Mutable Structures, Hand Evaluation, and The Recipe

Or,

What happened to our trees?
What happens when structures change?

- Values aren’t just trees any more
  - Mutation allows us to observe sharing
- Much more care needed with recursion
  - Fields of a structure are not “always smaller” than the structure itself.
- All old intuitions work as long as set! is not used
- Much more care is needed with set!
Example from last time

(define p1 (make-posn 1 2))
(define p2 (make-posn 3 4))

Comparing

(set! p1 p2)
(begin (set-posn-x! p1 (posn-x p2))
  (set-posn-y! p2 (posn-x p2)))

What is p1 after (set-posn-x! p2 5)
What can we do with a list?

Think of a list as carrying tasks for the week (first place Monday, second Tuesday, etc)

- We might want to
  - Lookup an element
  - Change an element
Vectors

- (define X (vector 'a 'b 'c))
- (begin
  (vector-set! X 0 'blank)
  (vector-set! X 1 'blank)
  (vector-set! X 2 'blank)
  (vector-ref X 2))
- Applications?
List are still very useful!

- We still have cons
- With mutation, we can do more!