

Problem F. Periodic Sequence

Input file: *standard input*
 Output file: *standard output*
 Time limit: 1 second
 Memory limit: 1024 mebibytes

As you may know, some fractions of integers $\frac{A}{B}$ result in an infinite periodic decimal representation. For example, $\frac{4}{7}$ results in 0.57142857 , which means that the 142857 part is repeating itself. Note that we could also write 0.5714285714 or 0.571428571428571 . As you see, it is not trivial to check if two such sequences are equal.

Therefore, you have to help us. You are given only the periodic part of two sequences and need to check if they are equal. Note that the periodic parts are considered equal if they can be made equal by repetition and cyclic shifting.

Input

The first line contains two integers n and m ($1 \leq n, m \leq 5 \cdot 10^5$) — the length of the first and second sequence.

The second line contains n integers a_i ($0 \leq a_i < 10$) — the first sequence.

The third line contains m integers b_i ($0 \leq b_i < 10$) — the second sequence.

Output

Print YES if the two sequences are equal and NO if they are not.

Examples

<i>standard input</i>	<i>standard output</i>
6 3 1 5 6 1 5 6 6 1 5	YES
7 3 1 5 6 1 5 6 7 5 6 7	NO