

淡江大學八十七學年度碩士班入學考試試題

系別：資訊工程學系

科目：計算機概論(含資料結構、程式語言結構)

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1. (15%) Given an example to show that Quicksort is unstable.

2. (a)(10%) Consider the Algol procedure below. Is $\text{Swap}(i, A[i]) = \text{Swap}(A[i], i)$?

Explain your answer?

```

procedure Swap (x,y)
integer x, y;
begin
    integer t;
    t := x; x := y; y := t;
end.

```

(b) (20%) Compare the following three parameter passing modes: Pass-by-reference, Pass-by-value and Pass-by-name. Include remarks concerning (1) efficiency of execution (2) is it ever unsafe to use?

3. (15%) Define foreign Key. What is this concept used for in the relational data model?

4. (30%) Find the worst case time complexity of the following algorithm.

```

procedure REV(S)
begin
    n := LENGTH(S);
    If n ≤ 2 Then return S
    Else return (REV(SUB(S,3,n)) || SUB(S,1,3))
end.

```

where $\text{SUB}(S,i,j)$ return the substring $S(i), \dots, S(j)$. $\text{LENGTH}(S)$ returns number of elements in S , and $\|$ denotes concatenation of string, i.e., $abc \| de = abcde$.

5. (10%) Discuss the main characteristics of the database approach and how it differs from traditional file systems.