Adding Number to a Sequence

Given an array of Integers, you are allowed to add just one number such that some permutation of the resulting array forms an AP. (Arithmetic Progression).

Print all such numbers that you can add for a given array.

A sequence s1,s2,....,sn is in AP if

s2-s1 = s3-s2 = ...= sn-sn-1

Input

First line of input contains t, number of test cases.

First line of every test case is the N (<10^5), size of the array.

Next line contains N numbers.

Output

Output for each test case contains two lines.

First line is the numbers of numbers which satisfies the above condition.

Next line contains all such numbers seperated by single space in **increasing order.**

If there are infinte such numbers then print -1.

Example

Input:
4
3
1 2 4
1
5
4
4 3 4 5
2
2 4
 Output:
1
3
-1
0
3
0 3 6