

HW3

1. Given the adjacency list representation of a graph below:

A: B->C->D

B: A

C: B->D

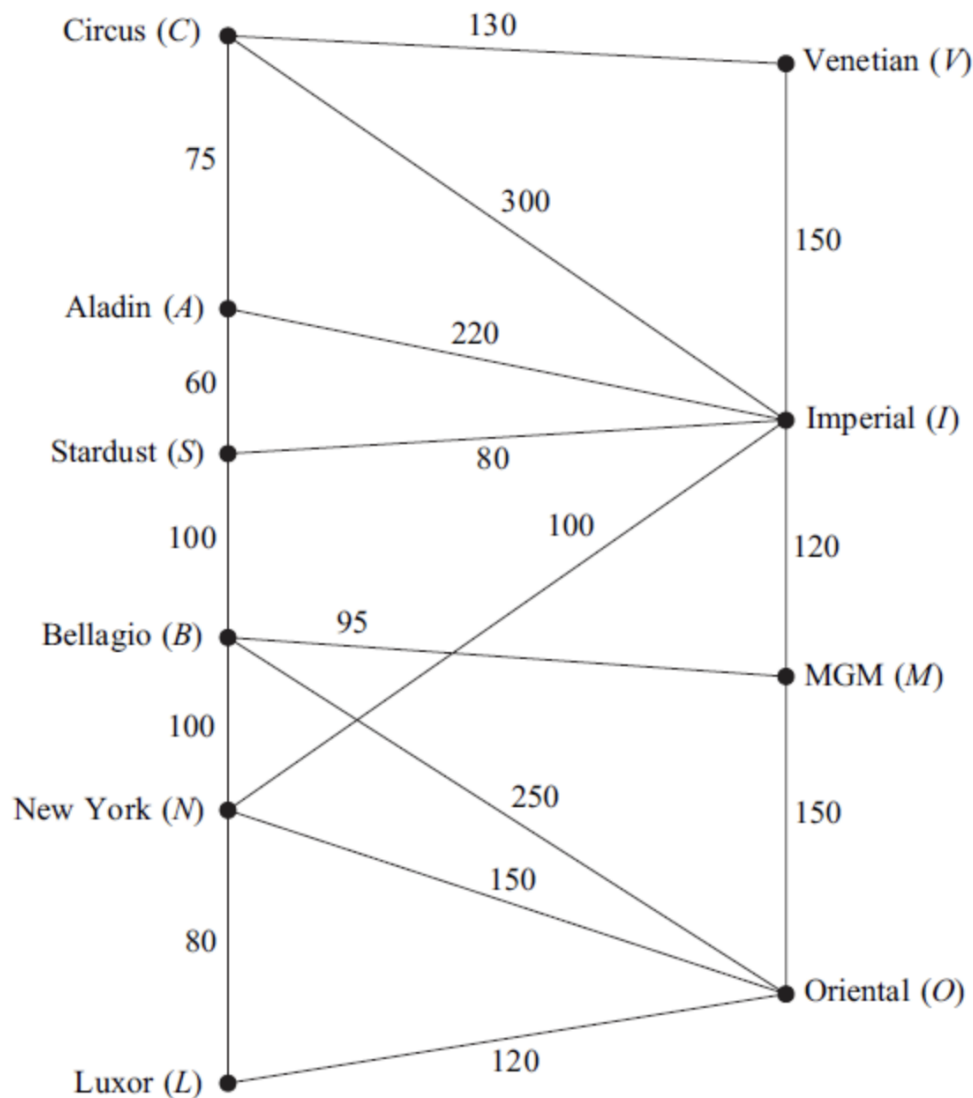
D:

E: C->D

- (1) Draw a picture of the graph
- (2) Represent the graph using adjacency matrix
- (3) Traverse the graph using DFS. Write down the order in which **each vertex and edge** is visited. Start from Vertex A.
- (4) Traverse the graph using BFS. Write down the order in which **each vertex and edge** is visited. Start from Vertex A.

2.

The network shows the times, in seconds, taken by Craig to walk along walkways connecting ten hotels in Las Vegas.



Use the Dijkstra algorithm to find the shortest time it takes for Craig to walk from Circus to any other hotel and the path it takes. Show your work.

3. Coding:

Create a new directory "HW3" in your github repo. For each of the following questions, create a single .cpp file with your code. (eg: 3a.cpp, 3b.cpp, 3c.cpp...) If you're stuck (after multiple attempts), you may discuss with your peers, look up online resources as

long as you reference it, but you must NOT copy others' code. You MUST produce your own code.

- Please add proper comments in your code.
- Make sure your code passes all the test cases in leetcode .
- Push your code under the HW3 folder.
- Create a README.md file under the HW3 folder that shows how many test cases passed for each question.

[BFS/DFS]

- <https://leetcode.com/problems/clone-graph/>
- <https://leetcode.com/problems/number-of-islands/>

[BFS]

- <https://leetcode.com/problems/shortest-bridge/>

[DFS]

- <https://leetcode.com/problems/word-search/>

[Dijkstra]

- <https://leetcode.com/problems/network-delay-time/>

[Heap/priority queue]

- <https://leetcode.com/problems/find-median-from-data-stream/>

[Topological sort]

- <https://leetcode.com/problems/course-schedule-ii/>