

HardExams

Input file: *standard input*
Output file: *standard output*
Time limit: 3 seconds
Memory limit: 2048 MB

It's still summer, but you're already grinding for your next exams. Your knowledge can be measured by a single integer and currently you possess K knowledge.

Each exam requires a knowledge of **at least** $a[i]$. Conveniently, there is an optional party **after** each exam. If you choose to go the party after the i -th exam, your current knowledge gets transformed from x into $x \oplus b[i]$, where $\oplus$ is the bitwise exclusive OR operator. If you choose to not attend the party, your knowledge remains unaffected.

It is guaranteed that there **at most 5 exams which require non-zero knowledge**.

Is there a way to pass all exams?

Input

The first line of input contains three numbers N ($1 \leq N \leq 2 * 10^5$), the number of available courses and parties, K ($0 \leq K \leq 10^9$), your current knowledge,

The second line contains N integers $a[1], a[2], \dots, a[N]$ ($0 \leq a[i] \leq 10^9$) - the knowledge required to pass each exam

The third line contains N integers $b[1], b[2], \dots, b[N]$ ($0 \leq b[i] \leq 10^9$) - the xor factor for each party

Output

You should output *Yes* if you can pass all exams or *No* otherwise.

Example

standard input	standard output
3 1 1 2 3 2 0 0	Yes
1 0 1 1	No