Assignment 1  
Due Wed Feb 8  

Current Topics in Computer Science:  
Computational Genomics  

CSCI 7000-005, Spring 2006  

Chapter, page, and problem numbers refer to the text, *An Introduction to Bioinformatics Algorithms* by Jones and Pevzner.

1. Review chapters 1-3.  
3. page 119, Problem 4.2  
4. page 119, Problem 4.8  
5. page 119-120, Problem 4.9  
   (see page 42 for description of branch-and-bound algorithms)  
6. page 302, Problem 8.6  
7. page 303, Problem 8.9  
   Before solving example given, solve for $S = \{\text{ATG, ATT, CAT, TTA, TAT}\}$.  
8. page 303, Problem 8.10  
9. We want each sequence on a microarray to be as similar as possible to its neighbors.  
   a. Prove that in a four letter alphabet, all $4^k$ words of length $k$ can be arranged (in a line) so that each word differs from each neighbor in exactly one position.  
   b. Use the result in (a) to show how to construct a 2D array of all $4^{2k}$ words of length $2k$ so that each word differs from each of its four adjacent neighbors in exactly one position.

You may work together or use any other resources, but you must tell me who you worked with and what resources you used, and you must write up the solutions yourself, in your own words/style.