SAC '22 Code Challenge 2 P1 - Calendar Management

Time Limit: 1.0s **Memory Limit:** 256M

Since Zain is a busy student, he keeps a calendar with all his important upcoming assessments. However, Zain keeps forgetting to check his calendar and occasionally checks it!

Given this information, Zain wants you to tell him the assessments he has today or has had since his last check (if it is his first check, assume it started before the first assessment in his calendar).

Currently, Zain has A upcoming assessments throughout the month, each having a day they are completed, D_i, and name.

Zain will check his calendar a total of K times and tell you the current day, C_i.

Can you help him?

Input Specification

The first line will contain A $(1 \leq A \leq 100)$ and K $(1 \leq K \leq 30)$, the number of assessments in the month and the number of checks.

The next A lines will contain the day, D_i $(1 \leq D_i \leq 30)$, and name of the i^{th} assessment.

The name of an assessment will be at most 15 characters long and only contain lowercase letters, uppercase letters, and _.

The next K lines will contain a day Zain checks the calendar, C_i $(1 \leq C_i \leq 30, C_{i-1} < C_i$ for all $i > 1)$.

Note: The assessments for a given check should be output in the order given in the input.

Output Specification

For each check, output all the assessments between the last check and the current day on different lines (including the current day).

Sample Input

```
3 5
3 Physics
6 English
5 Rock_throwing
1
3
6
7
8
```

Sample Output

```
Physics
English
Rock_throwing
```

Explanation for Sample Output

The first check has no assessments, the second check has `Physics`, the third check has `English` and `Rock_throwing` (note the order they were output), and every other check has no assessments.

SAC '22 Code Challenge 2 P2 - Cookie Sprinkler

Time Limit: 1.0s **Memory Limit:** 256M

To help build a new home for ~~Mr. DeMello~~ Santa, you were tasked with maintaining a 2D, $N \times N$ tank of milk in his house.

In this tank, you will be asked to perform Q queries of 2 types:

`1 x y`: Add one new cookie to the tank of milk at position (x, y).

`2 x1 y1 x2 y2`: Add sprinkles to all the cookies once in the rectangle from $(x1, y1)$ to $(x2, y2)$.

Can you help Santa determine the sum of the sprinkles placed on the cookies?

Input Specification

The first line will contain N $(1 \leq N \leq 500)$ and Q $(1 \leq Q \leq 500)$, the square size of the milk tank and the number of queries.

The next Q lines will contain one of the queries listed above.

For type 1 queries, they will contain x $(1 \leq x \leq N)$ and y $(1 \leq y \leq N)$, the coordinates of the new cookie.

For type 2 queries, they will contain $x1$, $y1$, $x2$, and $y2$ $(1 \leq x1 \leq x2 \leq N, 1 \leq y1 \leq y2 \leq N)$, a rectangle where all cookies are given one more sprinkle.

Note: One cell can contain multiple cookies.

Output Specification

Output the sum of the sprinkles placed on the cookies.

Sample Input

```
6 6
1 2 3
1 5 6
2 2 3 5 6
1 4 4
2 2 3 4 4
2 2 3 5 6
```

Sample Output

```
7
```

Explanation for Sample Output

In all the queries, the cookie at $(2, 3)$ is sprinkled 3 times, the cookie at $(5, 6)$ is sprinkled 2 times, and the cookie at $(4, 4)$ is sprinkled 2 times.