COMP 7712: Assignment 7
Due date: 11/29/2016

NOTE: email your program(s) directly to the TA (qmtran@memphis.edu) with subject "COMP 7712 Assignment 7".

A graph G consists of a set of vertices $\{v_0, \cdots, v_{n-1}\}$ and a set of edges $\{e_1, \cdots, e_{m-1}\}$. An edge connects two vertices v_i and v_j. In a weighted graph, each edge also has a weight, which is usually a positive number.

You should test your programs using the graph module I provided.

1. (50 points) Given a weighted graph in which every pair of vertices is connected by an edge, write a brute-force Python program (using the backtracking framework) to find a tour of all vertices with minimal total weight. A tour is a path that begins with one vertex and ends at the same vertex.

2. (50 points) Given a weighted graph, the goal is to place cameras at vertices to "watch" the edges. If a camera is placed at vertex v, it can watch all the edges that are connected to vertex v. Write a Python program using backtracking to determine the minimal amount of cameras that can be placed to watch all edges for each given graph.