Heuristics Part 2b:
Greedy Exercises

Video (7 mins): https://youtu.be/Sj1RQdtjnWE

Practice Greedy Algorithms for TSP

The following table shows the distances between 4 cities. A courier van needs to visit all 4 cities during a delivery tour. Work out a proposed route and the distance of the proposed round trip.

a) Using the first greedy algorithm in the slide with Ang Mo Kio with the starting city.
b) Using the second greedy algorithm in the slide starting with the closest pair of cities.

	Ang Mo Kio	Bedok	Serangoon	Ponggol
Ang Mo Kio	-	10	4	13
Bedok	10	-	8	9
Serangoon	4	8	-	7
Ponggol	13	9	7	-

Summary

✦ The Traveling Salesman problem (TSP) is too complex to solve with a straightforward test of all possible paths

  ❖ a map with 25 cities has over 3×10^{23} tours

✦ We can get a good enough solution by heuristics

  ❖ *Greedy algorithm*: construct the solution step by step by optimizing local decisions

✦ We will explore other heuristics design ideas next time