Exercise 1:
Given the complete undirected graph $G = (V, E)$ for a set $V$ of vertices, and a function $w : E \to \mathbb{R}^+$ that assigns a positive weight to each edge, the Traveling Salesman Problem (TSP) is to find a cyclic path in $G$ that contains each vertex in $V$ exactly once and has minimal total weight.

a) Describe a brute force algorithm for solving the TSP.

b) Describe several heuristics to approximate the TSP. Use at least the following techniques:

- Iterated local search.
- Simulated annealing.
- Ant colony optimization.
- Evolutionary computing.

c) How can the TSP be formulated as an ILP?