C - Rotatable Array

Editorial (/contests/abc410/tasks/abc410_c/editorial)

Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 300 points

Problem Statement

There is an integer sequence A of length N, initially $A_i = i$. Process a total of Q queries of the following types:

- Type 1: Change A_p to x.
- Type 2: Output A_p.
- Type 3: Repeat the operation "move the first element of A to the end" k times.
  - Formally, replace A with $(A_2, A_3, \ldots, A_N, A_1)$ k times.

Constraints

- All input values are integers.
- $1 \leq N \leq 10^6$
- $1 \leq Q \leq 3 \times 10^5$
- All queries satisfy the following constraints:
  - $1 \leq p \leq N$
  - $1 \leq x \leq 10^6$
  - $1 \leq k \leq 10^9$

Input

The input is given from Standard Input in the following format:

$$
\begin{aligned}
&N \quad Q \\
&\mathrm{Query}_1 \\
&\mathrm{Query}_2 \\
&\vdots \\
&\mathrm{Query}_Q
\end{aligned}
$$

Here, Query_i represents the i-th query.

Type 1 queries are given in the following format:

$$
1 \quad p \quad x
$$

Type 2 queries are given in the following format:

$$
2 \quad p
$$

Type 3 queries are given in the following format:

$$
3 \quad k
$$

Output

For each Type 2 query, output the answer on a line.

Sample Input 1 Copy

Copy

```
5 5
2 3
1 2 1000000
3 4
2 2
2 3
```

Sample Output 1 Copy

Copy

```
3
1
1000000
```

This input contains 5 queries.

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- Initially, $A = (1, 2, 3, 4, 5)$.
- The 1st query is Type 2: output $A_3 = 3$.
- The 2nd query is Type 1: replace A_2 with 1000000.
  - After the query, $A = (1, 1000000, 3, 4, 5)$.
- The 3rd query is Type 3: repeat the operation "move the first element of A to the end" 4 times.
  - After the query, $A = (5, 1, 1000000, 3, 4)$.
- The 4th query is Type 2: output $A_2 = 1$.
- The 5th query is Type 2: output $A_3 = 1000000$.

Sample Input 2 Copy

```
1000000 2
1 1000000 999999
3 1000000000
```

Sample Output 2 Copy

```

```

The output may be empty.