國立清華大學 電機工程學系 一〇四學年度第二學期

EE-2410 資料結構 Data Structure

Homework #6 (學期總成績 bonus 2 分)

Due on June 9, 2016

請上 iLMS 上傳包含【原始碼及執行結果】的綜合 PDF file

(抄襲之作業將不計分)

1. (學期總成績 Bonus 2 分) Consider a graph defined in a file called "**roadmap.txt**". Each line specifies a **weighted bi-directional edge**, where (*i*, *j*, 5) means an edge from vertex *i* to vertex *j* with a weight of 5. We plan to interpret the information of this graph as follows:
   - A **vertex** denotes a **city**.
   - An **edge** denotes a **highway segment** linking two cities.
   - The **weight** of an edge denotes the **distance** of a highway segment.

   Try to develop a C++ program to **report the shortest path length between any two cities**. Note that there are in total 10 cities in file "roadmap.txt", denoted as 0, 1, 2, 3, 4, 5, 6, 7, 8, 9. You can use two-dimensional *adjacency matrix* for graph representation to simplify your program.
   (Command format example): %*route*
   (Results to be reported): It is advised that you report your results as a matrix form, with a row denoting the shortest path lengths from a city to all the others.
   (Input roadmap file): to be downloaded from iLMS system.

繳交資料**:** Combine all your following documents into a single PDF file before submission to iLMS system. On top of the combined PDF file should be a **cover page** with your affiliation (e.g., the department of your major, name, registration number, etc) 系所，中英文姓名，學號等資訊**.**

1. All your **source codes** (C++ file).
2. The **execution results** of running your programs.

STL reference: STL 網頁: http://www.cppreference.com/wiki/stl/start