國立交通大學九十學年度碩士班入學考試試題

科目名稱：網際網路概論(472)　　考試日期：90 年 4 月 21 日 第 3 節

系所班別：資訊管理研究所　　組別：乙組　　第 1 頁,共 2 頁

＊作答前,請先核對試題、答案卷（試卷）與准考證上之所組別與考試科目是否相符!!

1. **The Web pages in a Web site have been simplified to be organized in a binary tree structure.**

(i) The root node represents the home page. Each internal node represents a Web page with at most two reference links to other Web pages. All Web pages, except the home page, are referenced by only one Web page. The leaf node represents a Web page that does not have any reference links to other Web pages. A tree structure may be skewed.

(ii) A reference path is a an ordered list of Web pages in browsing Web pages, which traverses from the Home page (root) to one of the leaf nodes according to the reference links. The length of a reference path is the number of Web pages contained in the reference path. A maximal reference path is a reference path that contains the maximal number of Web pages.

(a) (8%) Write a recursive algorithm to find the length of the maximal reference path in the Web site.

(b) (3%) Analyze the time complexity of your algorithm.

2. **Suppose that you are doing e-business on the Internet. The data structure *purchased_items* links the product items each customer had purchased. Let N be the total number of customers and M be the total number of product items, respectively. An array customers[ ] is used to record the purchased product items for N customers.**

(a) (8%) Write an algorithm to compute the total amount of sales for each product item. You should use the data structure products[ ] to store the total amount of sales.

(b) (4%) Analyze the time complexity of your algorithm.

```
Struct  item  {
   char    name[30];
   float   price;              /*  sale price for one product item */
   int     quantity;           /* number of product items purchased */
};
struct  item_list  {
   struct  item    product;
   struct  item_list  *next;
};
typedef  struct  item_list    * purchased_items;
 purchased_items     customers[N ];

struct sales {
    char    name[30];
    float   total_sales;
} products[M];
```

3. Suppose that you are responsible for developing a software system for Web-based applications. (5%) What kind of software paradigms will you choose to develop your system? The classic waterfall model, spiral model or prototyping approach? Justify your answer.

4. The "thin-client" philosophy is used in developing Web-based applications.
   (a) (3%) Explain the idea of "thin-client".
   (b) (3%) Illustrate the approaches to achieve thin-client designs for Web-based applications.

5. Two enterprises have used XML to format their data.
   (a) (3%) Discuss the possible issues when the two enterprises are trying to exchange their XML-formatted data.
   (b) (3%) How to solve the issues?

6. 試述 Java byte-code verification process. 8%.
7. 試寫出一個使用 Java Applet 的網頁程式 8%
8. 試述 ERP 與 ASP 的架構以及不同點　8%
9. 試規劃 B2B 電子訂單系統的流程與項目　8%
10. Suggest two applications in which a fat server would seem to be an appropriate design strategy　8%
11. 保護資訊真確性（Information Integrity）是網路安全的重要要求。請問有哪些密碼學方法可以提供真確性之防護？真確性的保護可以完全依賴密碼學的方法嗎？爲什麼？(20%)