B. Candy Boxes

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

There is an old tradition of keeping 4 boxes of candies in the house in Cyberland. The numbers of candies are special if their arithmetic mean, their median and their range are all equal. By definition, for a set $\{x_1, x_2, x_3, x_4\}$ ($x_1 \le x_2 \le x_3 \le x_4$) arithmetic mean is , median is and range is x_4 - x_1. **The arithmetic mean and median are not necessary integer.** It is well-known that if those three numbers are same, boxes will create a "debugging field" and codes in the field will have no bugs.

For example, $1, 1, 3, 3$ is the example of 4 numbers meeting the condition because their mean, median and range are all equal to 2.

Jeff has 4 special boxes of candies. However, something bad has happened! Some of the boxes could have been lost and now there are only n ($0 \le n \le 4$) boxes remaining. The i-th remaining box contains a_i candies.

Now Jeff wants to know: is there a possible way to find the number of candies of the 4 - n missing boxes, meeting the condition above (the mean, median and range are equal)?

Input

The first line of input contains an only integer n ($0 \le n \le 4$).

The next n lines contain integers a_i, denoting the number of candies in the i-th box ($1 \le a_i \le 500$).

Output

In the first output line, print "YES" if a solution exists, or print "NO" if there is no solution.

If a solution exists, you should output 4 - n more lines, each line containing an integer b, denoting the number of candies in a missing box.

All your numbers b must satisfy inequality $1 \le b \le 10^6$. It is guaranteed that if there exists a positive integer solution, you can always find such b's meeting the condition. If there are multiple answers, you are allowed to print any of them.

Given numbers a_i may follow in any order in the input, not necessary in non-decreasing.

a_i may have stood at any positions in the original set, not necessary on lowest n first positions.

Examples

input
2 1 1
output
YES 3 3

input
3 1 1 1
output

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NO
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input

```
4
1
2
2
3
```

output

```
YES
```

Note

For the first sample, the numbers of candies in 4 boxes can be $1, 1, 3, 3$. The arithmetic mean, the median and the range of them are all 2.

For the second sample, it's impossible to find the missing number of candies.

In the third example no box has been lost and numbers satisfy the condition.

You may output b in any order.