

## CSE 326b DATA STRUCTURES HOMEWORK 6

Due: **Friday, Feb. 29, 2008** at the beginning of class. Please put your quiz section (BA, BB) in addition to your name at the top of your homework.

### Problem 1. Insertion Sort

- a) Do Weiss problem 7.1
- b) Do Weiss problem 7.2

For both parts of the problem, please do the problems using the code included in the book.

### Problem 2. Nonrecursive Mergesort

Mergesort can be done without using recursion. Write a non-recursive mergesort algorithm in pseudocode. A gentle reminder that looking up the answer to this on the web is not allowed.

### Problem 3. Quicksort

Do Weiss problem 7.19 Please use the code included in the book for this problem.

### Problem 4. Extra Credit

The input to this problem consists of a list of 7-digit phone numbers written as simple integers (e.g., 5551212 represents the phone number 555-1212). No number appears in the input more than once, but there is no other limit on the size of the input.

Write a program that prints out the phone numbers in the list in ascending order.

Your solution must obey the following constraint: it must not use more than 2MB of memory. (And, of course, it cannot use any external storage — disks, tapes, punched cards, iPods, the network, etc.)

Extra-Extra Credit: Implement your solution to this problem in C, C++, Java, or some other similar language.

Extra-Extra-Extra Credit: Implement your solution in MIPS assembly language. Try to use as few instructions as possible. (You may substitute a different assembly language, but it would be best if it were one that someone on the course staff has seen before. Please check with us first if you want to use assembly language for some machine other than MIPS or x86.)