Lecture 15
Sorting
Exercises ANS

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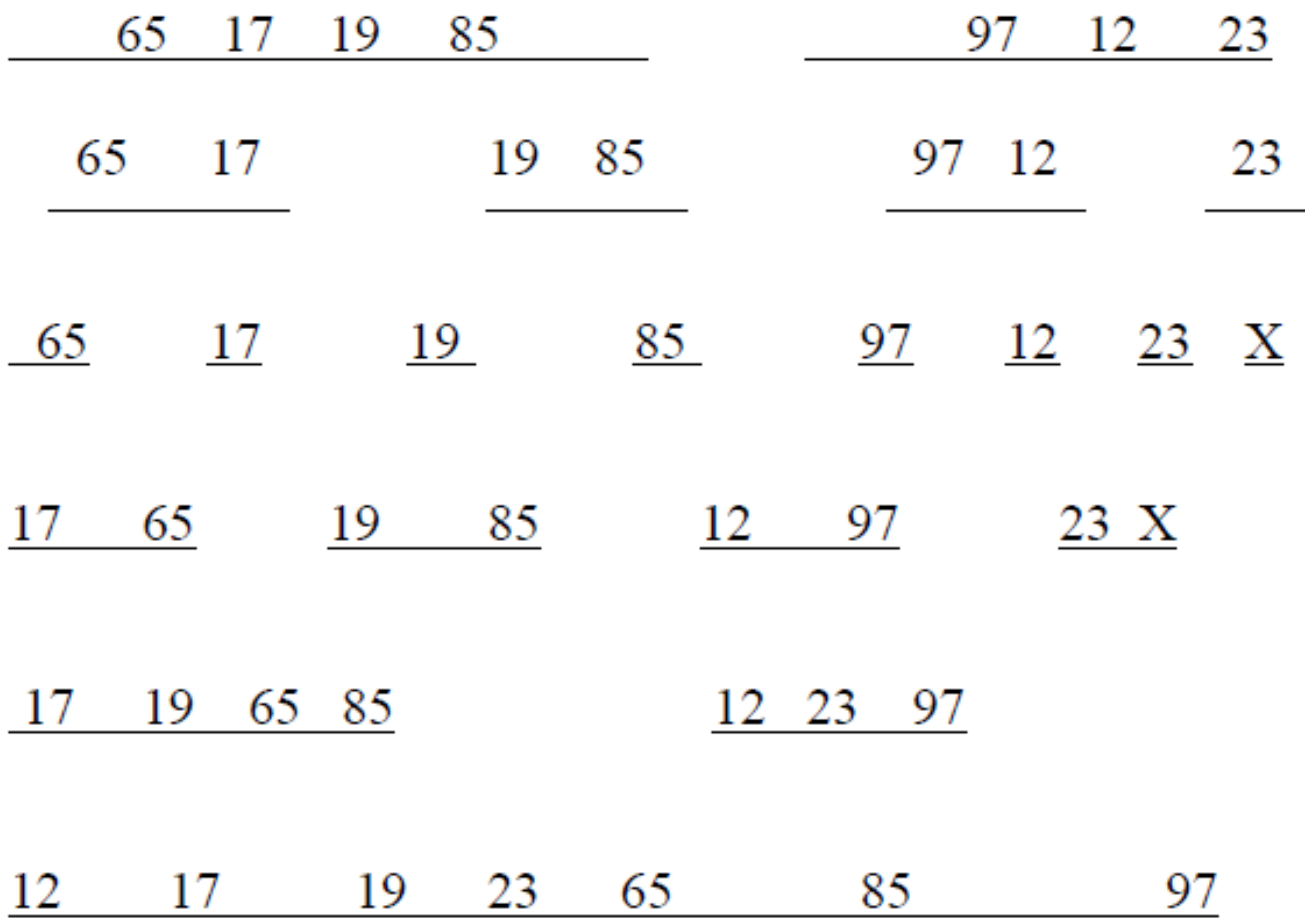
Acknowledgement: Lecture slides based on UofW Course on Data Structures

Q. Merge Sort ANS

Sort this list of numbers using mergesort. Show the split into sublists, then show the merge steps. When there are an odd number of elements in a list, make the left sublist larger. Put an ‘X’ on any sublist you don’t use.

