E. Singers' Tour

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

n towns are arranged in a circle sequentially. The towns are numbered from 1 to n in clockwise order. In the i-th town, there lives a singer with a repertoire of a_i minutes for each $i \in [1, n]$.

Each singer visited all n towns in clockwise order, starting with the town he lives in, and gave exactly one concert in each town. In addition, in each town, the i-th singer got inspired and came up with a song that lasts a_i minutes. The song was added to his repertoire so that he could perform it in the rest of the cities.

Hence, for the i-th singer, the concert in the i-th town will last a_i minutes, in the $(i+1)$-th town the concert will last $2 \cdot a_i$ minutes, ..., in the $((i+k) \bmod n+1)$-th town the duration of the concert will be $(k+2) \cdot a_i$, ..., in the town $((i+n-2) \bmod n+1)$ — $n \cdot a_i$ minutes.

You are given an array of b integer numbers, where b_i is the total duration of concerts in the i-th town. Reconstruct any correct sequence of **positive** integers a or say that it is impossible.

Input

The first line contains one integer t $(1 \le t \le 10^3)$ — the number of test cases. Then the test cases follow.

Each test case consists of two lines. The first line contains a single integer n $(1 \le n \le 4 \cdot 10^4)$ — the number of cities. The second line contains n integers $b_1, b_2, \ldots, b_n$ $(1 \le b_i \le 10^9)$ — the total duration of concerts in i-th city.

The sum of n over all test cases does not exceed $2 \cdot 10^5$.

Output

For each test case, print the answer as follows:

If there is no suitable sequence a, print `NO`. Otherwise, on the first line print `YES`, on the next line print the sequence $a_1, a_2, \ldots, a_n$ of n integers, where a_i $(1 \le a_i \le 10^9)$ is the initial duration of repertoire of the i-th singer. If there are multiple answers, print any of them.

Example

input
4 3 12 16 14 1 1 3 1 2 3 6 81 75 75 93 93 87

output
YES 3 1 3 YES 1 NO YES 5 5 4 1 4 5

Note

Let's consider the 1-st test case of the example:

1. the 1-st singer in the 1-st city will give a concert for 3 minutes, in the 2-nd — for 6

Codeforces Round #760 (Div. 3)
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→ **Practice?**

Want to solve the contest problems after the official contest ends? Just register for practice and you will be able to submit solutions.

→ **Virtual participation**

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

→ **Problem tags**

constructive algorithms | math

No tag edit access

→ **Contest materials**

- Announcement
- Tutorial

minutes, in the 3-rd — for 9 minutes;

2. the 2-nd singer in the 1-st city will give a concert for 3 minutes, in the 2-nd — for 1 minute, in the 3-rd - for 2 minutes;
3. the 3-rd singer in the 1-st city will give a concert for 6 minutes, in the 2-nd — for 9 minutes, in the 3-rd — for 3 minutes.
