

## Some Practice Questions

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1. Run the algorithm for finding the longest increasing subsequences on the following sequence:  
5, 3, 8, 2, 9, 3, 5, 6, 9, 7, 8, 1, 10, 2.
  - (a) Give the  $L(i)$  values for all  $i$ .
  - (b) What is the longest increasing subsequence?
2. Run the heap sort algorithm on the array  $A = \langle 6, 4, 25, 12, 84, 21, 8, 22, 9 \rangle$ . Draw the trees that are built after the initial sink process and the trees after each swap-sink operation.
3. Run the radix sort algorithm on the array  $A = \langle 127, 315, 471, 115, 225, 532, 287, 193, 365 \rangle$ . Show the values in the array after  $i$  goes from 1 to  $d$ . Explain why a stable sorting is required.
4. Suppose that we have numbers between 1 and 1000 in a binary search tree, and we want to search for the number 363. Which of the following sequences could not be the sequence of nodes examined?
  - (a) 2, 252, 401, 398, 330, 344, 397, 363.
  - (b) 924, 220, 911, 244, 898, 258, 362, 363.
  - (c) 925, 202, 911, 240, 912, 245, 363.
  - (d) 2, 399, 387, 219, 266, 382, 381, 278, 363.
  - (e) 935, 278, 347, 621, 299, 392, 358, 363.