CSC 151 Spring 2020
Topic: Binary Search

April 22, 2020

Day 34

Self-Checks

Check 1: Where are my keys?

a. Explain the role of the pred? parameter in list-sequential-search

b. Explain the role of the get-key parameter in keyed-list-sequential-search

c. If we double the length of the list, what is the worst case effect on the number or recursive calls in list-sequential-search?

Self-Checks

Check 2: Binary Search

a. Explain the role of may-precede? in binary-search

b. Explain the role of point-of-division, separating-element, sep-elt-key, left? And right? which are bound in the let* of binary-search.

c. Describe how and why the upper-bound of kernel search-portion changes when left? is true.

d. Describe how and why the lower-bound of kernel search-portion changes when right? is true.

e. If we double the length of the vector, what is the worst case effect on the number of recursive calls in binary-search?

Types of Problems in CS

What are some example problems we could solve with each of the following approaches? Think about it for a minute before moving on to the answers.

Repeating
Combining
Searching
Sorting

Types of Problems in CS

What are some example problems we could solve with each of the following approaches? Think about it for a minute before moving on to the answers.

Repeating: Anything where we use recursion. Make-list
Combining: appending lists, cons, reduce
Searching: using predicates to find matches, finding the first odd value in a list or vector
Sorting: prioritizing

Examples of Searching

Think of at least three procedures you could write that involve some kind of searching. I'll start you off with one example.

(look-up-word word dictionary)

Examples of Searching

Think of at least three procedures you could write that involve some kind of searching. I'll start you off with one example.

(look-up-word word dictionary)
(first-odd *lst*)
(find-name *name table*)
(find-by-house-number *num directory*)
(catch-bitcoin-miners *network-data*)

Lab Time



Upcoming Work

Please submit all exercises before the extras by Friday 4/24 at 10:30 pm.
Include documentation for problem 4.

To: csc-151-02-grader@grinnell.edu
Subject: CSC 151-02 Lab 4/22

Project Proposal is due **Friday**! Be sure to read the grading rubric!