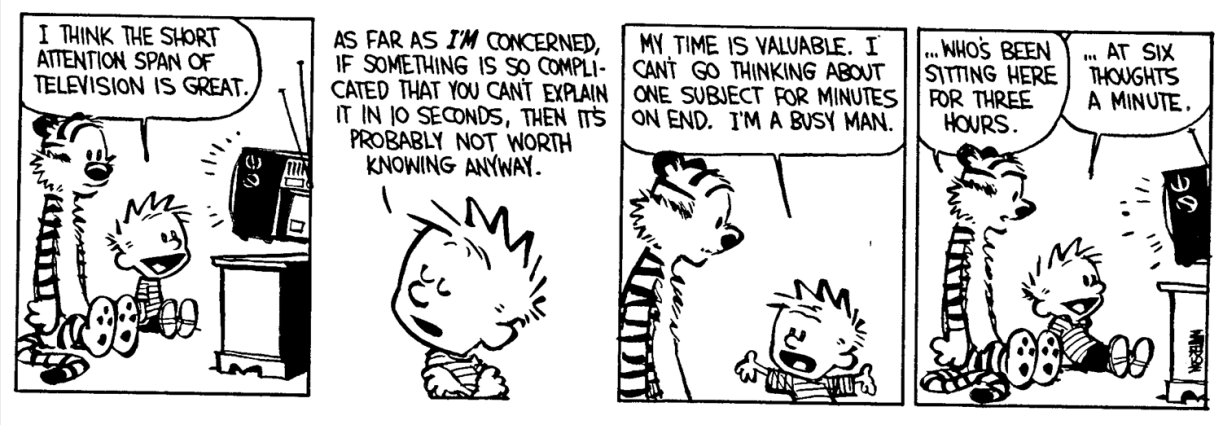
Meeting 11: Operational Semantics



Today

- Your questions on Lab 3
- Operational semantics

Announcements

- COG submission workaround for "Username not found" (prevents your score from being written to moodle). Message us if you have this issue.
- Spencer: Wed 9/28, 7-8pm, MUEN D144
- Lab 3 out and due Fri 9/30 to Sat 10/1. ~~Checkpoint due Fri 9/23 to Sat 9/24.~~
- Lab 3 in-class exercise, Tue 10/4
- Midterm, Thu 10/6
    - No interviews or labs out during midterm week.
    - Lab 3 interviews following week of 10/10
    - Allowed: 1 side of letter-sized paper (8.5"x11") handwritten "crib sheet" created by you
- Prof. Chang is traveling next week Tue 10/4 and Thu 10/6. Conduct class by video on Tue 10/4.

~ moodle review exercise due Tue 10/4

+ Fri. 10/2

Lab 2 Interviews

Reminder: to help you understand what you understand and don't understand for the midterm. If you didn't do well, please come see us.

Lab 3 builds on Lab 2 (and Lab 4 builds on Lab 3), so keep working at it. Even if you miss submission (~~for you~~), keep working at it.

↳ dropping

Questions

- substitute — function ⇝ AST ①
- Eval ✓✓ • eval — typeerror ✓ (rule → code)
- DoConst — in notes step - propagate
- SearchCall ②

Lang spec

- user / programmer
- implementor
- designer

} unambiguously understand

syntax — semantics

1+3 1+true 4 2

$

((1 # 2) # 3) $ 4

① syntactic – reading as a tree
- precedence
- associativity

② semantic
- evaluation order

$e_1 \# e_2$

---

prints "I am f"

f() + g() — prints "I am g"

if are free of side effects (= pure), then can't see the effect of evaluation order

⇒ referentially transparent

Big-step

$E \vdash e \Downarrow v$

relation between expressions and their values

all I define is what the result is

Small-step

$e \to e'$

relation between single steps of evaluation (or reduction)

this allows me to define evaluation order

= "how I evaluate to a value"

f() + g()