In class notes - quick sort

CS 14 - Data Structures

April 12, 2013

Algorithm 1 quicksort(container c)

1: **if** $|c| \leq 1$ **then**
2: **return** c
3: **end if**
4: Select a pivot $p \in c$
5: Let $c_<$ be a container with all of the elements of c less than the pivot p
6: Let $c_>$ be a container with all of the elements of c greater than the pivot p
7: Let c_p be a container with all of the elements of c equal to the pivot p
8: **return** concatenate (quicksort($c_<$), c_p, and quicksort($c_>$))

Questions:

1. On a test, you must be able to reproduce pseudocode for quicksort, merge-sort, and binary search. You also must know the best, worst, and average case run times for each algorithm.

2. What is a *stable* sort?

3. What is an *in place* sort?

4. Give an example of a worst case input for quicksort if we choose our pivot to be the first element in the container.

5. Name three ways we can select a *pivot* in quicksort, and one advantage of each.