

# Unstable-Languages-beta: IMPPP-3 \*

The PLaNCompS Project

IMPPP-3.cbs | PLAIN | PRETTY

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Language “IMPPP”

## 3 Boolean expressions

*Syntax*  $BExp : bexp ::=$  `false`  
| `true`  
| `aexp <= aexp`  
| `! bexp`  
| `bexp && bexp`  
| `( bexp )`

*Semantics*  $eval\_bool \llbracket \_ : bexp \rrbracket : \Rightarrow$  `booleans`  
*Rule*  $eval\_bool \llbracket \text{false} \rrbracket =$  `false`  
*Rule*  $eval\_bool \llbracket \text{true} \rrbracket =$  `true`  
*Rule*  $eval\_bool \llbracket AExp_1 <= AExp_2 \rrbracket =$   
`is-less-or-equal left-to-right`( $eval\_arith \llbracket AExp_1 \rrbracket, eval\_arith \llbracket AExp_2 \rrbracket$ )  
*Rule*  $eval\_bool \llbracket ! BExp \rrbracket =$  `not`( $eval\_bool \llbracket BExp \rrbracket$ )  
*Rule*  $eval\_bool \llbracket BExp_1 \&\& BExp_2 \rrbracket =$   
`if-true-else`( $eval\_bool \llbracket BExp_1 \rrbracket, eval\_bool \llbracket BExp_2 \rrbracket, \text{false}$ )  
*Rule*  $eval\_bool \llbracket ( BExp ) \rrbracket = eval\_bool \llbracket BExp \rrbracket$

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\*Suggestions for improvement: [plancomps@gmail.com](mailto:plancomps@gmail.com).  
Reports of issues: <https://github.com/plancomps/CBS-beta/issues>.