Inversions

Time Limit: 1 Second
Memory Limit: 2048 MB

Professor Mattox has a sequence of non-negative integers $p_0, p_1, \ldots, p_{n-1}$, and he would like to find a sequence $a_0, a_1, \ldots, a_{n-1}$ of n distinct integers such that:

1. No two (not necessarily distinct) elements a_i and a_j sum to 0.
2. p_i is equal to the number of indices j such that $a_i + a_j > 0$ for each $0 \leq j < n$.

If multiple such sequences exist, Mattox wants one such that the maximum of the absolute values of the elements $a_0, a_1, \ldots, a_{n-1}$ is as small as possible.

Input

The input consists of multiple test cases. The first line contains an integer T which represents the number of test cases.

For each testcase, the first line contains an integer n, the length of Mattox's sequence. And it is guaranteed that $1 \leq n \leq 2 \times 10^5$. The the next line contains a list of non-negative integers p representing Mattox's sequence.

For each file input, it is guaranteed that the sum of all n's is upper bounded by 2×10^5.

Output

For each test case, output the sequence a satisfying the given restrictions. If no such sequence exists, return 'NO'.

Sample Inputs

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

Sample Outputs

```
2 -1 3
NO
```