D - Conflict 2

Editorial (/contests/abc411/tasks/abc411_d/editorial)

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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:

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

Here, query_i represents the i-th query and is given in one of the following formats:

```
1 p
```

```
2 p s
```

```
3 p
```

Output

Output the answer.

Sample Input 1 Copy

Copy

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

Sample Output 1 Copy

Copy

```
atcoder
```

- 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 Copy

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

Sample Output 2 Copy

```

```

The final string of the server is empty.

Sample Input 3 Copy

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

Sample Output 3 Copy

```
ladxfzzkfmirurptilun
```

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