

15. Next Permutation on Subsegment

Time limit	1 second
Memory limit	64Mb
Input	standard input or input.txt
Output	standard output or output.txt

Given an array of integers. Implement the data structure processing next queries with asymptotics $O(\log n)$.

- sum on the subsegment $[l, r]$ (numeration is 0-based);
- insert integer x at position pos (i.e. after the insert x -th element must become pos -th);
- delete an item x , placed on position i ;
- set for all elements of subarray $[l, r]$ value x ;
- add for all elements of subarray $[l, r]$ value x ;
- next_permutation on subarray $[l, r]$;
- prev_permutation on subarray $[l, r]$.

Input format

The first line contains one integer n ($1 \leq n \leq 3 \cdot 10^4$) — number of elements in the array. Second line contains n integers, does not exceeding $3 \cdot 10^4$ - initial values of the elements of the array.

Third line contains one integer q ($1 \leq q \leq 10^5$) — number of queries.

Each of next q lines contains the queries one per line. Queries have the next format:

- $1lr$ ($0 \leq l \leq r < arraySize$) — find the sum of all integers in the array on the segment $[l, r]$;
- $2xpos$ ($|x| \leq 3 \cdot 10^4, 0 \leq pos \leq arraySize$) — insert an element x at position pos ;
- $3pos$ ($0 \leq pos < arraySize$) — delete the element on pos ;
- $4xlr$ ($|x| \leq 3 \cdot 10^4, 0 \leq l \leq r < arraySize$) — set value x for all elements on the segment $[l, r]$;
- $5xlr$ ($|x| \leq 3 \cdot 10^4, 0 \leq l \leq r < arraySize$) — add to all elements on the segment $[l, r]$ integer x ;
- $6lr$ — next_permutation on subarray $[l, r]$;
- $7lr$ — prev_permutation on subarray $[l, r]$.

Here, *arraySize* is the size of the array.

Output format

For each query of type 1 print the sum. After all queries, print the final values of the array.

Sample

Input	Output
7	28
1 2 3 4 5 6 7	40
8	5 3 7 6 7 5 7
4 5 1 3	
2 3 3	
5 2 0 4	
7 0 6	
6 0 3	
3 2	
1 1 5	
1 0 6	