Python Questions

Question 1:

Single Number

Given an array of integers, every element appears twice except for one. Find that single one.

Note: Your algorithm should have a linear runtime complexity. Could you implement it without using extra memory?

Question 2:

Given an integer array A of N integers, find the pair of integers in the array which have minimum XOR value. Report the minimum XOR value.

You have an array A[] with N elements. We have 2 types of operation available on this array :

- We can split a element B into 2 elements C and D such that B = C + D.

- We can merge 2 elements P and Q as one element R such that R = P^Q i.e XOR of P and Q.

You have to determine whether it is possible to make array A[] containing only 1 element 0 after several splits and/or merge?

Input

The first argument is an array of size N containing integer values Ai.

(1<=N<=100000)

(1<=Ai<=10^6)

Output

Return "Yes" if it is possible otherwise return "No".

Examples

Input

9 17

Output

Yes

Question 3:

Maximum height of the staircase

Given an integer A representing the square blocks. The height of each square block is 1.

The task is to create a staircase of max height using these blocks.

The first stair would require only one block, the second stair would require two blocks

and so on.

Find and return the maximum height of the staircase

Question 4:

Count of paths in a grid

Given an integer **A**, find and return the number of paths in a grid of size (A x A) that

starts from (1, 1) and reaches (A, A) without crossing the major diagonal.

Since the result can be large, return the result modulo (10^9 + 7).

NOTE

The major diagonal of a matrix A is the collection of entries A[i][j] where i == j

Input Format

The only argument given is integer A.

Output Format

Return the number of paths modulo (10^9 + 7).

Constraints

1 <= A <= 10^6

For Example

Input 1:

    A = 2

Output 1:

```
    1
```

Input 2:

```
    A = 5
```

Output 2:

```
    14
```

Question 5:

Square Root of Integer

Given an integar **A**.

Compute and return the **square root of A.**

If **A** is not a perfect square, return **floor(sqrt(A)).**

DO NOT USE SQRT FUNCTION FROM STANDARD LIBRARY

Input Format