CSCI 338—Algorithm Design and Analysis
Programming Assignment 7: The Floyd-Warshall algorithm

Due: Thursday, April 13, 2017

This is an individual assignment.

This assignment is to implement the Floyd-Warshall algorithm for all-pairs shortest paths using an adjacency-matrix graph representation on a weighted undirected graph.

The algorithm description is in Section 6.6 of the textbook. You should implement it as a static method or a function that takes an adjacency-matrix graph representation as its parameter. Since the matrix is an object or an array, the algorithm modifies the matrix directly, and the method/function doesn't need to return anything.

Test the algorithm on several graphs, including non-sparse disconnected graphs.[1] Note that you are not required to generate the accompanying intermediate vertex table that would allow you to reconstruct the paths, so you'll need to test the algorithm on some graphs that are small enough that you can verify your results by hand.

[1] You can generate a non-sparse disconnected graph by picking a split point between the vertices and making all the edge weights between the resulting two groups have infinite weight, resulting in upper-right and lower-left quadrants of all infinities.