
CSL 356: Analysis and Design of Algorithms**Instructor:** Ragesh Jaiswal

1. Discuss the remaining problem from Tutorial 7.
2. Discuss Homework-2 problems.
3. Ms. X wants to visit some shoe stores out of the n stores in the city S_1, \dots, S_n . Mr. Y has to drive Ms. X around. He has to pick her up from her house and drop her back to her house. For each store S_i , there is a value $v(i)$ that denotes the satisfaction that Ms. X gets on visiting the store S_i . Mr. Y on the other hand, is concerned about the driving cost. For each pair of stores S_i, S_j there is an associated driving cost $d(i, j)$ that denotes the cost Mr. Y has to incur when driving between S_i and S_j . The driving cost from Ms. X's house to a store S_j is denoted by $d(0, j)$. You have to find a tour of a subset of stores starting and ending at Ms. X's house, that maximizes the total satisfaction of Ms. X minus the total driving cost incurred by Mr. Y.
4. You are given a rectangular piece of cloth with dimensions $X \times Y$, where X and Y are positive integers, and a list of n products that can be made using the cloth. For each product $i \in [1, n]$ you know that a rectangle of cloth of dimensions $a_i \times b_i$ is needed and that the final selling price of the product is c_i . Assume the a_i, b_i , and c_i are all positive integers. You have a machine that can cut any rectangular piece of cloth into two pieces either horizontally or vertically. Design an algorithm that determines the best return on the $X \times Y$ piece of cloth, that is, a strategy for cutting the cloth so that the products made from the resulting pieces give the maximum sum of selling prices. You are free to make as many copies of a given product as you wish, or none if desired.