Solving standard traveling salesman problem and multiple traveling salesman problem by using branch-and-bound

Abstract

The standard Traveling Salesman Problem (TSP) is the classical Traveling Salesman Problem (TSP) while Multiple Traveling Salesman Problem (MTSP) is an extension of TSP when more than one salesman is involved. The objective of MTSP is to find the least costly route that the traveling salesman problem can take if he wishes to visit exactly once each of a list of n cities and then return back to the home city. There are a few methods that can be used to solve MTSP. The objective of this research is to implement an exact method called Branch-and-Bound (B&B) algorithm. Briefly, the idea of B&B algorithm is to start with the associated Assignment Problem (AP). A branching strategy will be applied to the TSP and MTSP which is Breadth-first-Search (BFS). 11 nodes of cities are implemented for both problem and the solutions to the problem are presented.

Keywords