Selection between lists

You need to be alert to (usually minor) changes that may be made to the assignment statement or to the guidelines after the assignment is first put up. Refresh this frame and re-read the assignment carefully before you make your final submission.

Assignment statement

You are given two list of unsorted integers (all distinct). You are not permitted to transfer elements between the two lists. You are required to devise an algorithm that finds the *k*–th ranked element over the elements in both the lists.

If you need to do selection locally, then you should use the median of median algorithm.

You should make your algorithm as efficient as possible.

Testing your program

If your program is run with only one command line argument `n`, then you should internally generate two lists of (globally) distinct integers, `n` in each list and print the two lists and then find the *k*–th ranked element over the elements in both the lists, where *k* is a randomly generated valid rank.

Otherwise, your command line should have arguments: `k n` p_1 p_2 ... p_n q_1 q_2 ... q_n

Here, `k` is the rank, `n` is the number of elements in each list; followed by the `n` elements of the first list, followed by the `n` elements of the second list.

Your program should then run on the data supplied through the command line.

Report

In the report (latex / plain text) report the complexity analysis of your program.

Marking guidelines

Assignment marking is to be done only **after** the deadline expires, as submissions gets blocked after the assignment is marked.

Handling of command line arguments	**4**
Proper implementation of program	**15**
Efficiency of implementation and justification in the report	**6**
Total Marks	***25***

Assignment submission

Use electronic submission via the WBCM link

You should keep submitting your incomplete assignment from time to time after making some progress, as you can submit any number of times before the deadline expires.

Warning

Cases of copying will be dealt with seriously and severely, with recommendation to the Dean to de-register the student from the course.