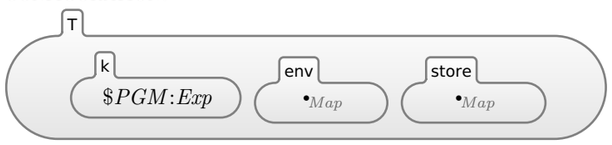
LAMBDA

MODULE LAMBDA

SYNTAX $Exp ::= Id$
$\mid \lambda Id.Exp$
$\mid Exp\ \ Exp$ [strict]
$\mid (Exp)$ [bracket]

CONFIGURATION:

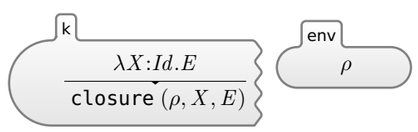


SYNTAX $Val ::= \texttt{closure}\ (Map, Id, Exp)$

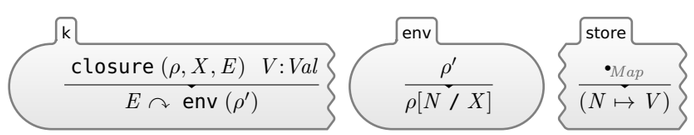
SYNTAX $Exp ::= Val$

SYNTAX $KResult ::= Val$

RULE

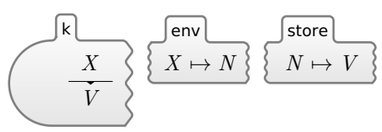


RULE



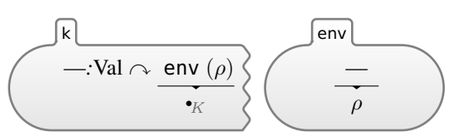
requires $\texttt{fresh}\ (N:Nat)$

RULE



SYNTAX $K ::= \texttt{env}\ (Map)$

RULE



[structural]

SYNTAX $Val ::= Int$
$\mid Bool$

SYNTAX $Exp ::= Exp * Exp$ [strict]
$\mid Exp\ \texttt{/}\ Exp$ [strict]
$\mid Exp\ \texttt{+}\ Exp$ [strict]
$\mid Exp\ \texttt{<=}\ Exp$ [strict]

RULE $\dfrac{I1:Int * I2:Int}{I1 *_{Int} I2}$

RULE $\dfrac{I1:Int\ \texttt{/}\ I2:Int}{I1 \div_{Int} I2}$

RULE $\dfrac{I1:Int\ \texttt{+}\ I2:Int}{I1 +_{Int} I2}$

RULE $\dfrac{I1:Int\ \texttt{<=}\ I2:Int}{I1 \leq_{Int} I2}$

SYNTAX $Exp ::= \texttt{if}\ Exp\ \texttt{then}\ Exp\ \texttt{else}\ Exp$ [strict(1)]

RULE $\dfrac{\texttt{if true then}\ E\ \texttt{else}\ —}{E}$

RULE $\dfrac{\texttt{if false then}\ —\ \texttt{else}\ E}{E}$

SYNTAX $Exp ::= \texttt{let}\ Id\ \texttt{=}\ Exp\ \texttt{in}\ Exp$

RULE $\dfrac{\texttt{let}\ X\ \texttt{=}\ E\ \texttt{in}\ E':Exp}{(\lambda X.E')\ \ E}$ [macro]

SYNTAX $Exp ::= \texttt{letrec}\ Id\ \ Id\ \texttt{=}\ Exp\ \texttt{in}\ Exp$

SYNTAX $Id ::= \texttt{\$x}$
$\mid \texttt{\$y}$

RULE $\dfrac{\texttt{letrec}\ F:Id\ \ X:Id\ \texttt{=}\ E\ \texttt{in}\ E'}{\texttt{let}\ F\ \texttt{=}\ (\lambda\texttt{\$x}.((\lambda F.\lambda X.E)\ \ (\lambda\texttt{\$y}.(\texttt{\$x\ \$x\ \$y}))))\ \ (\lambda\texttt{\$x}.((\lambda F.\lambda X.E)\ \ (\lambda\texttt{\$y}.(\texttt{\$x\ \$x\ \$y}))))\ \texttt{in}\ E'}$ [macro]

END MODULE