

IMP-FL

MODULE IMP-FL-SYNTAX

```

SYNTAX  KLabel ::= div#ee
                | div#He
                | div#eH
                | plus#ee
                | plus#He
                | plus#eH
                | le#ee
                | le#He
                | not#e
                | not#H
                | and#ee
                | and#He
                | assign#ee
                | assign#eH
                | ite#eee
                | ite#Hee
                | while#ee
                | seq#ee
                | pgm#ee
                | emptyIds#
                | consIds#ee
                | skip#

```

```

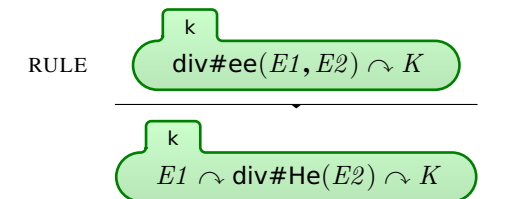
SYNTAX  KResult ::= Int
                | Bool

```

END MODULE

MODULE IMP-FL

CONFIGURATION:



RULE $\frac{\text{div\#ee}(E1, E2) \curvearrowright K}{E1 \curvearrowright \text{div\#He}(E2) \curvearrowright K}$ when 'notBool('isKResult($E1$))

RULE $\frac{\text{div\#ee}(E1, E2) \curvearrowright K}{E2 \curvearrowright \text{div\#eH}(E1) \curvearrowright K}$ when 'notBool('isKResult($E2$))

RULE $\frac{V \curvearrowright \text{div\#He}(E) \curvearrowright K}{\text{div\#ee}(V, E) \curvearrowright K}$ when 'isKResult(V)

RULE $\frac{V \curvearrowright \text{div\#eH}(E) \curvearrowright K}{\text{div\#ee}(E, V) \curvearrowright K}$ when 'isKResult(V)

RULE $\frac{\text{plus\#ee}(E1, E2) \curvearrowright K}{E1 \curvearrowright \text{plus\#He}(E2) \curvearrowright K}$ when 'notBool('isKResult($E1$))

RULE $\frac{\text{plus\#ee}(E1, E2) \curvearrowright K}{E2 \curvearrowright \text{plus\#eH}(E1) \curvearrowright K}$ when 'notBool('isKResult($E2$))

RULE $\frac{V \curvearrowright \text{plus\#He}(E) \curvearrowright K}{\text{plus\#ee}(V, E) \curvearrowright K}$ when 'isKResult(V)

RULE $\frac{V \curvearrowright \text{plus\#eH}(E) \curvearrowright K}{\text{plus\#ee}(E, V) \curvearrowright K}$ when 'isKResult(V)

RULE $\frac{\text{le\#ee}(E1, E2) \curvearrowright K}{E1 \curvearrowright \text{le\#He}(E2) \curvearrowright K}$ when 'notBool('isKResult($E1$))

RULE $\frac{V \curvearrowright \text{le\#He}(E) \curvearrowright K}{\text{le\#ee}(V, E) \curvearrowright K}$ when 'isKResult(V)

RULE $\frac{\text{not\#e}(E) \curvearrowright K}{E \curvearrowright \text{not\#H}(\bullet_{List} K) \curvearrowright K}$ when 'notBool('isKResult(E))

RULE $\frac{V \curvearrowright \text{not\#H}(\bullet_{List} K) \curvearrowright K}{\text{not\#e}(V) \curvearrowright K}$ when 'isKResult(V)

RULE $\frac{\text{and\#ee}(E1, E2) \curvearrowright K}{E1 \curvearrowright \text{and\#He}(E2) \curvearrowright K}$ when 'notBool('isKResult($E1$))

RULE $\frac{V \curvearrowright \text{and\#He}(E) \curvearrowright K}{\text{and\#ee}(V, E) \curvearrowright K}$ when 'isKResult(V)

RULE $\frac{\text{assign\#ee}(E1, E2) \curvearrowright K}{E2 \curvearrowright \text{assign\#eH}(E1) \curvearrowright K}$ when 'notBool('isKResult($E2$))

RULE $\frac{V \curvearrowright \text{assign\#eH}(E) \curvearrowright K}{\text{assign\#ee}(E, V) \curvearrowright K}$ when 'isKResult(V)

RULE $\frac{\text{ite\#eee}(E, S1, S2) \curvearrowright K}{E \curvearrowright \text{ite\#Hee}(S1, S2) \curvearrowright K}$ when 'notBool('isKResult(E))

RULE $\frac{V \curvearrowright \text{ite\#Hee}(S1, S2) \curvearrowright K}{\text{ite\#eee}(V, S1, S2) \curvearrowright K}$ when 'isKResult(V)

RULE $\frac{X \curvearrowright K}{EL \ X \mapsto I \ ER}$

RULE $\frac{I \curvearrowright K}{EL \ X \mapsto I \ ER}$

RULE $\frac{\text{assign\#ee}(X, I) \curvearrowright K}{EL \ X \mapsto \text{---} \ ER}$

RULE $\frac{K}{EL \ X \mapsto I \ ER}$

RULE $\frac{\text{plus\#ee}(I1, I2) \curvearrowright K}{I1 +_{Int} I2 \curvearrowright K}$

RULE $\frac{\text{div\#ee}(I1, I2) \curvearrowright K}{I1 \div_{Int} I2 \curvearrowright K}$ when $I2 \neq_K 0$

RULE $\frac{\text{le\#ee}(I1, I2) \curvearrowright K}{I1 \leq_{Int} I2 \curvearrowright K}$

RULE $\frac{\text{not\#e}(B) \curvearrowright K}{\neg_{Bool} B \curvearrowright K}$

RULE $\frac{\text{and\#ee}(\text{true}, B) \curvearrowright K}{B \curvearrowright K}$

RULE $\frac{\text{and\#ee}(\text{false}, \text{---}) \curvearrowright K}{\text{false} \curvearrowright K}$

RULE $\frac{\text{skip\#}(\bullet_{List} K) \curvearrowright K}{K}$

RULE $\frac{\text{seq\#ee}(E1, E2) \curvearrowright K}{E1 \curvearrowright E2 \curvearrowright K}$

RULE $\frac{\text{ite\#eee}(\text{true}, E1, E2) \curvearrowright K}{E1 \curvearrowright K}$

RULE $\frac{\text{ite\#eee}(\text{false}, E1, E2) \curvearrowright K}{E2 \curvearrowright K}$

RULE $\frac{\text{while\#ee}(E, S) \curvearrowright K}{\text{ite\#eee}(E, \text{seq\#ee}(S, \text{while\#ee}(E, S)), \text{skip\#}(\bullet_{List} K)) \curvearrowright K}$

RULE $\frac{\text{consIds\#ee}(V, Rest) \curvearrowright K}{Rest \curvearrowright K}$ when 'notBool(V in keys E)

RULE $\frac{\text{emptyIds\#}(\bullet_{List} K) \curvearrowright K}{K}$

END MODULE