CSC238S **Problem Set 1** **Due: January 29/96**

1. Problem 2.3.9 on page 39 of text.

2. Problem 2.4.6 on page 45 of text.

3. Let $A[1], \cdots, A[n]$ be a *bitonic* list (to be defined in class).

   (a) Show that any sublist $A[i], \cdots, A[j]$ with $1 \leq i \leq j \leq n$ is also bitonic.

   (b) Modify the binary search procedure shown in class to derive a fast iterative algorithm for computing the maximum element of a bitonic list.

   (c) Modify the loop invariants for the binary search program so as to derive and prove appropriate invariants for your bitonic maximum program.

   (d) Prove the correctness of your program. You may refer to any results (for example, about binary search) stated in class.