



## E. MEX Count

time limit per test: 3 seconds  
 memory limit per test: 256 megabytes

Define the **MEX** (minimum excluded value) of an array to be the smallest nonnegative integer not present in the array. For example,

- $\text{MEX}([2, 2, 1]) = 0$  because 0 is not in the array.
- $\text{MEX}([3, 1, 0, 1]) = 2$  because 0 and 1 are in the array but 2 is not.
- $\text{MEX}([0, 3, 1, 2]) = 4$  because 0, 1, 2, and 3 are in the array but 4 is not.

You are given an array  $a$  of size  $n$  of nonnegative integers.

For all  $k$  ( $0 \leq k \leq n$ ), count the number of possible values of  $\text{MEX}(a)$  after removing exactly  $k$  values from  $a$ .

### Input

The first line contains an integer  $t$  ( $1 \leq t \leq 10^4$ ) — the number of test cases.

The first line of each test case contains one integer  $n$  ( $1 \leq n \leq 2 \cdot 10^5$ ) — the size of the array  $a$ .

The second line of each test case contains  $n$  integers,  $a_1, a_2, \dots, a_n$  ( $0 \leq a_i \leq n$ ).

It is guaranteed that the sum of  $n$  over all test cases does not exceed  $2 \cdot 10^5$ .

### Output

For each test case, output a single line containing  $n + 1$  integers — the number of possible values of  $\text{MEX}(a)$  after removing exactly  $k$  values, for  $k = 0, 1, \dots, n$ .

### Example

input	Copy
5	
5	
1 0 0 1 2	
6	
3 2 0 4 5 1	
6	
1 2 0 1 3 2	
4	
0 3 4 1	
5	
0 0 0 0 0	
output	Copy
1 2 4 3 2 1	
1 6 5 4 3 2 1	
1 3 5 4 3 2 1	
1 3 3 2 1	
1 1 1 1 1 1	

### Note

In the first sample, consider  $k = 1$ . If you remove a 0, then you get the following array:

1	0	1	2
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So we get  $\text{MEX}(a) = 3$ . Alternatively, if you remove the 2, then you get the following array:

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<a href="#">326889456</a>	Jul/01/2025 18:20	Accepted

1	0	0	1
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So we get  $\text{MEX}(a) = 2$ . It can be shown that these are the only possible values of  $\text{MEX}(a)$  after removing exactly one value. So the output for  $k = 1$  is 2.

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