t, r	type variables			
x, y, z, s	variables			
Typ, τ, ρ	::=			type
	$\mid$	t		variable
	$\mid$	$\tau_1 \rightarrow \tau_2$		function
	$\mid$	$\forall\,(t.\tau)$	bind t in τ	polymorphic
	$\mid$	(τ)	S	
Exp, e	::=			expression
	$\mid$	x		variable
	$\mid$	$\lambda(x : \tau)e$	bind x in e	abstraction
	$\mid$	$e_1(e_2)$		application
	$\mid$	$\Lambda(t)e$	bind t in e	type abstraction
	$\mid$	$e[\tau]$		type application
	$\mid$	(e)	S	
Δ	::=			type formation hypothesis
	$\mid$	**empty**		
	$\mid$	$\Delta, t\,\textbf{type}$		
Γ	::=			typing hypothesis
	$\mid$	**empty**		
	$\mid$	$\Gamma, x : \tau$		

$\boxed{\Delta \vdash \tau\,\textbf{type}}$ type formation

$$\frac{t \in \Delta}{\Delta \vdash t\,\textbf{type}} \quad \textsc{type\_var}$$

$$\frac{\begin{array}{c}\Delta \vdash \tau_1\,\textbf{type}\\ \Delta \vdash \tau_2\,\textbf{type}\end{array}}{\Delta \vdash \tau_1 \rightarrow \tau_2\,\textbf{type}} \quad \textsc{type\_arr}$$

$$\frac{\Delta, t\,\textbf{type} \vdash \tau\,\textbf{type}}{\Delta \vdash \forall\,(t.\tau)\,\textbf{type}} \quad \textsc{type\_all}$$

$\boxed{\Delta\,\Gamma \vdash e : \tau}$ typing

$$\frac{\begin{array}{c}\Delta \vdash \tau\,\textbf{type}\\ x : \tau \in \Gamma\end{array}}{\Delta\,\Gamma \vdash x : \tau} \quad \textsc{exp\_var}$$

$$\frac{\begin{array}{c}\Delta \vdash \tau_1\,\textbf{type}\\ \Delta\,\Gamma, x : \tau_1 \vdash e : \tau_2\end{array}}{\Delta\,\Gamma \vdash \lambda(x : \tau_1)e : \tau_1 \rightarrow \tau_2} \quad \textsc{exp\_lam}$$

$$\frac{\begin{array}{c}\Delta\,\Gamma \vdash e_1 : \tau_2 \rightarrow \tau\\ \Delta\,\Gamma \vdash e_2 : \tau_2\end{array}}{\Delta\,\Gamma \vdash e_1(e_2) : \tau} \quad \textsc{exp\_ap}$$

$$\frac{\Delta, t\,\textbf{type}\,\Gamma \vdash e : \tau}{\Delta\,\Gamma \vdash \Lambda(t)e : \forall\,(t.\tau)} \quad \textsc{exp\_Lam}$$

$$\frac{\begin{array}{c}\Delta\,\Gamma \vdash e : \forall\,(t.\tau')\\ \Delta \vdash \tau\,\textbf{type}\end{array}}{\Delta\,\Gamma \vdash e[\tau] : [\tau/t]\tau'} \quad \textsc{exp\_App}$$

$\boxed{e\ \mathbf{val}}$

$$\frac{}{\lambda(x:\tau)e\ \mathbf{val}}\quad \textsc{val\_lam}$$

$$\frac{}{\Lambda(t)e\ \mathbf{val}}\quad \textsc{val\_Lam}$$

$\boxed{e_1 \mapsto e_2}$

$$\frac{e_2\ \mathbf{val}}{\lambda(x:\tau_1)e(e_2) \mapsto [e_2/x]e}\quad \textsc{red\_lam}$$

$$\frac{e_1 \mapsto e_1'}{e_1(e_2) \mapsto e_1'(e_2)}\quad \textsc{red\_ap}1$$

$$\frac{\begin{array}{c} e_1\ \mathbf{val} \\ e_2 \mapsto e_2' \end{array}}{e_1(e_2) \mapsto e_1(e_2')}\quad \textsc{red\_ap}2$$

$$\frac{}{\Lambda(t)e[\tau] \mapsto [\tau/t]e}\quad \textsc{red\_Lam}$$

$$\frac{e \mapsto e'}{e[\tau] \mapsto e'[\tau]}\quad \textsc{red\_App}$$

$\boxed{\Delta\,\Gamma \vdash e_1 \equiv e_2 : \tau}$

$$\frac{\Delta\,\Gamma \vdash e : \tau}{\Delta\,\Gamma \vdash e \equiv e : \tau}\quad \textsc{eq\_refl}$$

$$\frac{\Delta\,\Gamma \vdash e_1 \equiv e_2 : \tau}{\Delta\,\Gamma \vdash e_2 \equiv e_1 : \tau}\quad \textsc{eq\_comm}$$

$$\frac{\begin{array}{c} \Delta\,\Gamma \vdash e_1 \equiv e_2 : \tau \\ \Delta\,\Gamma \vdash e_2 \equiv e_3 : \tau \end{array}}{\Delta\,\Gamma \vdash e_1 \equiv e_3 : \tau}\quad \textsc{eq\_trans}$$

$$\frac{\Delta\,\Gamma, x:\tau' \vdash e_1 \equiv e_2 : \tau}{\Delta\,\Gamma \vdash \lambda(x:\tau')e_1 \equiv \lambda(x:\tau')e_2 : \tau}\quad \textsc{eq\_lam}$$

$$\frac{\begin{array}{c} \Delta\,\Gamma \vdash e_1 \equiv e_1' : \tau' \to \tau \\ \Delta\,\Gamma \vdash e_2 \equiv e_2' : \tau' \end{array}}{\Delta\,\Gamma \vdash e_1(e_2) \equiv e_1(e_2') : \tau}\quad \textsc{eq\_ap}0$$

$$\frac{\Delta, t\,\mathbf{type}\,\Gamma \vdash e_1 \equiv e_2 : \tau}{\Delta\,\Gamma \vdash \Lambda(t)e_1 \equiv \Lambda(t)e_2 : \forall\,(t.\tau)}\quad \textsc{eq\_Lam}$$

$$\frac{\Delta\,\Gamma \vdash e_1 \equiv e_2 : \forall\,(t.\tau)}{\Delta\,\Gamma \vdash e_1[\tau'] \equiv e_2[\tau'] : [\tau'/t]\tau}\quad \textsc{eq\_App}0$$

$$\frac{\begin{array}{c} \Delta\,\Gamma, x:\tau_1 \vdash e_2 : \tau_2 \\ \Delta\,\Gamma \vdash e_1 : \tau_1 \end{array}}{\Delta\,\Gamma \vdash (\lambda(x:\tau_1)e_2)(e_1) \equiv [e_1/x]e_2 : \tau_2}\quad \textsc{eq\_ap}$$

$$\frac{\begin{array}{c} \Delta, t\,\mathbf{type}\,\Gamma \vdash e : \tau \\ \Delta \vdash \rho\,\mathbf{type} \end{array}}{\Delta\,\Gamma \vdash \Lambda(t)e[\rho] \equiv [\rho/t]e : \tau}\quad \textsc{eq\_App}$$

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Definition rules:         24 good    0 bad
Definition rule clauses: 55 good    0 bad
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