

Languages-beta: SIMPLE-3-Statements *

The PPlanCompS Project

SIMPLE-3-Statements.cbs | PLAIN | PRETTY

Language "SIMPLE"

3 Statements

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

Rule $\llbracket \text{'if' ' (' Exp ') ' Block} \rrbracket : stmt =$
 $\llbracket \text{'if' ' (' Exp ') ' Block 'else' '{' '}' } \rrbracket$
Rule $\llbracket \text{'for' ' (' Stmt Exp_1 ';' Exp_2 ') '}$
 $\text{'{' Stmt '}' } \rrbracket : stmt =$
 $\llbracket \text{'{' Stmt}$
 $\text{'while' ' (' Exp_1 ') '}$
 $\text{'{' '{' Stmt '}' Exp_2 ';' '}'}$
 $\text{'}' } \rrbracket$

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