CS 367 - Introduction to Data Structures
Thursday, March 10, 2016

Program 3 assigned – FINISH IT BEFORE BREAK

Homework 6 assigned Monday

Last Time
Call Stack Tracing
Recursion
- recursion vs. iteration
- rules of recursion
- constructing recursive code
- practice writing recursive code
Exam 1 returned

Today
Recursion
- more practice writing recursive code
- complexity of recursive methods
- practice analyzing complexity

Next Time
Read: finish Recursion, Search
Read: start Trees
Execution tree tracing
Searching
Categorizing ADTs Part 1
General Trees
- implementing
- determining tree height
Practice – Array

→ Write a recursive method that counts the number of even values in an (non-null) array filled with integers.

1.

2.

3.

4.

```java
int evenCount(int[] array) {
```
Analyzing Complexity of Recursive Methods

Options:
1.
2.

Steps
1.
Practice – Complexity of Recursive evenCount

Problem size N is

1. Equations

2. Table

3. Verify

4. Complexity
Practice – Strings

→ Write a recursive method that determines if a string is a palindrome.

Examples:
* eye
* mom
* radar
* racecar
* Rise to vote, sir!
* Never odd or even!
* A nut for a jar of tuna.
* Campus Motto: Bottoms up, Mac.
* Ed, I saw Harpo Marx ram Oprah W aside!

Assumptions: non-null input string, all spaces and punctuation removed, all lower-case

Useful string methods:
* char charAt(int index)
* int length()
* String substring(int begin, int one_past_last)
Practice – Complexity of Recursive isPalindrome

Problem size N is

1. Equations

2. Table

3. Verify

4. Complexity
Towers of Hanoi

Algorithm

solveTowers(count, src, dest, spare) {

Complexity

Problem size N is

1. Equations

2. Table

3 Verify

4. Complexity