Lab 6 (Recursion)

CSC 172 (Data Structures and Algorithms)
Fall 2017
University of Rochester
Due Date: Sunday, Oct 22 @ 11:59 pm

Introduction

The labs in CSC172 will follow a pair programming paradigm. Every student is encouraged (but not strictly required) to have a lab partner. Every student must hand in their own work but also list the name of their lab partner if any on all labs.

In this lab, we will work on recursive functions. Collaboration is allowed. You and your lab partner may discuss the lab with other pairs in the lab. It is acceptable to write pseudocode on the whiteboard for the benefit of other lab pairs, but you are not allowed to electronically copy and/or transfer files between groups.

1 Task 1 (Make Change)

Given an infinite number of quarters (25 cents), dimes (10 cents), nickels (5 cents), and pennies (1 cent), write a method `makeChange(int n)` that takes 'n' cents as input, and returns the number of ways of representing 'n' cents. You can either write an iterative or a recursive solution. You are also allowed to have any number of helper functions.

2 Task 2 (N Queen Problem)

Write a java program to print at least one way of arranging eight queens on a chess board so that none of them attack each other (i.e., they do not share the same row, column, or diagonal). Any textual representation of the board is fine as long as the board is comprehensible. You are encouraged to draw a black&white (or any color of your choice) chess board and make the squares holding the queens blue. [No extra credit.]

Submission

Submit `Lab6.zip` at the appropriate location on the Blackboard system at `learn.rochester.edu`. You should hand in a single zip (compressed archive) `Lab6.zip` containing your source code and README files, as described below.

1. A plain text file named README that includes your contact information, your partner's name, a brief explanation of the lab (a one-paragraph synopsis. Include information identifying what class and lab number your files represent.), and one sentence explaining the contents of any other files you hand in.
2. Two Java source code files `EightQueen.java` and `MakeChange.java` representing the work accomplished. All source code files should contain author and partner identification in the comments at the top of the file.
3. Any additional files as required.