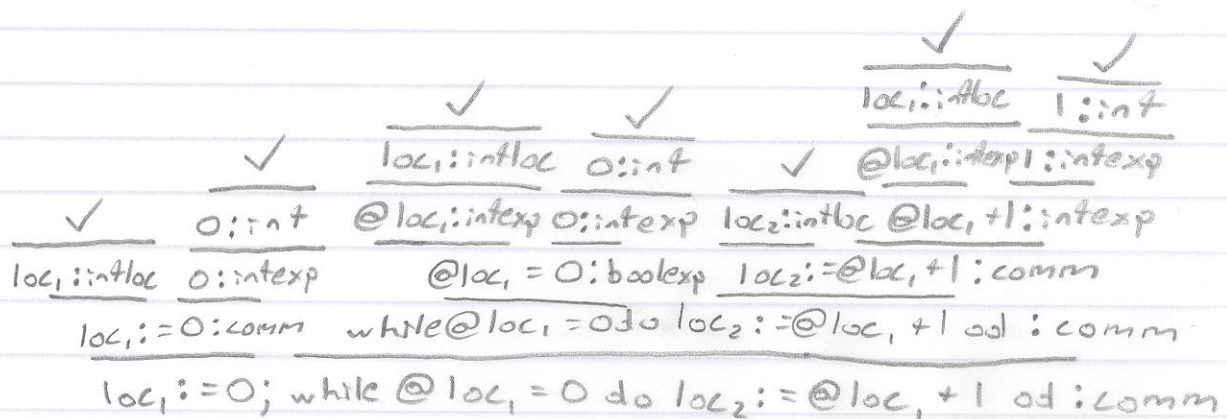


COSC 4200 HW#5

1. check ✓
2. (read from bottom → top)

we are left with only valid terminals,

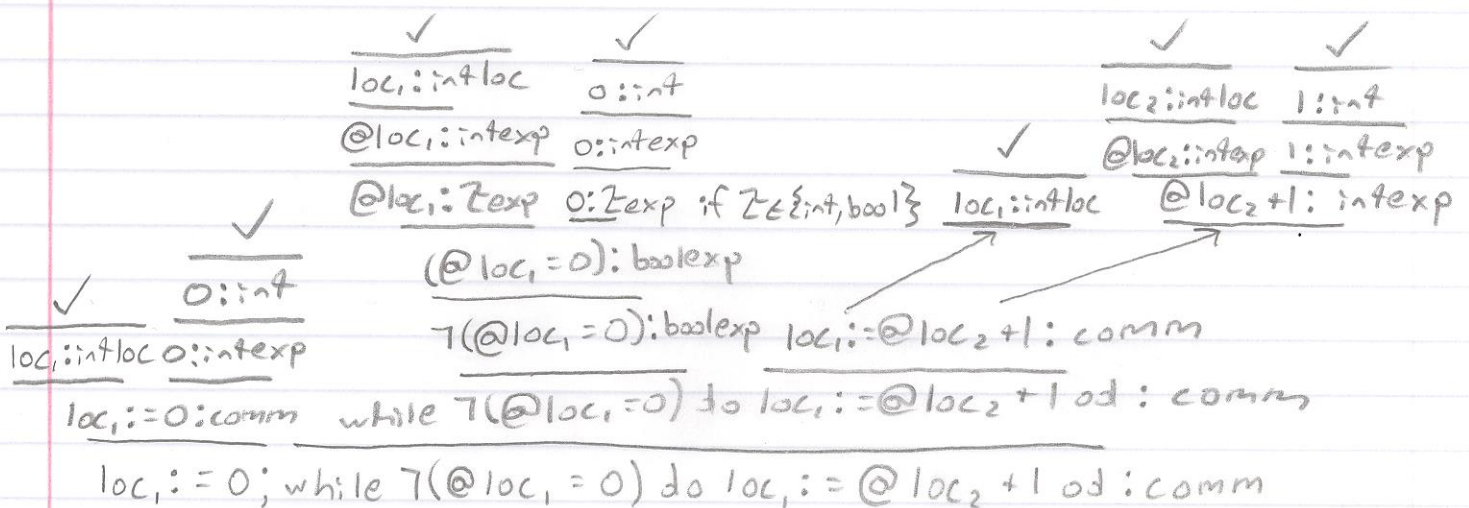
∴ $loc_1 := 0; \text{while } @loc_1 = 0 \text{ do } loc_2 := @loc_1 + 1 \text{ od} : \text{comm}$ is well-typed. ■



3. (read from bottom → top)

we are left with only valid terminals,

∴ $loc_1 := 0; \text{while } \neg(@loc_1 = 0) \text{ do } loc_1 := @loc_2 + 1 \text{ od} : \text{comm}$ is well-typed. ■



(continued on next page) →

(read from bottom \rightarrow top)

3. (continued from previous page)

@loc, :: intexp,
not intloc!

$\frac{\times}{\text{---}}$
@loc, :: intloc

$\frac{\checkmark}{\text{---}}$
O :: int
O :: intexp

@loc, := O : comm

Because @loc, := O : comm requires
@loc, :: intloc, yet @loc, :: intexp,
then the command cannot be reduced
into valid terminals.

\therefore @loc, := O : comm is NOT
well-typed. \blacksquare

we are left with only valid terminals,

\therefore loc, := @loc, = O : comm is well-typed. \blacksquare

$\frac{\checkmark}{\text{---}}$ loc, :: intloc
 $\frac{\checkmark}{\text{---}}$ O :: int
@loc, :: intexp O :: intexp

$\frac{\checkmark}{\text{---}}$ @loc, :: Zexp O :: Zexp where $Z \in \{int, bool\}$
loc, :: intloc @loc, = O : boolexp

loc, := @loc, = O : comm