An Animal Contest 1 P2 - Alpaca Racing

Time limit: 0.6s **Memory limit:** 256M
Python: 1.5s

You have decided to enter your alpaca into the annual Alpaca Racing Tournament! The race will be run around a track of length D, and you will be competing against N other alpacas. However, your alpaca is running slower than usual because it ~~ate too many Cheetos~~ got injured while training for the race. Desperate to win, you hack into the tournament software containing the speeds of all alpacas to see if there is a chance of victory. The speed of the i^{th} alpaca is defined as a_i, and your alpaca has speed P. Soon, you realize that you have no chance of winning, but you have one more trick up your sleeve. You create a device that can reduce the speed of any alpaca, setting its new speed to $\left\lfloor \text{speed} \times \frac{100-X}{100} \right\rfloor$. However, due to a bug in the device, it can only be used K times. Your task is to find out if you can win if you use the device at most K times. Note that winning means that you finish in the fastest time, meaning **no ties**.

Constraints

For all subtasks:

$1 \leq N, K \leq 10^6$

$1 \leq D, P, a_i \leq 10^{16}$

$1 \leq X \leq 100$

Subtask 1 [10%]

$X = 100$

Subtask 2 [90%]

No additional constraints.

Input Specification

The first line of input will contain 4 integers N, D, K, X, all separated by a space.

The next N lines will each contain a_i, denoting the speed of the i^{th} alpaca.

The final line of input will contain P, denoting the speed of your alpaca.

Output Specification

You are to output `YES` if you can win the race **outright** after using the device at most K times and `NO` otherwise.

Note: For this problem, you will NOT be required to pass the sample cases in order to receive points. In addition, you must pass all previous subtasks to earn points for a specific subtask.

Sample Input 1

```
2 12 3 30
100
50
50
```

Sample Output 1

```
YES
```

Explanation for Sample Output 1

The first alpaca finishes in $12/100 = 0.12$ hours, the second one finishes in $12/50 = 0.24$ hours and you finish in $12/50 = 0.24$ hours.

You use the device on the first alpaca twice, bringing his speed down to $\lfloor 100 \times \frac{100-30}{100} \rfloor = 70$, then $\lfloor 70 \times \frac{100-30}{100} \rfloor = 49$. The first alpaca now finishes in $12/49 = 0.245$ hours, which is slower than you. You also need to use the device once on the second alpaca. Using the device 3 times allows you to win.

Sample Input 2

```
4 200 1 1
1000
12
2134
22
1
```

Sample Output 2

```
NO
```