CS 61A Lecture 11

Wednesday, February 18

Announcements

- Optional Hog Contest due Wednesday 2/18 @ 11:59pm
- Homework 3 due Thursday 2/19 @ 11:59pm
- Project 2 due Thursday 2/26 @ 11:59pm

- Bonus point for early submission by Wednesday 2/25 @ 11:59pm!

Box-and-Pointer Notation

The Closure Property of Data Types

- A method for combining data values satisfies the closure property if:
  - The result of combination can itself be combined using the same method
  - Closure is powerful because it permits us to create hierarchical structures
  - Hierarchical structures are made up of parts, which themselves are made up of parts, and so on

Lists can contain lists as elements (in addition to anything else)

Box-and-Pointer Notation in Environment Diagrams

Lists are represented as a row of index-labeled adjacent boxes, one per element
Each box either contains a primitive value or points to a compound value

Interactive Diagram

Sequence Operations

Python sequence operators for membership and slicing

Membership

- `2 in digits` (True)
- `1 in digits` (False)

Slicing

- `digits[0:2]` (Slicing creates a new object)
- `digits[1:]` (8, 2, 8)
A tree has a root value and a sequence of branches; each branch is a tree.

The root values of sub-trees within a tree are often called node values or nodes.