65 17 19 85 97 12 23

ANS: fig to the right

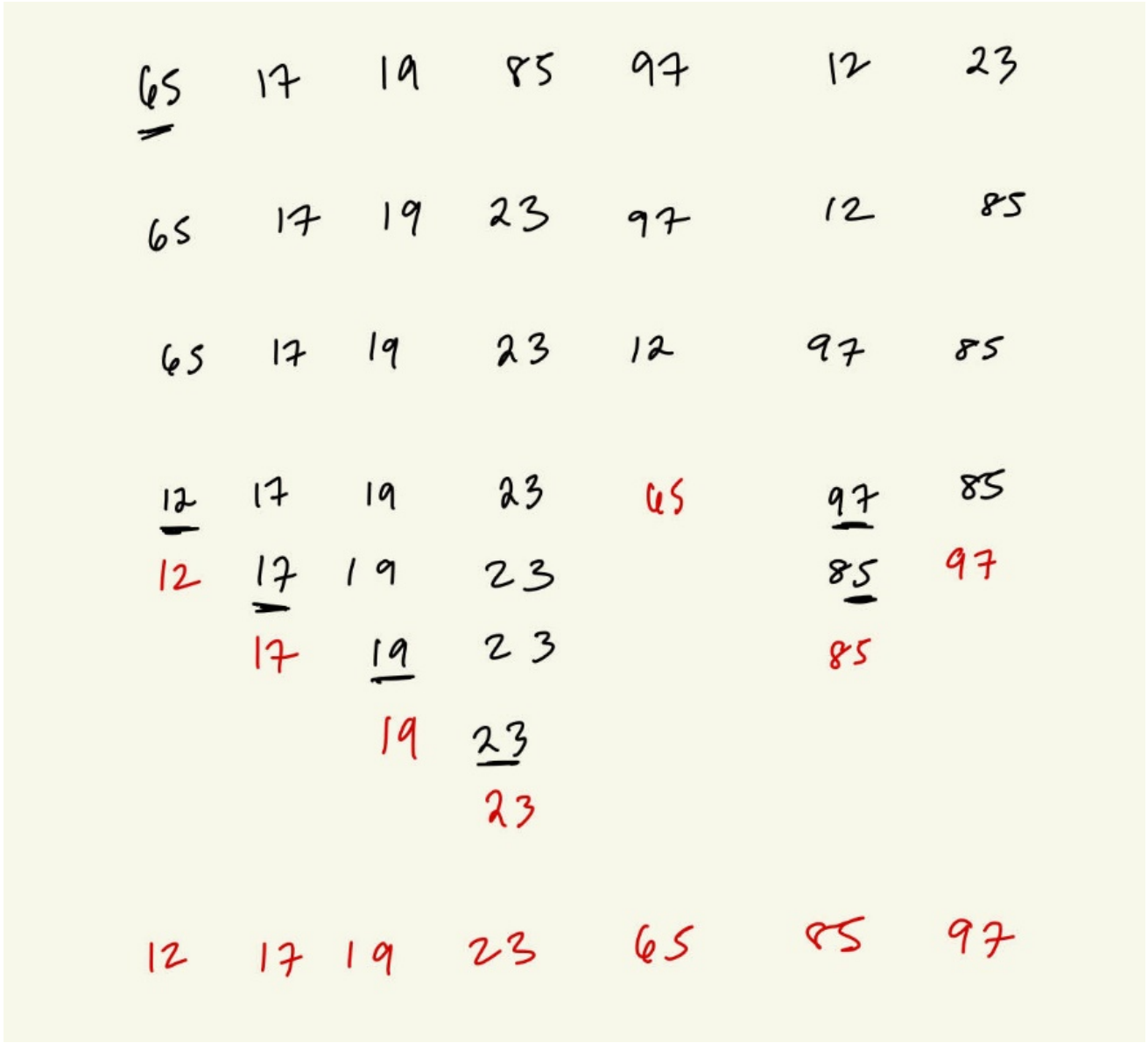


Q. Quick Sort ANS

Sort this array of numbers with Quick Sort into ascending order, using the first number of each subarray as the pivot. Show the intermediate subarrays at each step, enclosing the pivot at each step with parentheses. Draw the corresponding Binary Search Tree and give the final sorted array.

65 17 19 85 97 12 23

ANS: fig to the right



Q. Quick Sort ANS

(Below is what I expect you to write on the exam paper. You do not need to show the detailed process as previous slide.)

12 17 19 23 (65) 97 85

Left part:

(12) 17 19 23

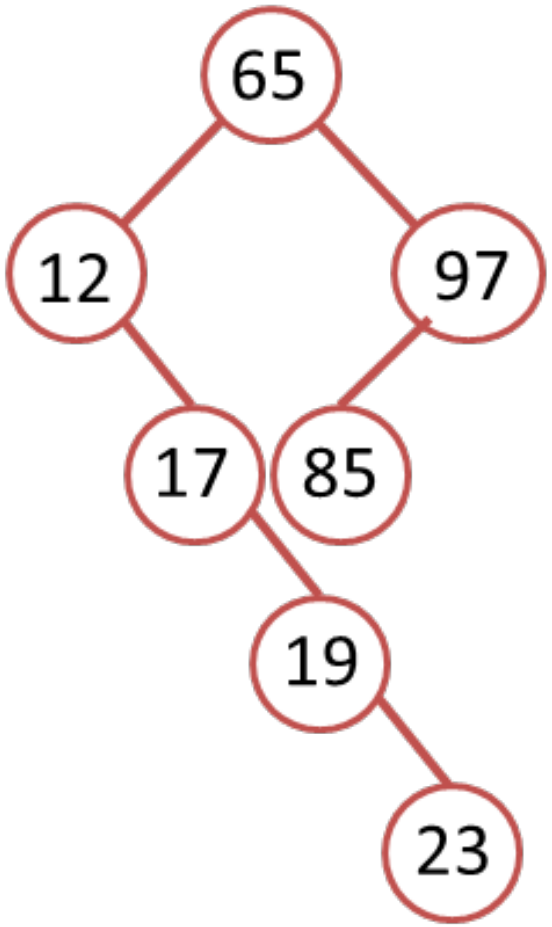
(17) 19 23

(19) 23

Right part:

85 (97)

Sorted list: 12 17 19 23 65 85 97



Corresponding BST

Q. Radix Sort ANS

Sort this array of numbers with Radix sort, with radix of 10, into ascending order. Show the intermediate results after each pass.

65 17 19 85 97 12 23

ANS: fig to the right

170	45	75	90	802	24	2	66

After 1st pass (sorting by the last digit)

170	90	802	2	24	45	75	66

After 2nd pass (sorting by the 2nd to last digit)

802	2	24	45	66	170	75	90

After 3rd pass (sorting by the first digit)

2	24	45	66	75	90	170	802