

Languages-beta: SIMPLE-3-Statements *

The PPlanCompS Project

SIMPLE-3-Statements.cbs | PLAIN | PRETTY

Language "SIMPLE"

3 Statements

Syntax *Block* : **block** ::= '{' *stmts*? '}'
Stmts : **stmts** ::= *stmt* *stmts*?
Stmt : **stmt** ::= *imp-stmt* | *vars-decl*
ImpStmt : **imp-stmt** ::= *block*
| *exp* ';'
| 'if' '(' *exp* ')' *block* ('else' *block*)?
| 'while' '(' *exp* ')' *block*
| 'for' '(' *stmt* *exp* ';' *exp* ')' *block*
| 'print' '(' *exps* ')' ';'
| 'return' *exp*? ';'
| 'try' *block* 'catch' '(' *id* ')' *block*
| 'throw' *exp* ';' ;

Rule \llbracket 'if' '(' *Exp* ')' *Block* \rrbracket : *stmt* =
 \llbracket 'if' '(' *Exp* ')' *Block* 'else' '{' '}' \rrbracket

Rule \llbracket 'for' '(' *Stmt* *Exp*₁ ';' *Exp*₂ ')'
 '{' *Stmts* '}' \rrbracket : *stmt* =
 \llbracket '{' *Stmt*
 'while' '(' *Exp*₁ ')'
 '{' '{' *Stmts* '}' *Exp*₂ ';' '}'
 '}' \rrbracket

*Suggestions for improvement: plancomps@gmail.com.
Reports of issues: <https://github.com/plancomps/CBS-beta/issues>.

Semantics $\text{exec}[_ : \text{stmts}] : \Rightarrow \text{null-type}$

Rule $\text{exec}[\text{'{' '}'}] = \text{null}$

Rule $\text{exec}[\text{'{' Stmt '}'}] = \text{exec}[\text{Stmt}]$

Rule $\text{exec}[\text{ImpStmt Stmt}] =$
 $\text{sequential}(\text{exec}[\text{ImpStmt}], \text{exec}[\text{Stmt}])$

Rule $\text{exec}[\text{VarsDecl Stmt}] =$
 $\text{scope}(\text{declare}[\text{VarsDecl}], \text{exec}[\text{Stmt}])$

Rule $\text{exec}[\text{VarsDecl}] = \text{effect}(\text{declare}[\text{VarsDecl}])$

Rule $\text{exec}[\text{Exp ';' }] = \text{effect}(\text{rval}[\text{Exp}])$

Rule $\text{exec}[\text{'if' '(' Exp ')' Block₁ 'else' Block₂}] =$
 $\text{if-else}(\text{rval}[\text{Exp}], \text{exec}[\text{Block}_1], \text{exec}[\text{Block}_2])$

Rule $\text{exec}[\text{'while' '(' Exp ')' Block}] = \text{while}(\text{rval}[\text{Exp}], \text{exec}[\text{Block}])$

Rule $\text{exec}[\text{'print' '(' Exps ')' ';' }] = \text{print}(\text{rvals}[\text{Exps}])$

Rule $\text{exec}[\text{'return' Exp ';' }] = \text{return}(\text{rval}[\text{Exp}])$

Rule $\text{exec}[\text{'return' ';' }] = \text{return}(\text{null})$

Rule $\text{exec}[\text{'try' Block₁ 'catch' '(' Id ')' Block₂}] =$
 $\text{handle-thrown}(\text{exec}[\text{Block}_1],$
 $\text{scope}(\text{bind}(\text{id}[\text{Id}], \text{allocate-initialised-variable}(\text{values}, \text{given})),$
 $\text{exec}[\text{Block}_2]))$

Rule $\text{exec}[\text{'throw' Exp ';' }] = \text{throw}(\text{rval}[\text{Exp}])$