Nokotan's Antler Tines

null_awe

1 Problem Statement

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Nokotan, recently into mathematics, was playing around with a protractor when she discovered that the angle between her antler tines are exactly 60 degrees! She realizes that this is the same as an interior angle of an equilateral triangle, which is a perfect tool to aid her in solving a problem that has been bugging her in recent days. She decides to try to take advantage of this new discovery!

Nokotan has an integer n ($2 \le n \le 10^3$). She has a permutation of the first $2n-1$ integers, arranged into two rows — with n integers in the top row and the remaining $n-1$ integers in the bottom. For the permutation $[3,6,2,1,4,5,7]$, the arrangement looks like this:

```
3 6 2 1
 4 5 7
```

In one operation, Nokotan will be able to choose any adjacent triangle of integers (two adjacent integers in the top row and the corresponding integer in the bottom row located in between them) and rotate the triangle clockwise using the 60 degree angle between her antler tines. For example, she could select the first adjacent triangle

```
3 6 2 1
 4 5 7
```

and rotate it counterclockwise using her antler to result in:

```
6 4 2 1
 3 5 7
```

Nokotan really hates wasting time. If it is possible, please help her find whether or not she can sort the integers by only using at most $(n+1)^2$ operations such that the integers 1 through n will be ordered in ascending order in the top row and $n+1$ through $2n-1$ will be ordered in ascending order in the bottom row.

2 Input

The first line contains a single integer t ($1 \leq t \leq 10^3$) — the number of test cases.

The first line of every test case contains a single integer n — the length of the top row of integers. It is guaranteed that the sum of all n will not exceed 2×10^3.

The second and final line of every test case contains $2n - 1$ integers p_1 through p_{2n-1}, describing the permutation.

3 Output

For each test case, first output `YES` if the permutation satisfies the condition, and `NO` otherwise. You can output `YES` and `NO` in any case (for example, strings `yES`, `yes`, and `Yes` will be recognized as a positive response).

Then, output k ($k \leq (n+1)^2$), the number of operations used to sort the permutation.

Lastly, output k integers to represent the operations. If you rotate a triangle with its upper left corner at index i, use i to represent that operation.

4 Samples

Sample Input 1	Sample Output 1

3
5
6 1 3 5 9 2 7 8 4
2
3 2 1
4
1 2 3 4 5 6 7
	YES
	3
	1 1 4
	NO
	YES
	0

5 Explanation

In the first example, we have the following setup:

```
6 1 3 5 9
 2 7 8 4
```

If we rotate the red triangle (upper left index of 1) counterclockwise and the blue triangle (upper left index of 4) clockwise, we have satisfied the condition.

In the second example, it can be shown that we cannot sort the permutation.

In the third example, the condition is already satisfied — we do not need to use any operations.