

CS162 Lab 7

Goals

- Use simple algorithms for searching
- Use simple algorithms for sorting

1. Create data files.

You will need at least four text files filled with random integer values. You don't need large number of values. This will just make testing easier. For example, you can create a file with a random collection of the values; 1, 2, 3, 4, 5, 6, 7, 8, & 9. Save it. Make 3 copies. In each copy put in a single value of 0: towards the beginning of one file, around the middle of another and towards the end of the third. Rename each as appropriate, i.e. early, middle, etc. Keep the original one without a 0.

2. Search for the target value (i.e. 0).

The book or the lecture has several examples of the code for searching algorithms. Implement one of them in a program that searches for the target value in your data files. Test the results. You cannot use binary search yet. Why? Cite which one you used (page # or slide #).

3. Sort a set of values.

The book or the lecture has several examples of the code for sorting algorithms. Implement one of them in a program. Your program should write the sorted results into a file using a name the user provides. Sort all input files and compare the results. Cite which one you used (page # or slide #).

4. Search for the target value.

Find an algorithm for binary search. Implement it in a program that searches for the target value in your data file. Remember that you cannot use any of the original files since they are not sorted. Create the data files that suitable for this task, or use the output files from task 3. Cite the reference for the algorithm you use in the comment.

For this lab, you can implement each as a separate program or create a single program giving the user the choice of which activity to perform and instructions to run your program. Turn in all your program files, makefile and readme file in a **zip** file on **TEACH**.

Grading

- Programming style: 1 point
- Implement and test the searching algorithm: 3 points
- Implement and test the sorting algorithm: 3 points
- Implement and test the binary search algorithm: 3 points