Comp 121 – Introduction to Data Structures. *Spring 2002*
Programming Assignment 0 -- Due Monday, Jan 28

Objective: To familiarize you with the programming environment you will be using for the remainder of this course.

Given an array A[0,...n-1], the **bubblesort** sorting algorithm sorts the array as follows:

```
for (i=n; i>1; i--)
      for (j=0; j<i-1; j++)
            if (A[j]>A[j+1]) swap(A[j],A[j+1]);
```

You are to write and test a program that reads in a list of floating-pont numbers from a file, sorts these numbers using the bubblesort algorithm, and writes the numbers out into another file. The input file will be formatted as follows:

n
a_1
a_2
a_3
.
.
a_n

indicating that there are n numbers to be sorted --- the numbers a_1, a_2, ..., a_n

You must write, compile, and execute your program in the C++ programming language, using the GNU C++ compiler *g++*, on one of the Department Unix machines. You must use the `<fstream>` input-output facilities (you may *not* use `fscanf/ fprintf` instead).

Rules for submitting this (and future) programs:

- **The signed cover sheet must accompany all submissions!!**
- Include a (neatly typed – *not* handwritten) design plan and some general comments on the structure and layout of your program. (This will be more important in the later assignments, when the programs are less trivial.)
- Include a complete listing of all your code, input files, and output files
- Your code must be appropriately commented --- *if we don't understand your code with reasonable effort, you get no credit for it*.
- Include a test plan detailing how you tested your program, and why you believe it is correct. Read the document available off the course assignments web-page, and use the terminology and notation presented there ("black-box" & "white-box" testing, etc.) in your test plan.
- All of the above should be placed in an envelope with your name and student-ID on the outside, and submitted at the beginning of class on the due date. Submissions will not be accepted after 10 minutes have elapsed from the start of class – *no late submissions will be accepted without documented reasons.*