Week: 06 Date: 10/7/2021

15-110 Recitation Week 6

Reminders

- HW3 is due Monday 10/11 at NOON
- How was Quiz 2?
- How were code reviews?

Overview

- Linear vs. Binary Search
- Hashing
- Dictionaries: Code Writing
- Recursive Interleave

Problems

LINEAR VS. BINARY SEARCH

What are the key differences between linear and binary search?

Tracing linear and binary search:

What are the key points in the binary search algorithm?

HASHING

(a) What does a hash table store?

(b) How are the locations for data chosen in a hashtable?

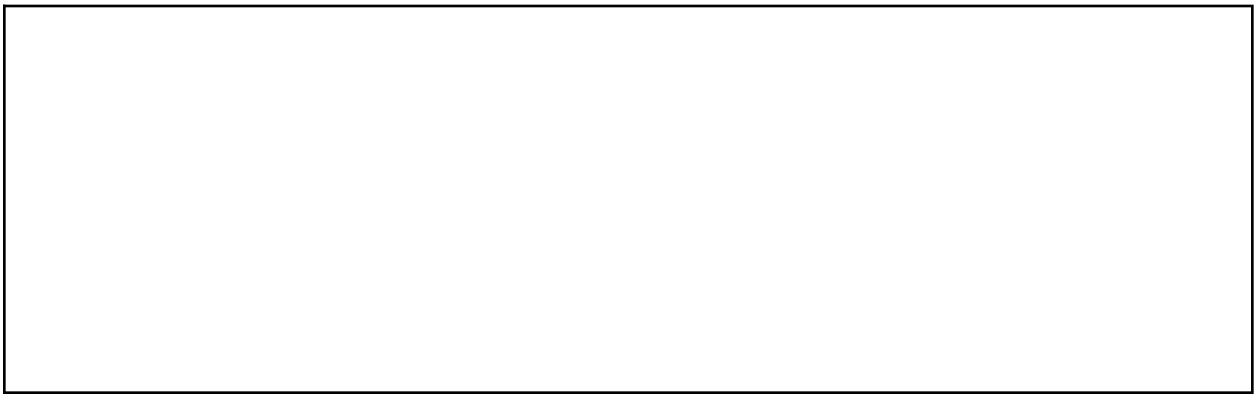
(c) How can we check if an element is in a hash table?

(d) Describe one concrete situation in which a hash table would **not** be an appropriate choice of data structure. Explain why a hash table would not be appropriate in that situation. (Bonus: What data structure would you use instead?)

DICTIONARIES: CODE WRITING

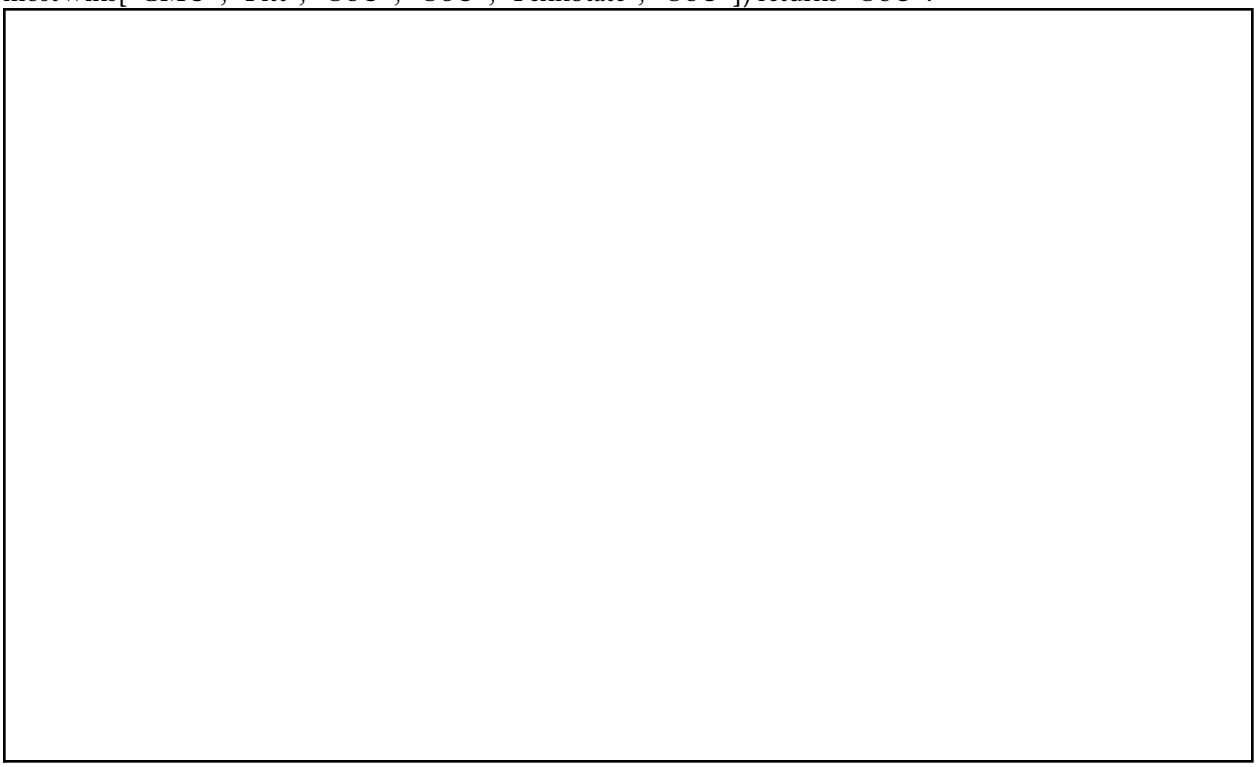
Notes on dictionaries:

Kelly's Bakery is doing an inventory of their freshly baked goods. This morning, they baked 12 new cupcakes and now they need to update their inventory to represent these items. You are given a dictionary that represents the inventory at Kelly's Bakery, which maps the name of the item to how many items of that baked good are available. Write the function updateInventory(d) that takes in this dictionary and updates it such that there are 12 new cupcakes in stock. Your function should be able to handle the situation that cupcakes are not provided as an item in this dictionary at all as well.



Given a list of wins by CMU, Pitt, OSU, PennState's, and another unspecified number of football teams, return the team with the most wins. There will be no ties. For example,

mostWins["CMU", "Pitt", "OSU", "OSU", "PennState", "OSU"]) returns "OSU".



RECURSIVE INTERLEAVE

Below we've written an iterative function interleave, which takes in two input lists of the same size and combines them into one list, alternating elements from the first list and the second list. For example, `interleave([1,2,3], [4,5,6])` should return `[1,4,2,5,3,6]`. Now, try to write this function recursively.