# Problem A. Cake Tasting

| | |
|---|---|
| Input file: | `standard input` |
| Output file: | `standard output` |
| Time limit: | 1 second |
| Memory limit: | 512 megabytes |

Karina really loves cakes. This month she visited $n$ different pastry shops, where she participated in a cake tasting. For each pastry shop, Karina recorded all types of cakes she tasted using a special smartphone app. However, after all tasting events, she noted that the app can only show a number of different types of cakes she tasted. And this information was counted for all $2^n - 1$ subsets of pastry shops. Karina is upset and thinks that even this information was counted incorrectly.

Help Karina understand whether this information is correct and if so find any possible Karina's record.

## Input

The first line contains single integer $n$ ($1 \le n \le 19$) — the number of pastry shops. The next line contains $2^n - 1$ integers $a_i$ ($1 \le i \le 2^n - 1$; $1 \le a_i \le 1000$). The integer $a_i$ equals to the number of different types of cakes Karina tasted in shops $j$, where $j$-th digit of binary representation of $i$ is equal to one. For example, if $S_k$ is a set of cake types in $k$-th pastry shop, then $a_1 = |S_1|$, $a_2 = |S_2|$, $a_3 = |S_1 \cup S_2|$, $a_4 = |S_3|$, and so on.

## Output

In the first line print "`Yes`", if the information is correct, or "`No`", otherwise. If the information is correct, print a possible Karina's record in each of the following $n$ lines. For each pastry shop, the record should begin with integer $k_i$ ($1 \le k_i \le 1000$) equals the number of cake types in $i$-th pastry shop. Then, in the same line print $k_i$ different integers $s_{i,j}$, that denote the types of cakes, $s_{i,j}$ must not exceed $10^9$ by absolute value.

If there are several possible options of Karina's records, print any of them. It is guaranteed that if the solution exists, there is a solution with $k_i \le 1000$ for all $1 \le i \le n$.

## Scoring

| Subtask | Score | Constraints | |
|---|---|---|---|
| | | $n$ | $a_i$ |
| 1 | 10 | $n \le 2$ | $a_i \le 10$ |
| 2 | 15 | $n \le 4$ | $a_i \le 10$ |
| 3 | 30 | $n \le 8$ | $a_i \le 1000$ |
| 4 | 26 | $n \le 15$ | $a_i \le 1000$ |
| 5 | 19 | $n \le 19$ | $a_i \le 1000$ |

## Examples

| standard input | standard output |
|---|---|
| 2<br>2 3 4 | Yes<br>2 1 4<br>3 1 2 3 |
| 2<br>2 2 5 | No |
| 3<br>3 2 4 3 4 4 5 | Yes<br>3 1 2 5<br>2 1 4<br>3 1 2 3 |

## Note

In the first example there are two pastry shops. In the first pastry shop Karina tasted 2 types of cakes, in the second — 3 types, in the first and second together — 4 types. One of the possible ways corresponding to these numbers is the following. In the first pastry shop Karina tasted cakes of 1 and 4 types, in the second first pastry shop she tasted cakes of 1, 2 and 3 types, then in both pastry shops together she tried four types of cakes: 1, 2, 3 and 4.

In the second example, Karina tried 2 types of cakes in the first and second pastry shops, and 5 types in total. This obviously could not be true.

In the third example, there are three pastry shops. One of possible answers is:

$a_1 = |S_1| = |\{1, 2, 5\}|$,

$a_2 = |S_2| = |\{1, 4\}|$,

$a_3 = |S_1 \cup S_2| = |\{1, 2, 4, 5\}|$,

$a_4 = |S_3| = |\{1, 2, 3\}|$,

$a_5 = |S_1 \cup S_3| = |\{1, 2, 3, 5\}|$,

$a_6 = |S_2 \cup S_3| = |\{1, 2, 3, 4\}|$,

$a_7 = |S_1 \cup S_2 \cup S_3| = |\{1, 2, 3, 4, 5\}|$.