

Homework 3

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Spring 2016 Professor: P Thananjeyan

Written Assignments

1. Elementary sorts

- a) Sort the sequence I, L, O, V, E, A, L, G, O, R, I, T, H, M, S using the following sorting methods. Show trace after each iteration of the outer loop. Also, compare the best, worst, and average case for these algorithms.
- Insertion sort
 - Selection sort
 - Bubble sort

Solution:

- a.
- b.
- c.

- b) Show in the style of the example , how shell sorts the E, A, S, Y, S, H, E, L, L, S, O, R, T, Q, U, E, S, T, I, O, N

Solution:

Solution?

- c) Given traces, showing how I, L, O, V, E, A, L, G, O, R, I, T, H, M, S are sorted for following mergesort algorithms:
- Top-down mergesort
 - Bottom-up mergesort

Solution:

Solution?

2. Quicksort

- 1) Show how method partitions I, L, O, V, E, A, L, G, O, R, I, T, H, M, S
- 2) Show how quicksort sorts I, L, O, V, E, A, L, G, O, R, I, T, H, M, S(ignore the initial shuffle.) Compare the best, worst, and average case.

Solution:

Solution?

3. Priority Queues

- 1) Suppose that the P R I O * R * * I * T * Y * * * Q U E * * * U * E * (where a letter means insert and an asterisk means remove the maximum) is an initially empty priority queue. **Give the sequence of heaps** and the sequence letters returned by *remove the maximum operations*.

Solution:

P
P-R