \tau).e : \tau \to \mathtt{void}}\ \textsc{K_term_Lam}$$

$$\frac{\Gamma \vdash_{\mathrm{K}} e : \tau \quad \Gamma, x : \tau \vdash_{\mathrm{K}} u : \mathtt{void}}{\Gamma \vdash_{\mathrm{K}} \mathsf{let}\, x = e \,\mathsf{in}\, u : \mathtt{void}}\ \textsc{K_term_let}$$

$$\frac{\Gamma \vdash_{\mathrm{K}} e_1 : \mathbb{Z} \quad \Gamma \vdash_{\mathrm{K}} e_2 : \mathbb{Z}}{\Gamma \vdash_{\mathrm{K}} e_1\, p\, e_2 : \mathbb{Z}}\ \textsc{K_term_prim}$$

$$\frac{\Gamma \vdash_{\mathrm{K}} e' : \tau \to \mathtt{void} \quad \Gamma \vdash_{\mathrm{K}} e : \tau}{\Gamma \vdash_{\mathrm{K}} e'\, e : \mathtt{void}}\ \textsc{K_term_app}$$

$$\frac{\Gamma \vdash_{\mathrm{K}} e : \mathbb{Z} \quad \Gamma \vdash_{\mathrm{K}} e_1 : \mathtt{void} \quad \Gamma \vdash_{\mathrm{K}} e_2 : \mathtt{void}}{\Gamma \vdash_{\mathrm{K}} \mathsf{if0}(e, e_1, e_2) : \mathtt{void}}\ \textsc{K_term_if0}$$

$$\frac{\Gamma \vdash_{\mathrm{K}} e : \tau}{\Gamma \vdash_{\mathrm{K}} \mathsf{halt}\, e : \mathtt{void}}\ \textsc{K_term_halt}$$

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Definition rules:         16 good    0 bad
Definition rule clauses:  39 good    0 bad
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