

Data Structure Lab Assignment (CS 2172)  
Assignment 8: Sorting

Time: 2 weeks

1. Develop subroutines for various shoring techniques as mentioned below.

- a) Insertion sort –
  - i. Default algorithm and
  - ii. Avoiding swap
- b) Bubble sort –
  - i. Default algorithm
  - ii. Avoiding swap
  - iii. Flagged bubble sort
  - iv. Range limiting bubble sort
  - v. **Alternating bubble sort**
- c) Merge sort – Default algorithm
- d) Quick sort – Default algorithm. Here use “median of three” pivot selection algorithm.

Now consider the following three lists each of having 20 elements:

List-1: 1 16 12 26 25 35 33 58 45 42 56 67 83 75 74 86 81 88 99 95  
List-2: 1 17 21 42 24 27 32 35 45 47 57 23 66 69 70 76 87 85 95 99  
List-3: 22 20 81 38 95 84 99 12 79 44 26 87 96 10 48 80 1 31 16 92

Write the main() function to order these lists using the above-stated subroutines. Also, note (print programmatically) the number of exchanges (or exchange like segment) for each sorting technique and try to understand the result for various sorting techniques.