E. More Queries to Array...

time limit per test: 5 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

You've got an array, consisting of n integers: $a_1, a_2, ..., a_n$. Your task is to quickly run the queries of two types:

1. Assign value x to all elements from l to r inclusive. After such query the values of the elements of array $a_l, a_{l+1}, ..., a_r$ become equal to x.
2. Calculate and print sum , where k doesn't exceed 5. As the value of the sum can be rather large, you should print it modulo 1000000007 $(10^9 + 7)$.

Input

The first line contains two integers n and m $(1 \le n, m \le 10^5)$, showing, how many numbers are in the array and the number of queries, correspondingly. The second line contains n integers: $a_1, a_2, ..., a_n$ $(0 \le a_i \le 10^9)$ — the initial values of the array elements.

Then m queries follow, one per line:

1. The assign query has the following format: "", $(1 \le l \le r \le n; 0 \le x \le 10^9)$.
2. The query to calculate the sum has the following format: "", $(1 \le l \le r \le n; 0 \le k \le 5)$.

All numbers in the input are integers.

Output

For each query to calculate the sum print an integer — the required sum modulo 1000000007 $(10^9 + 7)$.

Examples

input
4 5 5 10 2 1 ? 1 2 1 = 2 2 0 ? 2 4 3 = 1 4 1 ? 1 4 5

output
25 43 1300

input
3 1 1000000000 1000000000 1000000000 ? 1 3 0

output
999999986