

Po2

Time-limit: 1s

Description

'A' lives in a beautiful country 'X' where each city is named with a hexadecimal number. As 'A' loves to travel. He decided to visit all the Po2 cities of 'X'. A city is known as a Po2 city if the city name is power of two in the decimal representation. So, given the name of a city can you tell him whether he will visit this city or not.

Input:

First line of the input contains length of the city name n ($1 \leq n \leq 100000$). Then the following line contains n hexadecimal digits, name of the city. It is guaranteed that each digit will be between numbers (0 to 9) and Capital letters (A to F).

Output:

Print 'YES' if the given number is a Po2 city in decimal representation. Otherwise, print 'No' (without the quotes).

Examples:

Input:

10

Output:

YES

Input:

AB1C

Output:

NO

Hints: In the first sample the hexadecimal number is 10, which is 16 in decimal representation and it is a power of two.

In the second sample the hexadecimal number is AB1C, which is 43804 in decimal representation and which is not a power of two.