

Contest Duration: 2025-06-21(Sat) 22:00 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250621T2100&p1=248>) - 2025-06-21(Sat) 23:40 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250621T2240&p1=248>) (local time) (100 minutes)

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Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 425 points

Problem Statement

There is one server and N PCs. The server and each PC each hold one string, and initially all strings are empty.

Q queries are given. Each query is in one of the following formats:

- 1 p : Replace the string of PC p with the string of the server.
- 2 p s : Append string s to the end of the string of PC p .
- 3 p : Replace the string of the server with the string of PC p .

Find the final string of the server after processing all queries in the given order.

Constraints

- N, Q are integers
- $1 \leq N, Q \leq 2 \times 10^5$
- For every query, p is an integer and $1 \leq p \leq N$.
- For every query of type 2, s is a string of length at least 1 consisting of lowercase English letters.
- The sum of the lengths of s over all queries of type 2 is at most 10^6 .

Input

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

```
N Q
query1
query2
⋮
queryQ
```

Here, query_{*i*} represents the *i*-th query and is given in one of the following formats:

```
1 p
```

```
2 p s
```

```
3 p
```

Output

Output the answer.

Sample Input 1

Copy

```
2 6
2 1 at
3 1
2 2 on
1 2
2 2 coder
3 2
```

Copy

Sample Output 1

Copy

```
atcoder
```

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- Initially, the strings of the server and PCs 1, 2 are all empty.
- 1st query: Append at to the end of the string of PC 1. At this time, the strings of the server, PC 1, 2 are empty, at, empty, respectively.
- 2nd query: Replace the string of the server with the string of PC 1. At this time, the strings of the server, PC 1, 2 are at, at, empty, respectively.

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- 3rd query: Append on to the end of the string of PC 2. At this time, the strings of the server, PC 1, 2 are at, at, on, respectively.
- 4th query: Replace the string of PC 2 with the string of the server. At this time, the strings of the server, PC 1, 2 are at, at, at, respectively.
- 5th query: Append coder to the end of the string of PC 2. At this time, the strings of the server, PC 1, 2 are at, at, atcoder, respectively.
- 6th query: Replace the string of the server with the string of PC 2. At this time, the strings of the server, PC 1, 2 are atcoder, at, atcoder, respectively.

Thus, the final string of the server is atcoder.

Sample Input 2

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```
100000 3
1 100
2 300 abc
3 200
```

Copy

Sample Output 2

Copy

Copy

The final string of the server is empty.

Sample Input 3

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```
10 10
2 7 ladx
2 7 zz
2 7 kfm
3 7
1 5
2 5 irur
3 5
1 6
2 6 ptilun
3 6
```

Copy

Sample Output 3

Copy

```
ladxfzzkfmirurptilun
```

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