
Description

You've just won the lottery and are thinking about buying a luxury condominium downtown. You know that the top-floor penthouses are really expensive because they're exclusive: if you own the top floor of the highest skyscraper, there's literally nobody else as high as you. But a ground-floor apartment is cheap because every building has a ground floor, so it's not as special to own one.

To help you make this trade-off, you've obtained a list of all the buildings downtown and how many levels each has. You want to find out how exclusive it is to live at level j , i.e. the number of buildings that have at least j levels.

Input

The first line of the input contains the single integer n , the number of buildings in your list (at most 100,000). Each of the following n lines contains the single integer x_i ($1 \leq i \leq n$) and $1 \leq x_i \leq 10^6$, which is the number of levels in building i .

Output

You should output m lines, where $m = \max_i x_i$, i.e. the number of levels in the tallest building. The j th line should contain a single integer: how many buildings have at least j levels.

For example, the first line should just be n , since every building has at least one level. The last (m th) line should be the number of buildings that are all the tallest.

Hint: Note that the time limit is 5 seconds and some inputs are big. An $O(nm)$ solution will not be fast enough to meet the time limit.

Sample Input 1

```
5
1
5
1
10
1
```

Sample Output 1

```
5
2
2
2
2
1
1
1
1
1
```

Explanation: All 5 buildings have at least one level, 2 buildings have at least 2, 3, 4, or 5, levels, and only one building (the tallest) has 6, 7, 8, 9, or 10 levels.

Sample Input 2

```
10
7
8
9
6
1
3
4
10
5
2
```

Sample Output 2

```
10
9
8
7
6
5
4
3
2
1
```

Explanation: There are 10 buildings, of heights, 1, 2, 3, ..., 10, so there are 10 buildings with at least 1 level, 9 buildings with at least 2 levels, etc.