University of Washington
Department of Computer Science and Engineering
CSE 421, Autumn 2015

November 17, 2015

Homework 8, Due Wednesday, November 25, 2015

Problem 1 (10 points):

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Problem 2 (10 points):

Give an algorithm, which given a directed graph $G = (V, E)$, with vertices $s, t \in V$ and an integer k, determines the number of paths from s to t of length k. Your algorithm should be polynomial in k, $|V|$ and $|E|$.

Hint: Let $PathCount[v, j]$ denote the number of paths from s to v. Find a way to compute $PathCount[v, j]$ from values of $PathCount[w, j-1]$.

Problem 3 (10 points):

Design and implement a dynamic programming that computes a "mistype" distance between words w_1 and w_2 that reflects the chance of typing word w_2 when word w_1 is intended. Your distance function will need to take into the account errors including mistyping characters, adding characters, deleting characters, and transposing characters. The errors of mistyping should also reflect the distance between characters on a key board, as it is more likely to type an 's' for an 'a' than it is to type a 'p' for an 'a'.

You will need to use your judgment in defining the parameters for this algorithm.

For this problem describe your distance function and how it computes the mistype distance.

Include the *documented* code for you dynamic programming algorithm.

Problem 4 (10 points):

Run you algorithm on the inputs provided (which are not available yet - but should be soon.) The input will consist of lists of words, where the you are to compute the distance from the first word in the list to all of the other words.