CMSC 423 Homework #3:
Suffix Trees, Arrays, BWT, and HMMs
Due: Nov. 12 at the start of class

You may discuss these problems with other students, but you must write up your solutions independently, without using common notes or worksheets. You must indicate at the top of your homework who you worked with. Your write up should be clear, concise, and neat. You are trying to convince a skeptical reader that your algorithms or answers are correct. Messy or hard-to-read homeworks will not be graded.

1. Build a suffix array for string noncorroboration$.

2. Compute the Burrows-Wheeler transform on string defenselessness.

3. Consider the following HMM, where transition probabilities are on the edges and emission probabilities are given in tables next to the nodes:

   ![HMM Diagram]

   (a) What must the transition probability $X$ adjacent to state $q_1$ be?
   (b) Suppose we start in state $q_0$. Give two paths that could emit the string tagcat. What are their probabilities?
   (c) Suppose we start in state $q_0$ with probability 1.0. Compute and show the Viterbi dynamic programming matrix for the string taccggt. What is the highest probability path for this string?