

CS350: Data Structures Class Notes

Class 7: Monday, September 15, 2008

Today we spent talked briefly about the maze assignment. Everyone now has a solution.

Finishing Recursion

First we talked about subroutine calls and activation records—an OS record that is used to store the state of a computer (in particular the return address) before a subroutine call is entered. We talked about tail-recursion as a means of improving recursive efficiency.

We looked at other recursive definitions from mathematics including addition using increment and decrement, multiplication as repeated addition, and division as repeated subtraction. Your book also discusses exponentiation and greatest common divisor.

We looked at a simple example of a recursive divide and conquer algorithms—finding the maximum value in a list. It should be clear why divide and conquer algorithms are typically recursive.

We also looked at an example of a greedy algorithm, counting change.

Complexity

We began talking about complexity using the two implementation of fib() from homework as examples. The idea of programmer, space, and time efficiency were introduced.

We also talked about what constitutes an anagram in preparation for Wednesday's homework.

Homework for Wednesday

Take a stab at finding a way to compare to strings to see if they are anagrams. Do this before you read the section on anagrams. Don't change your solution after you read the section. I'll grade accordingly.