# 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:
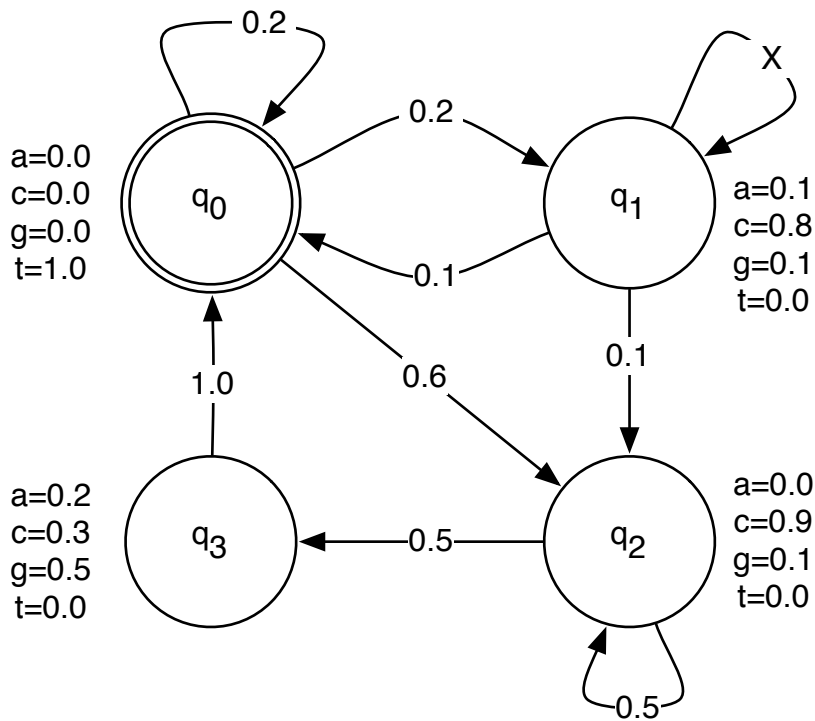
(a) What must the transition probability X adjacent to state q_1 be?

(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 `tacccgt`. What is the highest probability path for this string?