考試科目	資料結構	系所別	資訊管理系/科技組	考試時間	2月 9日(三) 第四節

An effective Sorting algorithm has played an essential role in implelemtnation of many applications. You are required to answer questions of different sorting algorithms.

Consider the following keys.

17, 35, 12, 28, 16, 5, 18, 7, 19, 92, 48, 3, 22, 1

I.   Heap-Sort:
   a) (10%) Construct a Min-Heap of the above keys.
   b) (10%) Describe an algorithm to sort keys with a min-heap.
   c) (10%) Show how to apply the algorithm on the constructed min-heap to sort these keys.

II.   BST-Sort:
   a) (10%) Construct an AVL tree of the above keys.
   b) (10%) Describe an algorithm to sort keys with an AVL tree.
   c) (10%) Show how to apply the algorithm on the constrcuted AVL tree to sort these keys.

III.   Merge-Sort:
   a) (10%) Describe the merge sort algorithm.
   b) (10%) Show how to apply the algorithm to sort the above keys step by step.

IV.   In-place Quick-Sort:
   (20%) Use the first element as a pivot and show how to apply in-place quicksort step by step to sort these keys. Conside these keys initially in the array as below:

   [17, 35, 12, 28, 16, 5, 18, 7, 19, 92, 48, 3, 22, 1]

備　　　註	一、作答於試題上者，不予計分。 二、試題請隨卷繳交。