Lab 6 Order Statistic

Goal

In this lab you will build on Quick Sort to write an efficient algorithm for computing order statistics (e.g., median) without sorting the array.

Resources

- Chapter 8: An Introduction to Sorting
- Chapter 9: Faster Sorting Methods

Java Files

- `CheckKth.java`
- `SortArray.java`

The basic and advanced sorts have been implemented in the `SortArray` class. The class `CheckKth` will generate some arrays, call the `kthItem` method, and checks that its output is correct.

Step 1. In `SortArray` look at the existing code for `kthItem()`. The private recursive method needs to be completed.

Step 2. Refer to the algorithm from the pre-lab presentation and complete the `kthItem()` method.

Checkpoint: Run CheckKth with an array size of 10. If it passes, run it again with an array size of 1000. If it fails, debug and retest.

Post-Lab Follow-Up

Implement an iterative version of `kthItem`. Use `CheckKth` to verify that the new code works correctly.