Student Information

Name: _____ Student ID: _____
Due Date: 15 Dec 1:00pm.
Submit answers on eDimension in pdf format. Submission without student information will **NOT** be marked! Any questions regarding the homework can be directed to the TA through email (contact information on eDimension).

Week 12

Questions

1. Compute the longest common subsequence (LCS) for the strings *TGTCGA* and *GCAGCTTGCC*.
   (a) Solve the DP by constructing the table of sub-problems and showing it.
   (b) Is the answer unique? Please list 2 different LCS for the two strings if it is not.
2. Solve the knapsack problem by filling the DP table for the objects of (size, value) pairs (2,1), (2,2), (4,5), (5,6), and a knapsack of size S=6
   (a) What are the elements in the second last column of the sub-problems matrix?
   (b) Solving this knapsack problem using a Greedy heuristic yields a better perofrmance than using DP. **(T/F)**
   Please provide a short explanation if your answer is False.
3. Consider the optimal parenthesization problem for the case of 4 matrices with dimensions (4,1), (1,3), (3,2), (2,3). Solve the DP by filling up a sub-problems table. Also, please provide the minimum cost to perform matrix multiplication for this case of 4 matrices.