傳播管理研究所

銘傳大學九十三學年度 碩士班招生考試

資訊管理學系

第二節 （第 1 頁共 1 頁）

資料結構 試題 （限用答案本作答）

1. Write a recursive program that evaluates the value of the following expression. (8%)
   ((n-1) / n) * ((n-2) / (n-1)) * ..... * (1 / 2) where n >= 2

2. Instead, use an iterative way to write a program that evaluates the value of the above expression. (7%)

3. Consider a Queue containing N data elements. Also, assume that the Queue needs to spend R seconds to remove out each element. What is the average waiting time for an element to be removed from the Queue? (10%)

4. Given the postfix form: 1 2 + 3 4 * 5 / 6 * 7 / - 8 9 / - (let / denote an integer division) When evaluating the value of this form with a Stack, how many executions of PUSH and POP operations on the Stack are required? (5%) What is the value resulting from the evaluation? (5%)

5. Briefly describe how to implement a Stack with two Queues. (10%)

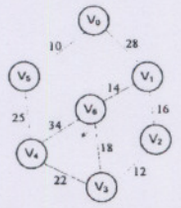
6. What are the advantages and disadvantages of Array, Single Linked List, and Double Linked List? (5%) Briefly describe how you would decide on which one to use. (5%)

7. Assume a Binary Tree contains N terminal nodes. What can you determine about the depth of the Binary Tree? (5%)

8. Write an Abstract Data Type (ADT) that defines a Binary Search Tree. (10%)

9. What are the advantages and disadvantages of Binary Search Tree, Heap, and AVL Tree ? (5%) Briefly describe how you would decide on which one to use. (5%)

10. For the following Weighted Undirected Graph, write the Adjacency Matrix of the Graph (5%); also, draw out the Minimum Cost Spanning Tree of the Graph. (5%)



11. What are the advantages and disadvantages of Bubble Sort, Quick Sort, and Heap Sort? (5%) Briefly describe how you would decide on which one to use. (5%)

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