

IMP

MODULE IMP-SYNTAX

SYNTAX $AExp ::= Int$
| $String$
| Id
| $++ Id$
| $read ()$
| $AExp / AExp$ [strict, division]
| $AExp + AExp$ [strict]
| $(AExp)$ [bracket]

SYNTAX $BExp ::= Bool$
| $AExp \leq AExp$ [seqstrict]
| $! BExp$ [strict]
| $BExp \&\& BExp$ [strict(1)]
| $(BExp)$ [bracket]

SYNTAX $Block ::= \{\}$
| $\{ Stmt \}$

SYNTAX $Stmt ::= Block$
| $Id = AExp ;$ [strict(2)]
| $if (BExp) Block \text{ else } Block$ [strict(1)]
| $while (BExp) Block$
| $int Ids ;$
| $print (AExps) ;$ [strict]
| $halt ;$
| $spawn Stmt$
| $Stmt \text{ } Stmt$

SYNTAX $Ids ::= List\{Id, \text{“}, \text{”}\}$ [strict]

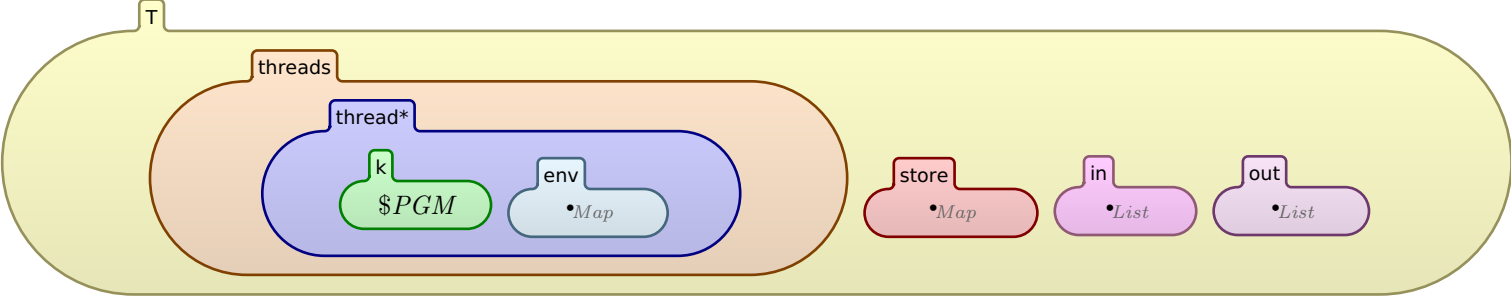
SYNTAX $AExps ::= List\{AExp, \text{“}, \text{”}\}$ [strict]

END MODULE

MODULE IMP

SYNTAX $KResult ::= Int$
| $Bool$
| $String$

CONFIGURATION:



[lookup]



[increment]



[read]

RULE $\frac{I1 / I2}{I1 \div_{Int} I2}$ requires $I2 \neq_{Int} 0$

RULE $\frac{I1 + I2}{I1 +_{Int} I2}$

RULE $\frac{Str1 + Str2}{Str1 +_{String} Str2}$

RULE $\frac{I1 \leq I2}{I1 \leq_{Int} I2}$

RULE $\frac{! T}{\neg_{Bool} T}$

RULE $\frac{true \&\& B}{B}$

RULE $\frac{false \&\& \text{—}}{false}$

RULE $\frac{\{\}}{\bullet_K}$ [structural]

RULE $\frac{\{S\}}{S \curvearrowright_{env} (\rho)}$ [structural]

SYNTAX $K ::= env (Map)$

RULE $\frac{}{\bullet_K}$ [structural]

RULE $\frac{X = I ;}{\bullet_K}$ [assignment]

RULE $\frac{S1 \ S2}{S1 \curvearrowright S2}$ [structural]

RULE $\frac{if (true) S \text{ else } \text{—}}{S}$

RULE $\frac{if (false) \text{—} \text{ else } S}{S}$

RULE $\frac{while (B) S}{if (B) \{ S \text{ while } (B) S \} \text{ else } \{\}}$ [structural]

RULE $\frac{int \ X, Xs ;}{\bullet_K}$ requires fresh (N)

RULE $\frac{int \bullet_{Ids} ;}{\bullet_K}$ [structural]

SYNTAX $Printable ::= Int$
| $String$

SYNTAX $AExp ::= Printable$

RULE $\frac{print (P, AEs) ;}{\bullet_K}$ [print]

RULE $\frac{print (\bullet_{AExps}) ;}{\bullet_K}$ [structural]

RULE $\frac{halt ; \curvearrowright \text{—}}{\bullet_K}$

RULE $\frac{spawn S}{\bullet_K}$

RULE $\frac{}{\bullet_K}$ [structural]

END MODULE