國立臺灣師範大學 100 學年度碩士班招生考試試題

科目：程式設計　　　　　　　　　　適用系所：應用電子科技學系

注意：1.本試題共 1 頁，請依序在答案卷上作答，並標明題號，不必抄題。2.答案必須寫在指定作答區內，否則不予計分。

1. (20 分) Please develop the program of evaluating the transpose of a 2-D matrix. (Hint: the transpose of a matrix is the matrix obtained by interchanging its row with the corresponding columns.)

2. (20 分) Please develop the program of insertion sort.

3. (5 分) (a) Please define the data structure of a circular doubly linked list with a dummy header node.

   (15 分) (b) Please write the function codes of deleting a node in the circular doubly linked list defined in 3-(a).

4. (5 分) (a) Please define the data structure of a graph with a adjacency linked list.

   (15 分) (b) Please write the function codes of breadth-first traversal on the graph based on the data structure defined in 4-(a).

5. (20 分) Please develop a non-recursive function to compare two binary trees. The function returns TRUE if the two trees are the same and FALSE otherwise.