

Assignment 2

1. Formulate the Shortest-Path Problem using linear programs. Write down the primal and the dual.
2. Formulate the Vertex Cover Problem using integer linear programs. Relax it to a linear program and write down the primal and dual.

Problem (Shortest Path)

There is an undirected graph $G = (V, E)$. For each edge $e \in E$, there is a weight w_e . Find out the shortest path from a node $s \in V$ to $t \in V$.

Problem (Vertex Cover)

There is an undirected graph $G = (V, E)$ with weights $w : V \rightarrow \mathcal{R}^+$. The goal is to find the minimum cost subset of vertices such that every edge is incident on some vertex in that subset.