

CSc 21200 – 2018 Spring  
Homework 6  
Due May 14<sup>th</sup>, 2019

Name your implementation file as LastName(3 to 5 letters)\_FirstNameInitial\_HW6\_QX.cpp

Note: You can only use iostream, cassert, ctype, cmath, cstdio, and cstdlib.

1. Create a template class called graph as an adjacency matrix with the following:
  - a. Private member variables for label/name for the vertices, **weighted** edges, and number of vertices
  - b. Constructors (default and copy)
  - c. Add a vertex
  - d. Add an edge
  - e. Remove an edge
  - f. Print the edges as a matrix (neatly)
  - g. Return the number of vertices
  - h. Return the number of edges
  - i. Return is there an edge between two vertices
  - j. Return a dynamic array of the neighbors of a vertex
2. Same as question one but implemented as an adjacency list.
  - a. Instead of printing the edges as a matrix, print it as a list
  - b. Instead of returning a dynamic array of the neighbors of a vertex, return a linked list.

Note:

Assume a weight of zero is no edge.

Assume label/name are only one char long for printing.

Assume when the user enters vertices, they are all unique.