ITCS_6114_8114: Algorithms and Data Structures

Fall 2015

Programming Project 3: Design of Demonstration Algorithms

The first phase will be due on November 4th, 2015.

Up to now, we have covered a number of algorithms and you know more about online classes. Toward the goal of improving online communication, this team project is use your experiences of learning an algorithm and design algorithms to demonstrate the algorithm to others effectively. Please consider two aspects when you design the algorithm.
1. Which part of the algorithm is difficult to understand
2. How you wished the algorithm was explained to you

As one simple example, showing all the results of every procedure in an algorithm are a way of demonstration. Some examples of algorithm animations can be found online, such as http://www.sorting-algorithms.com/ However, not all demonstration algorithms are effective.

We have grouped the algorithms covered in the course so far to three sets:
- Group One: insertion sort, merge sort, heap sort, quick sort, and linear sorting algorithms
- Group Two: binary search tree, hash functions, dynamic programming algorithms
- Group Three: graph algorithms

There will be two phases of this project. During the first phase, you only need to pick one algorithm from Group One and test your design algorithm.

During the second phase, you continue to refine your design of demonstration algorithm and work on the selected algorithms from the second and third groups. If your team has two members, you can choose one from Group Three. If your team has three members, you will choose one algorithm from each of the groups two and three.

To demonstrate your results, you can simply print out the numbers in the procedures and summarize them in a document. You do not need a visual interface and you do not need to generate animations. The grading will be mainly based on the design of your demonstration algorithms.

Your report should answer the following questions:
1. How does your demonstration algorithm improve the understanding of the algorithm?
2. Provide examples from the results to support your idea.
Also include a complete demonstration sequence of a selected algorithm.

We will have a class contest for peer grading of this project. We will have a contest forum and have all the report posted there for the class to vote. The details of the contest will be post when the project is due. We want to let every team know that the scores of your team will be affected by the contest results. So try your best to design the algorithm.

Your submission should include:
1. The names of all team members.
2. The project report
3. The source code files.