CS 312: Algorithm Analysis

Homework Assignment #13

Show all work neatly.

Question 1: (10) Gene Alignment with Edit Distance
Find the optimal alignment using dynamic programming (by hand) of AGTCGA and ATCGT . Use the Needleman-Wunsch cost function that you will use for the project, namely: $c_{indel} = 5$; $c_{sub} = 1$; and $c_{match} = -3$.

- Show your complete Dynamic Programming table. Include the edit distance score of each cell and show the previous pointer(s) from each cell.
- What is the Edit Distance of the 2 strings?
- Is there more than one optimal alignment?
- Bold the previous pointers along the optimal path from the goal cell.
- Show the alignment of the two strings with the first above the second.