You are engaged to develop an application that helps a manager to determine the shortest route a delivery vehicle needs to use between cities. Having studied CSCI203 - Data Structure and Algorithms, you recognize that this is an application for Dijkstra's shortest path algorithm. To prepare for your proposal, you decide to implement it on your computer.

The requirements are listed below.

Note that marks are also awarded for presentation of your program output.

Requirement 1 – Representation of the map in Figure 1

Represent the city-distance information shown in the map in Figure 1 with a weighted graph using adjacency matrix or link-list.

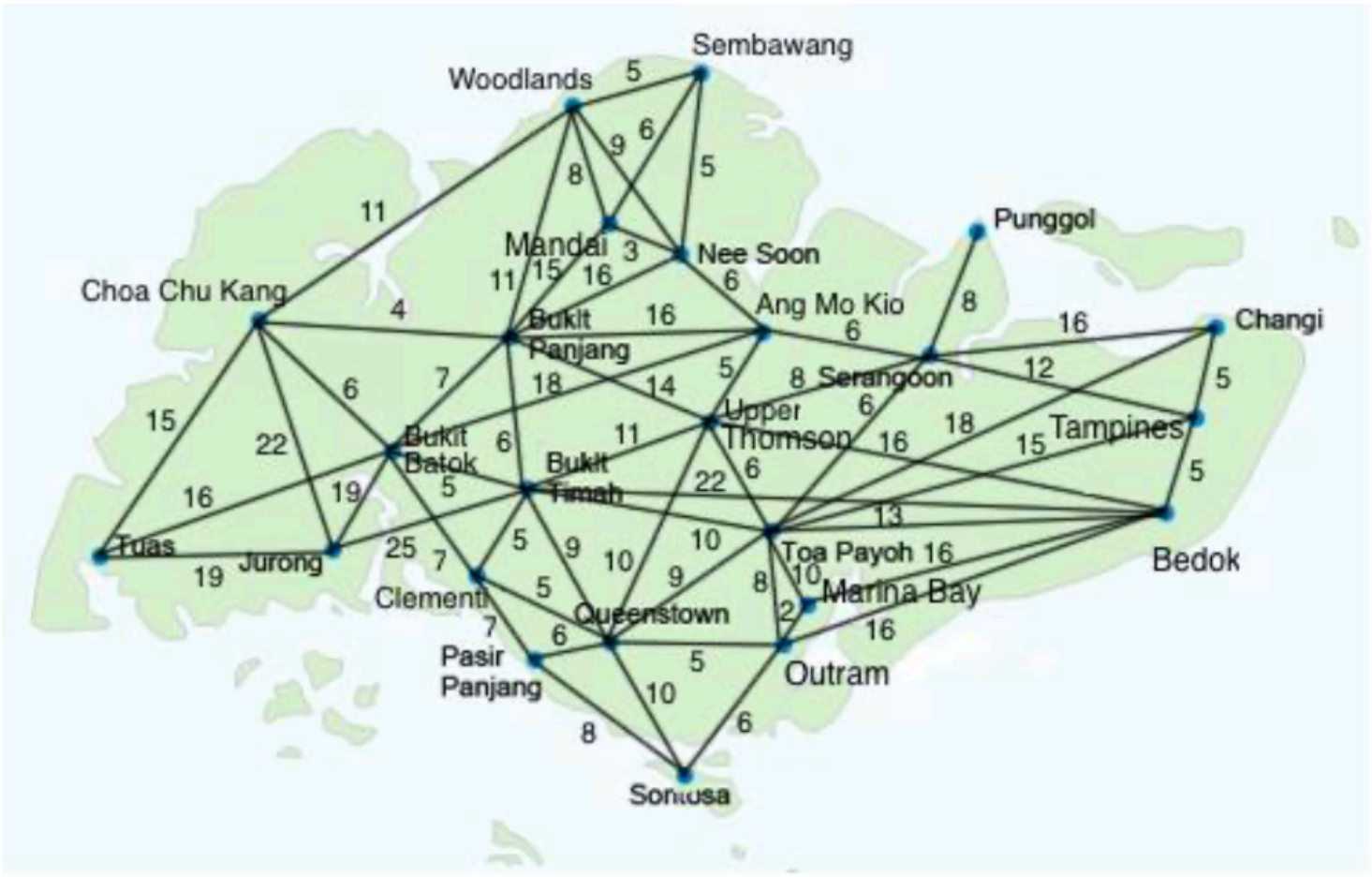

Figure 1

Requirement 2 – Implementation

Write an interactive program that given the start and destination cities, will determine the shortest route between them and its total distance. It is all right to have 0 distance; i.e., start and end at the same city. You can assume that the roads are all bi-direction; i.e., vehicle can travel in both directions. The output of your program may look something similar as follow:

> Start from: Changi
> To: Choa Chu Kang
> Path: Changi -> Toa Payoh -> Bukit Timah -> Bukit Batok -> Choa Chu Kang
> Total distance: 39 Km.

Requirement 3 – Test run

Test your program by determining the following routes:

- Changi to Choa Chu Kang
- Bedok to Bukit Batok
- Marina Bay to Woodlands
- Sembawang to Bukit Timah
- Upper Thomson to Outram
- Bukit Batok to Tampines