

淡江大學九十學年度碩士班招生考試試題

92

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)

准帶項目請打「○」否則打「×」	
計算機	字典
○	×

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本試題共 2 頁

本試題雙面印製

1. Give three different computer network topologies. Draw the diagrams and explain the differences between them. (10 pts)
2. Describe the difference between a client/server model and a peer-to-peer model. (10 pts)
3. Based on the object-oriented developing environment, describe the concepts of encapsulation, dynamic polymorphism, and inheritance. (10 pts)
4. Suppose we are comparing implementations of insertion sort and merge sort on the same machine. For inputs of size n , insertion sort runs in $8n^2$ steps while merge sort runs in $64n \lg n$ steps (\lg is the logarithm base 2). For which values of n does insertion sort beat merge sort? Briefly explain how might one modify the merge sort pseudocode to make it even faster on small inputs? (10 pts)
5. Explain the concept of divide-and-conquer in algorithm. From the following list, write down the algorithms that are using the concept of divide-and-conquer. (10 pts)
6. Explain the concept of greedy in algorithm. From the following list, write down the algorithms that are using the concept of greedy. (10 pts)

For problems 5 and 6:

Kruskal's_algorithm Prim's_algorithm binary_tree_search breadth_first_search
 bubble_sort quick_sort insertion_sort linear_sort

7. Consider the following blocks of C program, what are the printed values after the program being executed? (10 pts)

```

main ()
{ int a = 0;
  int b = 0;
  { int b = 1;
    { int a = 2; printf (" %d %d\n ", a, b); }
    { int b = 3; printf (" %d %d\n ", a, b); }
    printf (" %d %d\n ", a, b);
  }
  printf (" %d %d\n ", a, b);
}
    
```

◀ 注意背面尚有試題 ▶

