Interview Questions: Linear Programming

The **hard deadline** for this homework is **Wed 12 Jun 2013 8:59 PM PDT (UTC -0700)**.

☐ **In accordance with the Coursera Honor Code, I (Atul Gupta) certify that the answers here are my own work.**

Question 1

Feasibility detection. Suppose that you want to solve a linear program but you don't have a starting initial basic feasible solution—perhaps the all 0 vector is not feasible. Design a related linear program whose solution will be a basic feasible solution to the original linear program (assuming the original linear program has a basic feasible solution).

Question 2

Detecting unboundedness. Describe how to modify the simplex algorithm to detect an unbounded linear program—a linear program in which there is a feasible solution that makes the objective function arbitrarily large.

Question 3

Birkhoff-von Neumann theorem. Consider the polyhedron P defined by $\sum_i x_{ij} = 1$, $\sum_j x_{ij} = 1$, and $x_{ij} \geq 0$. Prove that all extreme points of P have integer coordinates (0 or 1).

☐ **In accordance with the Coursera Honor Code, I (Atul Gupta) certify that the answers here are my own work.**

Submit Answers Save Answers

You cannot submit your work until you agree to the Honor Code. Thanks!