LAMBDA

MODULE LAMBDA

SYNTAX *Exp* ::= *Int*
| *Bool*
| *Id*
| (*Exp*) [bracket]
| *Exp* *Exp* [strict]
| *Exp* * *Exp* [strict]
| *Exp* / *Exp* [strict]
| *Exp* + *Exp* [strict]
| *Exp* <= *Exp* [strict]
| lambda *Id* . *Exp* [binder]
| if *Exp* then *Exp* else *Exp* [strict]
| let *Id* = *Exp* in *Exp* [binder]
| letrec *Id* *Id* = *Exp* in *Exp* [binder]
| mu *Id* . *Exp* [binder]

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

SYNTAX *Exp* ::= *Type*

SYNTAX *Variable* ::= *Id*

SYNTAX *KResult* ::= *Type*

CONFIGURATION:

k
$*PGM*:*Exp*

RULE $\dfrac{I{:}Int}{\texttt{int}}$

RULE $\dfrac{B{:}Bool}{\texttt{bool}}$

RULE $\dfrac{T1{:}Type \texttt{ * } T2{:}Type}{T1 \texttt{ = int} \curvearrowright T2 \texttt{ = int} \curvearrowright \texttt{int}}$

RULE $\dfrac{T1{:}Type \texttt{ / } T2{:}Type}{T1 \texttt{ = int} \curvearrowright T2 \texttt{ = int} \curvearrowright \texttt{int}}$

RULE $\dfrac{T1{:}Type \texttt{ + } T2{:}Type}{T1 \texttt{ = int} \curvearrowright T2 \texttt{ = int} \curvearrowright \texttt{int}}$

RULE $\dfrac{T1{:}Type \texttt{ <= } T2{:}Type}{T1 \texttt{ = int} \curvearrowright T2 \texttt{ = int} \curvearrowright \texttt{bool}}$

RULE $\dfrac{\texttt{lambda } X \texttt{ . } E{:}Exp}{E[T \texttt{ / } X] \curvearrowright T{:}Type \texttt{ -> } \square}$

RULE $\dfrac{T2{:}Type \curvearrowright T1{:}Type \texttt{ -> } \square}{T1 \texttt{ -> } T2}$

RULE $\dfrac{T1{:}Type \quad T2{:}Type}{T1 \texttt{ = } (T2 \texttt{ -> } T{:}Type) \curvearrowright T}$

RULE $\dfrac{\texttt{if } T{:}Type \texttt{ then } T1{:}Type \texttt{ else } T2{:}Type}{T \texttt{ = bool} \curvearrowright T1 \texttt{ = } T2 \curvearrowright T1}$

RULE $\dfrac{\texttt{let } X \texttt{ = } E \texttt{ in } E'}{E'[E \texttt{ / } X]}$ [macro]

RULE $\dfrac{\texttt{letrec } F \quad X \texttt{ = } E \texttt{ in } E'}{\texttt{let } F \texttt{ = mu } F \texttt{ . lambda } X \texttt{ . } E \texttt{ in } E'}$ [macro]

RULE $\dfrac{\texttt{mu } X \texttt{ . } E}{(T{:}Type \texttt{ -> } T) \quad (E[T \texttt{ / } X])}$

SYNTAX *KItem* ::= *Type* = *Type*

RULE $\dfrac{T \texttt{ = } T}{\bullet_K}$

END MODULE