Problem L. Sorting Queries

Time limit 2000 ms
Mem limit 1048576 kB

Problem Statement

We have an empty sequence A. You will be given Q queries, which should be processed in the order they are given. Each query is of one of the three kinds below:

- `1 x` : Append x to the end of A.
- `2` : Print the element at the beginning of A. Then, delete that element. It is guaranteed that A will not empty when this query is given.
- `3` : Sort A in ascending order.

Constraints

- $1 \leq Q \leq 2 \times 10^5$
- $0 \leq x \leq 10^9$
- A will not be empty when a query `2` is given.
- All values in input are integers.

Input

Input is given from Standard Input in the following format:

Q
query1
query2
$\vdots$
query$Q$

The i-th query, query$i$, begins with the kind of query c_i (1, 2, or 3). If $c_i = 1$, the line additionally has an integer x.

In other words, each query is in one of the three formats below.

1 x

2

3

Output

Print q lines, where q is the number of queries with $c_i = 2$.
The j-th line $(1 \leq j \leq q)$ should contain the response for the j-th such query.

Sample 1

Input	Output
8 1 4 1 3 1 2 1 1 3 2 1 0 2	1 2

The i-th line below shows the contents of A after the i-th query is processed in Sample Input 1.

- (4)
- $(4, 3)$
- $(4, 3, 2)$
- $(4, 3, 2, 1)$
- $(1, 2, 3, 4)$
- $(2, 3, 4)$
- $(2, 3, 4, 0)$
- $(3, 4, 0)$

Sample 2

Input	Output
9 1 5 1 5 1 3 2 3 2 1 6 3 2	5 3 5

The i-th line below shows the contents of A after the i-th query is processed in Sample Input 2.

- (5)
- $(5, 5)$
- $(5, 5, 3)$
- $(5, 3)$
- $(3, 5)$

- (5)
- $(5, 6)$
- $(5, 6)$
- (6)