

# Languages-beta: IMP-2 \*

The PLaNCompS Project

IMP-2.cbs | PLAIN | PRETTY

---

Language “IMP”

## 2 Boolean expressions

Syntax  $BExp : bexp ::=$

- $'false'$
- $| 'true'$
- $| aexp \leq aexp$
- $| '! bexp$
- $| bexp \&\& bexp$
- $| '(' bexp ')'$

Semantics  $eval\_bool \llbracket \_ : bexp \rrbracket : \Rightarrow$  **booleans**

Rule  $eval\_bool \llbracket 'false' \rrbracket =$  **false**

Rule  $eval\_bool \llbracket 'true' \rrbracket =$  **true**

Rule  $eval\_bool \llbracket AExp_1 \leq AExp_2 \rrbracket =$   
**is-less-or-equal**( $eval\_arith \llbracket AExp_1 \rrbracket$ ,  $eval\_arith \llbracket AExp_2 \rrbracket$ )

Rule  $eval\_bool \llbracket '! BExp \rrbracket =$  **not**( $eval\_bool \llbracket BExp \rrbracket$ )

Rule  $eval\_bool \llbracket BExp_1 \&\& BExp_2 \rrbracket =$   
**if-true-else**( $eval\_bool \llbracket BExp_1 \rrbracket$ ,  $eval\_bool \llbracket BExp_2 \rrbracket$ , **false**)

Rule  $eval\_bool \llbracket '(' BExp ')' \rrbracket = eval\_bool \llbracket BExp \rrbracket$

---

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