Polynomial Division



Consider a sequence, $c_0, c_1, \ldots c_{n-1}$, and a polynomial of degree 1 defined as $Q(x) = a \cdot x + b$. You must perform q queries on the sequence, where each query is one of the following two types:

- 1 i x : Replace c_i with x.
- 2 l r: Consider the polynomial $P(x)=c_l\cdot x^0+c_{l+1}\cdot x^1+\cdots+c_r\cdot x^{r-l}$ and determine whether P(x) is divisible by $Q(x)=a\cdot x+b$ over the field Z_p , where $p=10^9+7$. In other words, check if there exists a polynomial R(x) with integer coefficients such that each coefficient of $P(x)-R(x)\cdot Q(x)$ is divisible by p. If a valid R(x) exists, print $\frac{1}{2}$ Yes on a new line; otherwise, print $\frac{1}{2}$ No.

Given the values of n, a, b, and q queries, perform each query in order.

Input Format

The first line contains four space-separated integers describing the respective values of n (the length of the sequence), a (a coefficient in Q(x)), b (a coefficient in Q(x)), and q (the number of queries). The second line contains n space-separated integers describing $c_0, c_1, \ldots c_{n-1}$. Each of the q subsequent lines contains three space-separated integers describing a query of either type 1 or type 2.

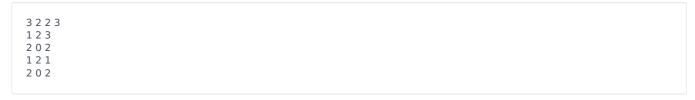
Constraints

- $1 \le n, q \le 10^5$
- For query type $1: 0 \le i \le n-1$ and $0 \le x < 10^9 + 7$.
- For query type 2: $0 \le l \le r \le n-1$.
- $0 \le a, b, c_i < 10^9 + 7$
- $a \neq 0$

Output Format

For each query of type $\frac{2}{2}$, print $\frac{1}{2}$ on a new line if Q(x) is a divisor of P(x); otherwise, print $\frac{1}{2}$ instead.

Sample Input 0



Sample Output 0

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No
Yes
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Explanation 0

Given $Q(x)=2\cdot x+2$ and the initial sequence $c=\{1,2,3\}$, we perform the following q=3 queries:

1. $Q(x)=2\cdot x+2$ is not a divisor of $P(x)=1+2\cdot x+3\cdot x^2$, so we print No on a new line.

- 2. Set c_2 to 1, so $c=\{1,2,1\}$.
- 3. After the second query, $P(x)=1+2\cdot x+1\cdot x^2$. Because $(2\cdot x+2)\cdot (500000004\cdot x+500000004) \bmod (10^9+7)=1+2\cdot x+1\cdot x^2=P(x)$, we print Yes on a new line.