

Greedy Approximation Algorithm Traveling Salesman Problem

Input: n -points in the 2D plane.

Output: Traveling Salesman route cost along with the route.

You need to implement this problem in three different ways.

1. **Exact Exponential Method:** Check all possible permutations of nodes and find the optimal valid [permutation](#). Run the code with different input size graph and make input size vs execution time chart and graph.
2. **Branch and bounding Method:** Follow the [Lecture 02](#) for the algorithm you have to use. Run the code with different input size graph and make input size vs execution time chart and graph.
3. **Greedy 2-Approximation Algorithm:** Follow the [Lecture 01](#) for the algorithm you have to use (MST approach). Run the code with different input size graph and make input size vs execution time chart and graph. Here make another chart to verify that approximation ratio is 2. Compare your output with branch and bound method.

[You may use [Prim](#) or [Kruskal](#) Library code, but make sure that you understand what you are doing]

Marks Distribution:

Tasks	Marks
Code implementation	2+3+5 = 10
Test case design, generation	2
Complexity analysis with charts and graphs	3
Report	3
Proper submission	2
Show graphically the Output of subtask-3 (MST & the final Route)	2 (BONUS)

Submission Deadline:

5:00 PM, April 14.

***This is for all students.*

***You have to show the very same file during assessment.*