CS 5007: INTRODUCTION TO APPLICATIONS OF COMPUTER SCIENCE WITH DATA STRUCTURES AND ALGORITHMS

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Aim

The aim of this project is to implement the learning from the Data Structures and Algorithms course by creating a working program that uses the concepts and ideas learnt.

Travelling Salesman Problem:

Given the list of cities and distances between them what is the shortest route with the given condition that each of the cities is visited only once and the route finally returns to the starting city.

Solution

The python script doesn't require data to be loaded. The major important part for the travelling salesman problem is the sample points i.e., the cities.

The cities are generated randomly through a function and are plotted on a graph.

After the plot is generated, the route is decided based on the distance between the cities.

The implementation in this program is such that the next city is selected greedily. That is first city is taken at random and the next city is chosen as the closest city from that point.

The solution can be made better by recalculating the paths to find a more optimal solution.

Travelling Salesman Problem - Greedy

genetic algorithm TSP

genetic algorithm generations

simulated annealing TSP