Practice Set 1

Git Intro
1. Create a repository for a Visual Studio project on GitHub.
2. Clone the repository locally with GitKraken.
3. Create a project using VS in the local clone's directory.
4. Commit and push with GitKraken.
5. Look at the updated project on GitHub.

Collaboration
1. Invite collaborators to your project on GitHub.
2. They need to clone your project now using GitKraken.
3. Repeat the following steps with each member at least once:
    a. Have one person pull the project to receive all updates.
    b. That person adds or modifies lines of codes.
    c. When done, commit and push the work.
4. Finally, stop modifying the project and have all members pull and verify that you are all at the same state.

Extra Topics
1. Discarding & resetting
2. Branches & forks
3. Merge & conflict resolution
4. Cherry picking

Programming Exercises
A. (CLRS 1.2-2) Suppose we are comparing implementations of insertion sort and merge sort on the same machine. For inputs of size n, insertion sort runs in $8n^2$ steps, while merge sort runs in $64n \log_2 n$ steps. For which values of n does insertion sort beat merge sort?
B. (CLRS 1-2-3) What is the smallest value of n such that an algorithm whose running time is $100n^2$ runs faster than an algorithm whose running time is 2^n on the same machine?
C. Follow the pseudocode and code INSERTION-SORT. Test to make sure it works.
D. Write your own pseudocode for a decreasing order INSERTION-SORT. Then code it and test it again.
E. Write a function that adds two integers of size *n* stored in binary in two boolean arrays. The result is another boolean array of size *n* + 1. Bonus point for not using extra memory space.