

Note:

- As usual, we will grade immediately after the deadline to give you feedback. *However, for this assignment, there will be no penalty for violating the deadline and submitting during the grace period (because I know you are or will be tired with various midterms).*
- As usual, the assignment will no longer be available for submission after the **Available until** date. This is your absolute deadline.

Quick-Sort

Description This is the second half of Lab04 and is worth 50 points. In this lab assignment (Lab04-2), your job is to implement the randomized version of Quick-sort. That is, you must choose a random pivot from the elements in $A[p \dots r]$ when partitioning the subarray. For more details, see page 179 of the textbook. The following webpage describes a simple way to obtain a random integer: <http://www.cplusplus.com/reference/cstdlib/rand/>

Input structure The input starts with an integer number which indicates the number of elements (integers) to be sorted, n . Then, the elements follow, one per line.

Output structure Output the elements in non-decreasing order. Each element must be followed by ;.

Examples of input and output:

Input

6
5
3
2
1
6
4

Output

1;2;3;4;5;6;

Note that the output is only one line and has no white characters.

See the lab guidelines for submission/grading, etc., which can be found in Files/Labs.