5_When2meet

(3分/3分/9分)

時間限制: 2 seconds

記憶體限制: 512 MB

題目敘述

在一個沒有作業沒有 deadline 也沒有考試的世界裡，有一群很喜歡出去玩的人，他們平時的興趣就是認識不同的朋友，並且約大家一起出去玩。

在這個世界的初始設定中，每個人都是互相不認識的邊緣人，自己活在一個人的社交圈中。接下來會有 Q 個事件依序發生：

- 有兩個人互相認識了，這兩個人的社交圈從此將會合併成為一個比較大的社交圈

- 有 k_i 個人想要約出去玩，這群人能約出去玩的先決條件是他們都屬於同一個社交圈，也就是說，如果這 k_i 個人之中有任何一個人在約出去玩的當下跟其他人分屬不同的社交圈子，那這個出遊計畫肯定會流局。

你以為問題就這麼簡單嗎？當然不可能。在剛剛的第二種事件中，假設那 k_i 個人真的約成了，他們很開心的出遊並享受現充生活，這時，團裡的其中一個人提出了問題：「我們這團人是從什麼時候開始認識的呀？」，對，這才是希望你幫忙解決的問題。對於每一組成功約出去的 k_i 個人，想請你告訴他們，他們是從什麼時間點開始變成同一個社交圈的。

輸入格式

第一行會有兩個正整數 N, Q，分別代表總共有多少人，以及接下來有多少事件。

接下來的 Q 行每行會先有一個數字 $e_i \in \{1, 2\}$ 代表事件類型：

- 若 $e_i = 1$，接下來會有兩個數字 a_i, b_i，代表編號為 a_i 的人和編號為 b_i 的人在時間點 i 時互相認識。
- 若 $e_i = 2$，接著會先有一個數字 k_i，代表現在希望能約 k_i 個人一起出去玩，接下來會有 k_i 個數字 $x_1, x_2, \cdots, x_{k_i}$，代表我們希望能約一起出去玩的人的編號。

輸出格式

對於每個 $e_i = 2$, 請輸出一個數值代表這 k_i 個人是從什麼時間開始變成同一個社交圈的，若這 k_i 個人在要約出去玩的當下還不在同一個社交圈裡，則輸出 -1。

資料範圍

- $1 \le N \le 2 \cdot 10^5$
- $1 \le Q \le 5 \cdot 10^5$
- $2 \le k_i \le N, \sum k_i \le 5 \cdot 10^5$
- $1 \le a_i, b_i, x_i \le N$

子任務

- 子任務 1 滿足 $k_i = 2$

- 子任務 2 滿足 $N \le 1000, Q \le 5000, \sum k_i \le 5000$
- 子任務 3 無其他限制

測試範例

輸入範例 1

```
5 10
1 1 2
1 2 3
2 2 1 3
2 2 1 5
1 3 4
1 2 5
2 2 2 5
1 1 3
1 2 4
2 2 1 4
```

輸出範例 1

```
2
-1
6
5
```

輸入範例 2

```
5 10
1 1 2
1 2 3
2 3 1 2 3
2 3 1 2 4
1 3 4
1 2 5
2 3 2 3 4
1 1 3
1 2 4
2 3 1 4 5
```

輸出範例 2

```
2
-1
5
6
```

範例說明

在範例測資 1 中：

- 1, 3 兩個人在時間點 2 時藉由共同好友互相認識，因此輸出 2
- 1, 5 兩個人在詢問時間當下還互相不認識對方，因此輸出 -1
- 2, 5 兩個人在時間點 6 時互相認識，因此輸出 6
- 1, 4 兩個人在時間點 5 時藉由兩層共同好友互相認識，因此輸出 5

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(3 Points/3 Points/9 Points)

Time Limit: 2 seconds
Memory Limit: 512 MB

Statement

In a world without assignments, deadlines, or exams, there is a group of people who love going out and having fun. Their main interest is getting to know different friends and organizing outings together.

In the initial setup of this world, each person is a stranger to everyone else, living in their own social circle. There will be a series of Q events happening:

- Two people become acquainted with each other, and their social circles merge into a larger one.

- A group of k_i people want to plan an outing together. The prerequisite for this group is that they all belong to the same social circle. In other words, if any person in this group belongs to a different social circle at the time of the outing, the plan will be unsuccessful.

But is the problem really that simple? Of course not. In the second type of event mentioned earlier, suppose the group of k_i people successfully plans the outing and enjoys their time together. Then, one person in the group raises a question: "When did we all start knowing each other?" Yes, this is the question they want you to help solve. For each group of k_i people who successfully plan their outing, they want to know at what time point they became part of the same social circle.

Input Format

The first line will contain two positive integers, N and Q, representing the total number of people and the number of events to follow.

The next Q lines each start with a number $e_i \in 1, 2$, representing the type of event:

- If $e_i = 1$, there will be two numbers a_i and b_i, indicating that person with ID a_i and person with ID b_i became acquainted with each other at time point i.

- If $e_i = 2$, there will be a number k_i, representing the desired number of people to gather for an outing. Following that, there will be k_i numbers $x_1, x_2, \cdots, x_{k_i}$, representing the IDs of the people we wish to invite for the outing.

Output Format

For each $e_i = 2$, please output a value representing the time when the group of k_i people became part of the same social circle. If the k_i individuals are not in the same social circle at the time of the outing plan, output -1.

Constraints

- $1 \le N \le 2 \cdot 10^5$
- $1 \le Q \le 5 \cdot 10^5$

- $2 \le k_i \le N, \sum k_i \le 5 \cdot 10^5$
- $1 \le a_i, b_i, x_i \le N$

Subtasks

- Subtask 1 satisfies $k_i = 2$.
- Subtask 2 satisfies $N \le 1000, Q \le 5000$, and $\sum k_i \le 5000$.
- Subtask 3 has no additional limits.

Test Cases

Input 1

```
5 10
1 1 2
1 2 3
2 2 1 3
2 2 1 5
1 3 4
1 2 5
2 2 2 5
1 1 3
1 2 4
2 2 1 4
```
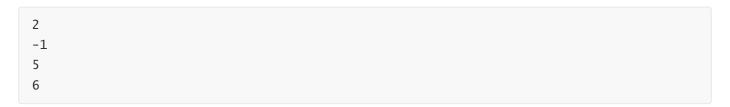
Output 1

```
2
-1
6
5
```

Input 2

```
5 10
1 1 2
1 2 3
2 3 1 2 3
2 3 1 2 4
1 3 4
1 2 5
2 3 2 3 4
1 1 3
1 2 4
2 3 1 4 5
```

Output 2

```
2
-1
5
6
```

Illustrations

In Example Test Case 1:

- Two people, 1 and 3, become part of the same social circle through a mutual friend at time point 2. Therefore, the output is 2.
- Two people, 1 and 5, do not belong to the same social circle at the time of the query. Therefore, the output is -1.
- Two people, 2 and 5, become part of the same social circle at time point 6. Therefore, the output is 6.
- Two people, 1 and 4, become part of the same social circle through two layers of mutual friends at time point 5. Therefore, the output is 5.