

# History

Input file:            **standard input**  
Output file:        **standard output**  
Time limit:         1 second  
Memory limit:      1024 megabytes

Traditionally, few students attended history classes, so the teacher decided to change the system and introduce mandatory group projects for students, which can only be completed in person during classes. Now all  $n$  students, numbered from 1 to  $n$ , attend the classes. The teacher knows that the knowledge level of the  $i$ -th student is  $a_i$ .

To complete the group project, students need to form pairs. To make this not too simple, the teacher has set the following requirement: two people with numbers  $i \neq j$  can be paired if either  $a_i + a_j = S$ , or  $a_i \oplus a_j = X$ , where  $\oplus$  denotes the bitwise exclusive OR (XOR) operation.

Help the students determine if it is possible to form pairs in such a way that the teacher's requirements are satisfied.

## Input

The first line contains three integers  $n$ ,  $S$ , and  $X$  ( $2 \leq n \leq 500\,000$ ,  $0 \leq S, X < 2^{30}$ ,  $n$  is **even**) — the number of students and the required sum or XOR values in a pair, respectively.

The next line contains  $n$  integers  $a_1, a_2, \dots, a_n$  ( $0 \leq a_i < 2^{30}$ ) — the knowledge levels of the students.

## Output

If it is possible to form pairs, then in the first line output "Yes"(without quotes).

In the next  $\frac{n}{2}$  lines, output the formed pairs themselves, where the  $i$ -th line should contain two integers  $c_i, d_i$  ( $1 \leq c_i, d_i \leq n, c_i \neq d_i$ ), indicating that students with numbers  $c_i$  and  $d_i$  should be paired together. Each student number, which is described by a number from 1 to  $n$ , must appear among the pairs exactly once.

If it is not possible to form pairs that satisfy all conditions, output "No"(without quotes) in a single line.

## Examples

standard input	standard output
6 7 0 1 2 9 9 5 6	Yes 1 6 2 5 4 3
4 6 2 1 5 2 3	No

## Note

We will show that the pairing in the first example is correct.

- $a_1 + a_6 = 1 + 6 = 7$
- $a_2 + a_5 = 2 + 5 = 7$
- $a_4 \oplus a_3 = 9 \oplus 9 = 0$

## Scoring

The tests for this problem consist of eight groups. Points for each group are awarded only if all tests of the group and all tests of some of the previous groups are passed. Note that passing the tests from

the statement is not required for some groups. **Offline checking** means that the results of testing your solution on this group will only be available after the competition ends.

Group	Points	Constraints	Required	Comment
		$n$		
0	0	–	–	Samples
1	9	$n \leq 20$	0	
2	15	$n \leq 100$	0 – 1	
3	7	–	–	$S \leq 1, a_i \geq 1$
4	17	–	–	$X = 0$
5	10	$n \leq 2\,000$	0 – 2	
6	21	–	–	All numbers in $a$ are distinct
7	11	$n \leq 100\,000$	0 – 2, 5	
8	10	–	0 – 7	<b>Offline checking</b>