UVa Online Judge

11525 Permutation

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, ..., 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 (≤ 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, ..., 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
```

Sample Output

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