

IMP

MODULE IMP-SYNTAX

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

```
SYNTAX  BExp ::= Bool
          | AExp ≤ AExp [seqstrict]
          | ! BExp [strict]
          | BExp && BExp [strict(1)]
          | (BExp) [bracket]
```

```
SYNTAX  Block ::= {Stmts}
```

```
SYNTAX  Stmt ::= Block
          | AExp ; [strict]
          | if (BExp)Block else Block [strict(1)]
          | while (BExp)Block
          | int Ids ;
          | print (AExps) ; [strict]
          | halt ;
          | join AExp ; [strict]
```

```
SYNTAX  Ids ::= List{Id, ", " } [strict]
```

```
SYNTAX  AExps ::= List{AExp, ", " } [strict]
```

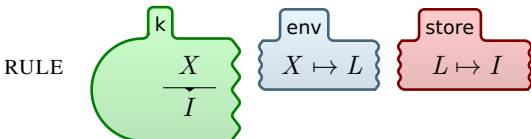
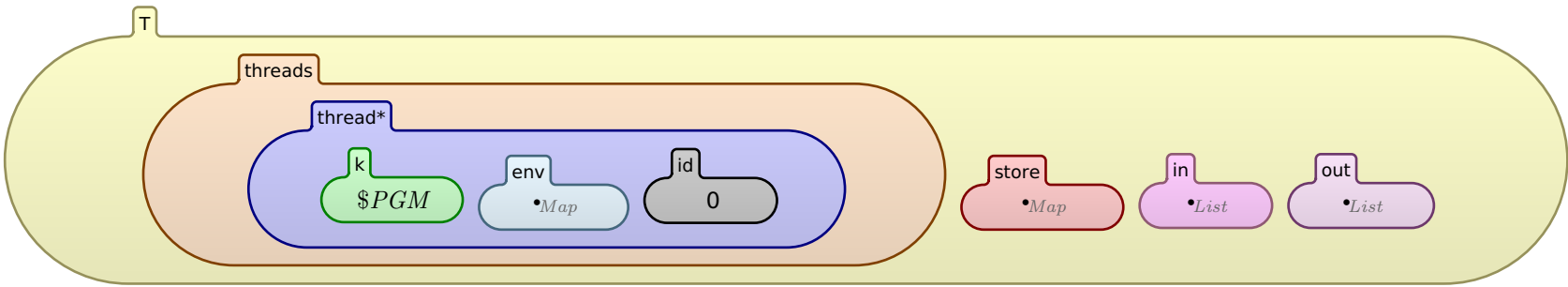
```
SYNTAX  Stmts ::= List{Stmt, ""}
```

END MODULE

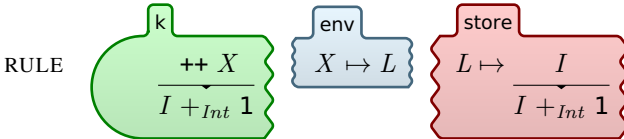
MODULE IMP

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

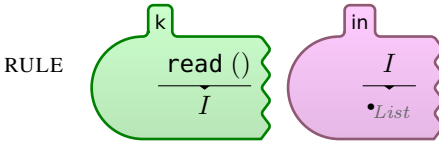
CONFIGURATION:



[lookup, transition]



[increment]



[read]

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

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

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

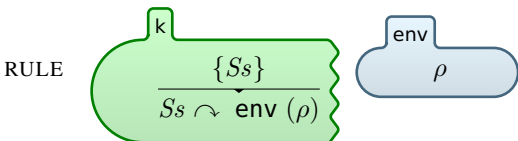
RULE $\frac{I1 \leq I2}{I1 \leq_{Int} I2}$

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

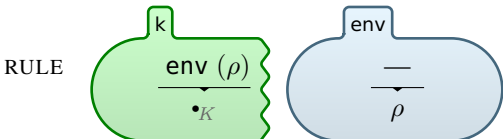
RULE $\frac{\text{true} \ \&\& \ B}{B}$

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

SYNTAX $KItem ::= \text{env} \ (Map)$

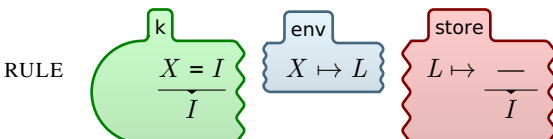


[structural]



[structural]

RULE $\frac{\text{---}}{\bullet_K};$



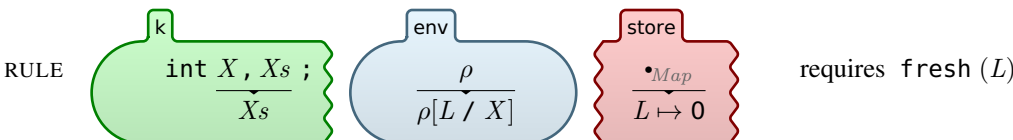
[assignment, transition]

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

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

RULE $\frac{\text{while } (B)S}{\text{if } (B)\{S \text{ while } (B)S\} \text{ else } \{\bullet_{Stmts}\}}$

[structural]



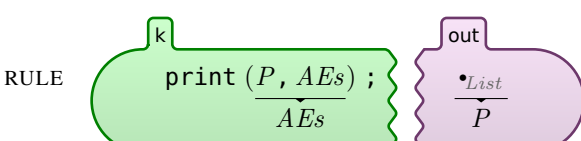
[structural]

RULE $\frac{\text{int } \bullet_{Ids} ;}{\bullet_K}$

[structural]

SYNTAX $AExp ::= \text{Printable}$

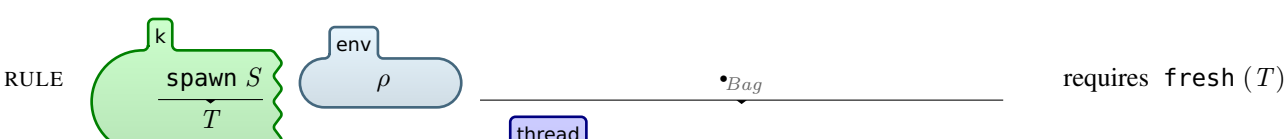
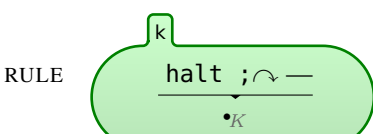
SYNTAX $\text{Printable} ::= \text{Int}$
 | String



[print]

RULE $\frac{\text{print } (\bullet_{AExps}) ;}{\bullet_K}$

[structural]



[structural]

RULE $\frac{\bullet_{Stmts}}{\bullet_K}$

[structural]

RULE $\frac{S \ Ss}{S \rightsquigarrow Ss}$

[structural]

END MODULE