LAMBDA

MODULE LAMBDA

SYNTAX *Type* ::= `int`
| `bool`
| *Type* `->` *Type*
| (*Type*) [bracket(bracket())]

SYNTAX *Exp* ::= *Id*
| `lambda` *Id* : *Type* . *Exp*
| *Exp* *Exp* [strict(strict())]
| (*Exp*) [bracket(bracket())]

SYNTAX *Exp* ::= *Type*

SYNTAX *Variable* ::= *Id*

SYNTAX *KResult* ::= *Type*

CONFIGURATION:

$\langle \langle \$PGM{:}Exp \rangle_{\mathsf{k}} \; \langle \texttt{.Map} \rangle_{\mathsf{tenv}} \rangle_{\mathsf{T}}$

SYNTAX *Exp* ::= *Exp* `->` *Exp* [strict(strict())]

RULE $\left\langle \dfrac{\texttt{lambda}\ X : T\ .\ E{:}Exp}{(T \texttt{ -> } E) \curvearrowright \rho} \cdots \right\rangle_{\mathsf{k}} \; \left\langle \dfrac{\rho{:}Map}{\rho[X \texttt{ <- } T]} \right\rangle_{\mathsf{tenv}}$

RULE $\left\langle \dfrac{X{:}Id}{T} \cdots \right\rangle_{\mathsf{k}} \; \left\langle \cdots X \mapsto T \cdots \right\rangle_{\mathsf{tenv}}$

RULE $\dfrac{(T1 \texttt{ -> } T2)\ \ T1}{T2}$

SYNTAX *Exp* ::= *Int*
| *Bool*
| *Exp* ∗ *Exp* [strict(strict())]
| *Exp* / *Exp* [strict(strict())]
| *Exp* + *Exp* [strict(strict())]
| *Exp* <= *Exp* [strict(strict())]

RULE $\dfrac{\text{—:Int}}{\texttt{int}}$

RULE $\dfrac{\text{—:Bool}}{\texttt{bool}}$

RULE $\dfrac{\texttt{int} * \texttt{int}}{\texttt{int}}$

RULE $\dfrac{\texttt{int / int}}{\texttt{int}}$

RULE $\dfrac{\texttt{int + int}}{\texttt{int}}$

RULE $\dfrac{\texttt{int <= int}}{\texttt{bool}}$

SYNTAX *Exp* ::= `if` *Exp* `then` *Exp* `else` *Exp* [strict(strict())]

RULE $\dfrac{\texttt{if bool then } T{:}Type \texttt{ else } T}{T}$

SYNTAX *Exp* ::= `let` *Id* : *Type* = *Exp* `in` *Exp*

RULE $\dfrac{\texttt{let } X : T = E \texttt{ in } E'}{(\texttt{lambda } X : T\ .\ E')\ \ E}$ [macro(macro())]

SYNTAX *Exp* ::= `letrec` *Id* : *Type* *Id* : *Type* = *Exp* `in` *Exp*
| `mu` *Id* : *Type* . *Exp*

RULE $\dfrac{\texttt{letrec } F : T1\ \ X : T2 = E \texttt{ in } E'}{\texttt{let } F : T1 = \texttt{mu } F : T1\ .\ \texttt{lambda } X : T2\ .\ E \texttt{ in } E'}$ [macro(macro())]

RULE $\left\langle \dfrac{\texttt{mu } X : T\ .\ E}{(T \texttt{ -> } T)\ \ E \curvearrowright \rho} \cdots \right\rangle_{\mathsf{k}} \; \left\langle \dfrac{\rho}{\rho[X \texttt{ <- } T]} \right\rangle_{\mathsf{tenv}}$

RULE $\left\langle \text{—:Type} \curvearrowright \dfrac{\rho}{\bullet_K} \cdots \right\rangle_{\mathsf{k}} \; \left\langle \dfrac{\text{—}}{\rho} \right\rangle_{\mathsf{tenv}}$

END MODULE