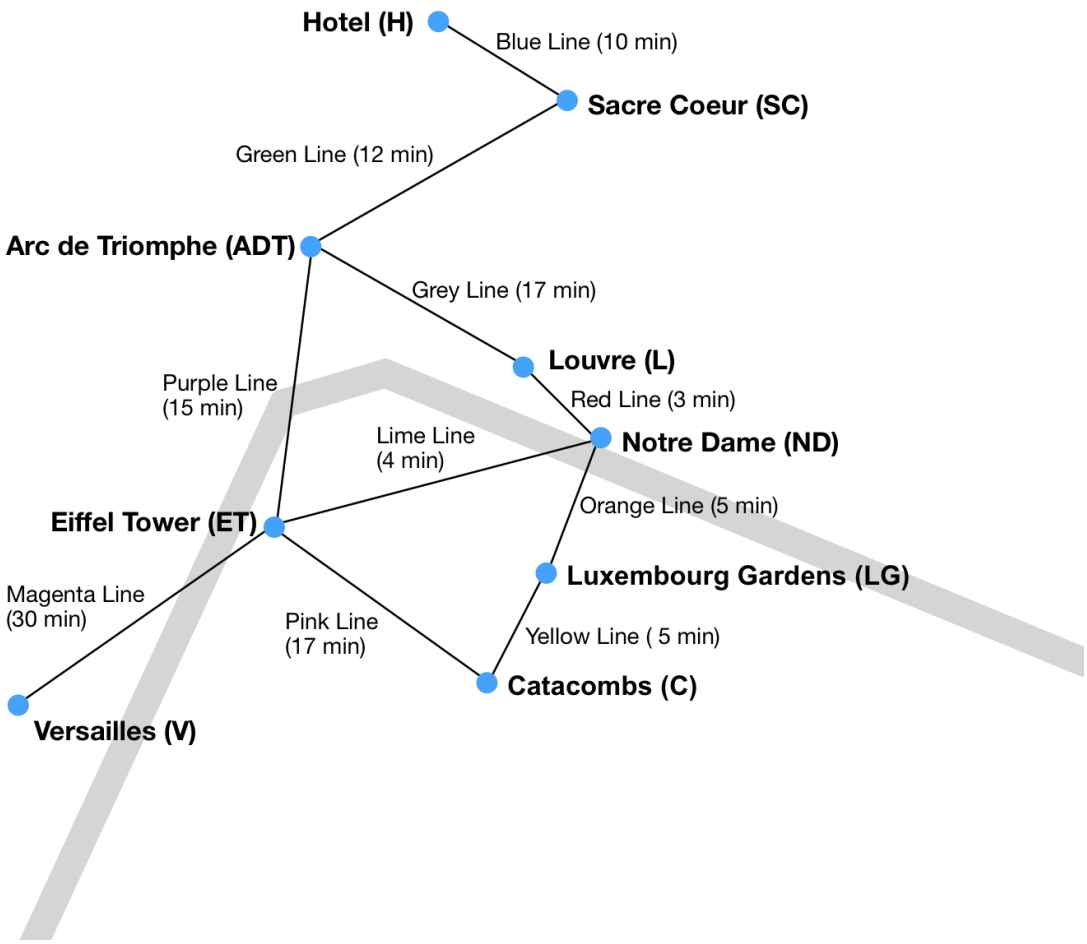
CSE 331 21au Section 7 Worksheet

Graph searching. We're going to take a trip! To Paris!! To help us plan, a friend has sent us a simplified map of the Paris Metro showing some of the main stops we'll be using. Here it is:



The map, of course, is a graph where the nodes are Metro stops and the edges are labeled with Metro line names and travel times between stops. We would like to use our knowledge of graph search algorithms to discover paths in the graph. Answer the questions on the next page.

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Question. (a) Find the path with fewest number of transfers (i.e., fewest number of intermediate stops) between your Hotel (H) and the Luxembourg Gardens (LG) and determine how much time it takes. Fill in your answers below. If there are ties when computing the path, you should pick the "lexicographically least path" (i.e., use alphabetical ordering).

(i) Algorithm used: BFS Total travel time: _____

(ii) Path from H to LG with fewest transfers (show the line used – Blue, Green, etc. – and travel time for each edge):

(b) Find the fastest path (minimum travel time) from Sacre Coeur (SC) to Catacombs (C). If there are two or more paths with the same minimum time, write down one of them. As above, indicate the algorithm used and then show the path and total time.

(i) Algorithm used: Dijkstra's Total travel time: _____

(ii) Fastest path from SC to C (show the line used – Blue, Green, etc. – and travel time for each edge):

priority queue nodes

Path	Cost

Node	Finished	Cost	Prev