TLE '17 Contest 2 P2 - Unlucky Numbers

Time limit: 2.0s   **Memory limit:** 256M
Python: 4.0s

The University of Fireloo is about to build a new on-campus residence named **University of Fireloo Place (UFP)**, a village with N apartment buildings!

Apparently, UFP's architects are quite superstitious, so they believe that the K distinct numbers $u_1, \ldots, u_K$ are "unlucky". As a result, for the ith apartment building, they want the floors to be numbered from 1 to f_i inclusive, but removing all floors with unlucky floor numbers.

Now, the architects need your help to determine how many floors each apartment in UFP should really have.

The bright red buildings and skies of the University of Fireloo.

Constraints

$1 \le N \le 1\,000\,000$
$1 \le K \le 500\,000$
$1 \le f_i \le 1\,000\,000\ (i = 1, \ldots, N)$
$1 \le u_j \le 1\,000\,000\ (j = 1, \ldots, K)$

For 20% of the points, $N, f_i, u_j \le 100$, and $K \le 10$ for all i and j.

For an additional 30% of the points, $N, f_i, u_j \le 100\,000$, and $K \le 10\,000$ for all i and j.

Input Specification

The first line contains K, the number of unlucky numbers the architects have considered.

The second line contains distinct, space-separated positive integers $u_1, \ldots, u_K$, the unlucky numbers.

The third line contains N, the number of apartments to be built in UFP.

For the next N lines, the ith line contains f_i, the top floor number of the ith apartment. It is guaranteed that no top floor number is an unlucky number.

Output Specification

Output N lines, where the ith line contains one integer denoting the actual number of floors the ith apartment should have.

Sample Input

```
2
4  13
2
16
14
```

Sample Output

```
14
12
```