



Group Cleanup

Problem Statement

Ever since Oski was promoted to be the administrator of a chat group, his life has known no peace.

Every night, the group (which is supposed to be for important announcements) turns into an endless ocean of stickers, nonsensical voice notes, and repetitive "P" messages. Oski's phone vibrates continuously, draining his battery before sunrise.

Oski's patience has finally run out. He decides to deploy an anti-spam bot with a simple rule: anyone who sends K or more messages within too short of a timeframe will be instantly kicked from the group.

Before turning the bot on, Oski wants to test it on last night's chat log to see who would have been kicked.

The chat log consists of N messages. The i -th message was sent by a member named S_i at timestamp t_i (in seconds). Note that the log is not guaranteed to be sorted chronologically, and it is possible for a member to send multiple messages at the exact same second.

A member is classified as a spammer if there exists a subset of at least K distinct messages sent by that member such that the time difference between the earliest and the latest message in that subset is at most X seconds.

Determine all members who are classified as spammers.

Input Format

The first line contains three integers N , K , and X ($1 \leq N \leq 10^5$; $2 \leq K \leq N$; $0 \leq X \leq 10^6$), denoting the total number of messages, the spam threshold count, and the spam threshold duration respectively.

The next N lines each describe a message. The i -th line contains a string S_i and an integer t_i ($1 \leq |S_i| \leq 20$; $0 \leq t_i \leq 10^6$), representing the sender's name and the timestamp of the message. The string S_i consists only of uppercase and lowercase English letters.

Output Format

Print the spammers' names sorted in alphabetical order, one name per line. If no spammers are found, print - (a single hyphen) instead.

Sample Input 1

```
6 3 5
Oski 10
Budi 12
Oski 11
Siti 20
Oski 14
Budi 18
```

Sample Output 1

Oski

Explanation of Sample 1

In the first test case, the spam threshold count is 3 consecutive messages, and the threshold duration for those messages is 5 seconds.

Oski sent 3 messages, where the difference between the earliest message and the latest message he sent was 4 seconds. Therefore, Oski is considered a spammer.

Sample Input 2

```
5 2 0
Alice 5
Bob 10
Alice 5
Charlie 2
Bob 11
```

Sample Output 2

Alice

Sample Input 3

```
4 3 10
Kevin 1
Kevin 15
Kevin 20
Kevin 35
```

Sample Output 3

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