

API CALENDAR HELP RATING EDU HOME TOP CATALOG CONTESTS GYM PROBLEMSET GROUPS

STEP 1 STEP 2 STEP 3 THEORY PRACTICE | SUBMIT SUBMISSIONS HACKS STANDINGS CUSTOM INVOCATION ITMO Academy: pilot course » Disjoint Sets Union » Step 2 » Practice

A. People are leaving

time limit per test: 2 seconds memory limit per test: 256 megabytes

n persons are standing at positions 1 to n. You have to perform queries of two types:

- "- x" the person at position x leaves;
- "? x" find the nearest person to the right that is still standing.

Input

The first line of the input contains two integers n and m ($1 \leq n, m \leq 10^6$) — the number of people and the number of queries. Next m lines contain queries, one per line. For queries on the leave the line looks like "- x" ($1 \le x \le n$). For queries on the nearest person, the line looks like "? x" ($1 \le x \le n$). It is guaranteed that all the leaving people are distinct.

Output

Output the result of each "?" operation one per line in the corresponding order. If there is no person to the right output "-1".

Example	
input	Сору
5 10	
? 1	
- 3	
? 3	
- 2	
? 1	
? 2	
- 4	
? 3	
- 5	
? 3	
output	Сору
1	
4	
1	
4	
5	
-1	

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