Assignment 2
Due: Monday 26 January 2002 10:00 A.M. EST

Design Turing machines that solve the following problems. You do not have to write out the explicit program. Just describe the basic idea.

1. Design a Turing machine that inputs a word followed by a space and prints out a word (followed by a space) with all of the repeated letters removed. The output word should contain no more than one of each letter and they should appear in the same relative order as the first occurrence of these letters in the original word. If the input word is BOOKKEEPER, the output word should be BOKEPR.

2. Design a Turing machine that accepts a word followed by a space, leaves the vowels (A,E,I,O,U) exactly where they are, but sorts the consonants relative to each other. For example, if the input were MICHIGAN, the output would be CIGHIMAN.

3. Design a Turing machine that accepts a word followed by a space and prints YES if the word contains at least two nonoverlapping palindromes of length at least 3, and NO if it does not. For example, if the input word were YABBADABBADOO, the output would be YES.