

Hw8

Select Algorithm

Part A. Programming (50%)

Implement the SELECT algorithm.

Input: input.txt

Output: output.txt

The program should be named as studentID.c/.cpp

Input format:

6

15 19 10 7 17 16

5

Description:

There are three rows and one end line("\n") in the input file.

The first row contains one number n which indicates the size of the array and $1 < n \leq 2^{25}$.

The second row contains n numbers which constructs the input array and the size of each number will not exceed $2^{31} - 1$.

The third row contains one number, m and $1 \leq m \leq n$.

Output format:

17

Output contains one number and one end line("\n"). Please output the m^{th} smallest number of the array.

Part B. Report (50%)

- Please compare the running time of your algorithm with the input elements are divided into groups 5, 7, or 9 and Heap sort.

The report should be named as studentID.pdf

The more detail you report; the more scores you can get.