

IMP

MODULE IMP-SYNTAX

```
SYNTAX  AExp ::= Int
          | String
          | Id
          | ++ Id
          | read ()
          | AExp / AExp [strict]
          | AExp + AExp [strict]
          | spawn Block [strict]
          | Id = AExp [strict(2)]
          | (AExp) [bracket]

SYNTAX  BExp ::= Bool
          | AExp ≤ AExp [strict]
          | ! BExp [strict]
          | BExp && BExp [strict]
          | (BExp) [bracket]

SYNTAX  Block ::= {Stmts}

SYNTAX  Stmt ::= Block
          | AExp ; [strict]
          | if (BExp)Block else Block [strict]
          | while (BExp)Block [strict]
          | int Ids ;
          | print (AExps) ; [strict]
          | halt ;
          | join AExp ; [strict]

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

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

SYNTAX  Stmts ::= List{Stmt, “”} [seqstrict]
```

END MODULE

MODULE IMP

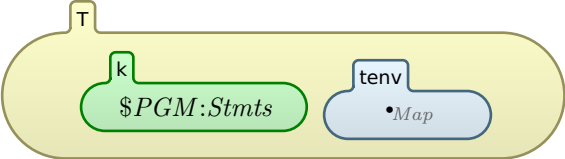
```
SYNTAX  BlockOrStmtType ::= block
          | stmt

SYNTAX  PrintableType ::= int
          | string

SYNTAX  Type ::= PrintableType
          | bool
          | BlockOrStmtType

SYNTAX  KResult ::= Type
```

CONFIGURATION:



RULE $\frac{\text{---:Int}}{\text{int}}$

RULE $\frac{\text{---:String}}{\text{string}}$

RULE $\frac{\frac{X:Id}{T}}{T} \quad \frac{\text{tenv}}{X \mapsto T}$

RULE $\frac{\frac{++ X:Id}{\text{int}}}{\text{int}} \quad \frac{\text{tenv}}{X \mapsto \text{int}}$

RULE $\frac{\text{read} ()}{\text{int}}$

SYNTAX AExp ::= Type

RULE $\frac{\text{int} / \text{int}}{\text{int}}$

RULE $\frac{\text{int} + \text{int}}{\text{int}}$

RULE $\frac{\text{string} + \text{string}}{\text{string}}$

RULE $\frac{\text{spawn block}}{\text{int}}$

RULE $\frac{\frac{X = T}{T}}{T} \quad \frac{\text{tenv}}{X \mapsto T}$

SYNTAX BExp ::= Type

RULE $\frac{\text{---:Bool}}{\text{bool}}$

RULE $\frac{\text{int} \leq \text{int}}{\text{bool}}$

RULE $\frac{! \text{ bool}}{\text{bool}}$

RULE $\frac{\text{bool} \&\& \text{ bool}}{\text{bool}}$

RULE $\frac{\frac{\{Ss\}}{Ss \curvearrowright \text{tenv} (\rho)}}{\text{tenv}} \quad \rho$

SYNTAX K ::= tenv (Map)

RULE $\frac{\frac{\text{---:BlockOrStmtType} \curvearrowright \text{tenv} (\rho)}{\text{block}}}{\text{tenv}} \quad \frac{\text{---}}{\rho}$

RULE $\frac{\text{int} ;}{\text{stmt}}$

SYNTAX Block ::= Type

RULE $\frac{\text{if} (\text{bool}) \text{ block} \text{ else } \text{block}}{\text{stmt}}$

RULE $\frac{\text{while} (\text{bool}) \text{ block}}{\text{stmt}}$

RULE $\frac{\frac{\text{int } X:Id, Xs:Ids ;}{Xs}}{\text{tenv}} \quad \frac{\text{•Map}}{X \mapsto \text{int}}$

RULE $\frac{\text{int } \text{•}_{Ids} ;}{\text{stmt}}$

RULE $\frac{\text{print} (\text{---:PrintableType}, AEs) ;}{AEs}$

RULE $\frac{\text{print} (\text{•}_{AExps}) ;}{\text{stmt}}$

RULE $\frac{\text{halt} ;}{\text{stmt}}$

RULE $\frac{\text{join int} ;}{\text{stmt}}$

RULE $\frac{\text{•}_{Stmts}}{\text{stmt}}$

RULE $\frac{\text{---:BlockOrStmtType } Ss}{Ss}$

END MODULE