PROBLEMS   SUBMIT CODE   MY SUBMISSIONS   STATUS   HACKS   STANDINGS   CUSTOM INVOCATION

F. Summer Practice Report

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Vova has taken his summer practice this year and now he should write a report on how it went.

Vova has already drawn all the tables and wrote down all the formulas. Moreover, he has already decided that the report will consist of exactly n pages and the i-th page will include x_i tables and y_i formulas. The pages are numbered from 1 to n.

Vova fills the pages one after another, he can't go filling page $i + 1$ before finishing page i and he can't skip pages.

However, if he draws **strictly more** than k tables in a row or writes **strictly more** than k formulas in a row then he will get bored. Vova wants to rearrange tables and formulas in each page in such a way that he doesn't get bored in the process. Vova can't move some table or some formula to another page.

Note that the count doesn't reset on the start of the new page. For example, if the page ends with 3 tables and the next page starts with 5 tables, then it's counted as 8 tables in a row.

Help Vova to determine if he can rearrange tables and formulas on each page in such a way that there is no more than k tables in a row and no more than k formulas in a row.

Input

The first line contains two integers n and k ($1 \le n \le 3 \cdot 10^5$, $1 \le k \le 10^6$).

The second line contains n integers $x_1, x_2, ..., x_n$ ($1 \le x_i \le 10^6$) — the number of tables on the i-th page.

The third line contains n integers $y_1, y_2, ..., y_n$ ($1 \le y_i \le 10^6$) — the number of formulas on the i-th page.

Output

Print "YES" if Vova can rearrange tables and formulas on each page in such a way that there is no more than k tables in a row and no more than k formulas in a row.

Otherwise print "NO".

Examples

input	Copy
2 2 5 5 2 2	

output	Copy
YES	

input	Copy
2 2 5 6 2 2	

output	Copy
NO	

→ Practice?

Want to solve the contest problems after the official contest ends? Just register for practice and you will be able to submit solutions.

Register for practice

→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ACM-ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ Problem tags

dp   greedy   *2500

No tag edit access

→ Contest materials

- Announcement   ✕
- Tutorial #1   ✕
- Tutorial #2   ✕

input	Copy
4 1 4 1 10 1 3 2 10 1	
output	Copy
YES	

Note

In the first example the only option to rearrange everything is the following (let table be 'T' and formula be 'F'):

- page 1: "TTFTTFT"
- page 2: "TFTTFTT"

That way all blocks of tables have length 2.

In the second example there is no way to fit everything in such a way that there are no more than 2 tables in a row and 2 formulas in a row.

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