

國立清華大學 電機工程學系 一〇二學年度第二學期

EE-2410 資料結構 Data Structure

Homework #3

Due on April 21, 2014

請上助教網站上傳包含【原始碼及執行結果】的綜合 PDF file

助教網頁: <http://www.ee.nthu.edu.tw/ee241000>

1. (學期總成績 10%) Write two C++ programs (using STL preferably) to solve the *stack permutation problem* discussed in Chapter 3 of the textbook.

(a) (5%) **Problem 1:** Print all **possible stack permutations** of an incoming train of n elements.

(command line format example): `%allsp <no. of elements in the incoming train>`

Try to execute your program when n equals 5. In addition to printing all possible stack permutations, report the total number of them.

(b) (5%) **Problem 2:** Check if a given permutation is producible by the stack permutation.

(command line format example): `%issp <a file containing a given permutation>`

Execute your program to check if the following sequence is a valid stack permutation:

4 6 5 8 10 9 7 3 2 1 (output order: from left to right)

Simply answer YES or NO in your report.

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

繳交資料: Combine all your following documents into a single PDF file for submission to the TA web page. On top of the combined PDF file should be a **cover page** with your 系所，中英文姓名，學號等資訊.

(a) All your **source codes** (C or C++ file).

(b) Show the **execution trace** of your programs.