

【110上】1504資料結構 Data Structures

HW8 Shortest Path

Deadline : 2023/1/1 23:30 遲交三天以上不收件!

參考網站 : <https://sites.google.com/view/sjshyudsimf/programming-assignment/hw7-shortest-path?authuser=0>

Request :

包含求解下列三個問題：

1. 單一起點到所有目的地之最短路徑
2. 任意兩點間的最短路徑
3. 計算出遞移封閉

This assignment needs to solve three problems:

1. single source all destinations (SSAD)
2. all pairs shortest paths (All-pairs)
3. transitive closure

輸入：directed graph $G=(V, E)$ and the weights on the edges E (as well as a starting vertex u for problem 1)

輸出：最短距離 shortest paths, all pairs shortest paths, and transitive closure of G

1. Generate a graph $G=(V, E)$ in random, the weights and density of the edges in G can be assigned by user.

For Problem 1 and 2 :

2. Find shortest distance from single source to every vertices (single source all destinations)
3. Find shortest distance between and two points
4. User can trace the process of solving this problem.

For Problem 3 :

2. Find transitive closure of the given graph.

Bonus:

For Problem 1: Report the shortest paths from the source to all destinations (SSAD) (5分)

For Problem 2: Report the shortest paths for all pairs (5分)

3. 程式註解。(1-2分)

4. 簡潔美觀的 user interface。(2分，有另外調整背景顏色或文字等..)

5.詳細的說明文件及執行後的截圖畫面(.pdf)。(2分)

注意：

1. 要是C++builder都裝不起來的同學，可以使用自己認為好用的開發環境。要是助教無法執行，需另外約時間demo。
2. 禁止抄襲，抄襲者 0 分計。