

Problem F

Permutation

Input: Standard Input
Output: Standard Output

Given N and K find the N 'th permutation of the integers from 1 to K when those permutations are lexicographically ordered. N starts from 0. Since N is very large N will be represented by a sequence of K non-negative integers S_1, S_2, \dots, S_k . From this sequence of integers N can be calculated with the following expression.

$$\sum_{i=1}^K S_i * (K - i)!$$

Input

First line of the input contains $T(\leq 10)$ the number of test cases. Each of these test cases consists of 2 lines. First line contains a integer $K(1 \leq K \leq 50000)$. Next line contains K integers $S_1, S_2, \dots, S_k.(0 \leq S_i \leq K-i)$.

Output

For each test case output contains N 'th permutation of the integers from 1 to K . These K integers should be separated by a single space.

Sample Input

```
4
3
2 1 0
3
1 0 0
4
2 1 1 0
4
1 2 1 0
```

Output for Sample Input

```
3 2 1
2 1 3
3 2 4 1
2 4 3 1
```

Problemsetter: Abdullah al Mahmud
Special Thanks: Manzurur Rahman Khan