Jugglable

Alec Sdima is practicing for his next juggling performance.

A sequence $x_1, x_2, \ldots, x_k$ is called **jugglable** if $(x_i + i) \bmod k$ for $1 \leq i \leq k$ form a permutation of $0, 1, \ldots, k-1$.

Alec has a sequence A of length N and wants to answer Q queries. For each query $[L, R]$, determine whether the sequence $A[L], A[L+1], \ldots, A[R]$ is jugglable.

Input

The first line contains the integers N, Q. The second line contains the sequence $A[1], A[2], \ldots, A[N]$. The following Q lines each contain a pair of integers L, R.

Output

For each of the Q queries, print `Yes` if the range is jugglable, and `No` otherwise

Example

Input	Output
7 8 4 6 11 3 4 2 2 1 4 3 7 4 6 6 7 2 6 3 6 4 5 2 5	 Yes No Yes Yes No Yes No Yes

For the first query, the range is $[1, 4]$, so the corresponding sequence is $[4, 6, 11, 3]$ and $k = 4$.

The values $(x_i + i) \bmod k$ are

$$(4+1) \bmod 4 = 1, \quad (6+2) \bmod 4 = 0, \quad (11+3) \bmod 4 = 2, \quad (3+4) \bmod 4 = 3.$$

They are all distinct, so the answer is `Yes`.

For the second query, the range is $[3, 7]$, so the corresponding sequence is $[11, 3, 4, 2, 2]$ and $k = 5$.

The values $(x_i + i) \bmod k$ are

$$(11+1) \bmod 5 = 2, \quad (3+2) \bmod 5 = 0, \quad (4+3) \bmod 5 = 2, \quad (2+4) \bmod 5 = 1, \quad (2+5) \bmod 5 = 2.$$

The value 2 appears multiple times, so the values are not all distinct. Therefore, the answer is `No`.

Constraints and Scoring

- $2 \leq N, Q \leq 200\,000$
- $1 \leq A[i] \leq 3 \cdot N$
- $1 \leq L \leq R \leq N$ for every query

Subtask	Score	Additional Constraints
1	3	$A[i] = 1$ for each i from 1 through N
2	5	$A[i] = i$ for each i from 1 through N
3	16	$N, Q \leq 2000$
4	11	It is guaranteed that each value $A[i]$ is chosen independently and uniformly at random in the range $[1, 3 \cdot N]$
5	28	$L = 1$ for each query
6	37	No additional restrictions.