acm International Collegiate Programming Contest IBM event sponsor	**Problem E** **Vote**	ACM-ICPC Thailand Central Group B Programming Contest 2013 SiPA

Nowadays, there are many talent shows on TV. These shows allow audiences to participate by voting for their favorite performers via a mobile/cell phone messaging. Although audience participation can generate a lot of income for the organizers, it turns out that the mechanism may spoil the spirit of competition because a contestant may pay his or her friends to cast thousands of votes in his or her favor.

Since a contestant who has more votes is qualified for the next round. The organizers see that if not controlled, such activities may reduce the quality of the show because a bad contestant may be qualified, while a good contestant is not.

To balance the income and quality, the organizers make a rule that allows only K votes per phone number. For example, if K = 5 and the same phone number votes more than 5 times, only the first five votes are considered and the rest are ignored.

Your task is to write an efficient program that can count the votes according to the rule of maximum K votes per phone number.

Input

1. The first line contains two integers representing the number of votes (N) and the number of contestants (C), respectively, where 1 < N <= 1,000,000 and 1 < C <= 10. They are separated by one space. Note that each contestant has a unique identification number from 1 to C, including.
2. The second line contains integer K, which is the maximum number of votes allowed per phone number, where 1 <= K <= 100.
3. Lines 3 to N + 2 contain a phone number (P), and an identification number of a contestant whom a sender votes for (D), respectively. The numbers P and B are separated by one space. A phone number is a 9-digit number which may have one or more leading zeros, but it has no space or other symbols. In case that a vote contains an invalid identification number (B <= 0 or B > C), the vote will be ignored.

Output

There are C lines of outputs representing counted votes for contestants sorted by contestant identification numbers.

Example Inputs and Outputs

Example 1

Input	Output
10 5 2 815654320 5 851234562 7 815654320 4 911234563 4 025213421 3 025213421 3 815654320 1 025213421 3 025179605 2 000000121 4	0 1 2 3 1

Explanation of Example 1

The input contains 10 votes and there are 5 contestants whose identification numbers are 1, 2, 3, 4 and 5. The maximum number of votes allowed per phone number is 2. Phone number `815654320` votes three times for Contestants 5, 4 and 1. Therefore, the third one is ignored. Phone number `025213421` votes three times for Contestant 3 and only the first two are counted. Phone number `851234562` votes just once, but the contestant identification number is invalid. Such an invalid vote is counted toward the limit of K votes as shown in the next example.

Example 2

Input	Output
30 10 2 800000003 3 001000002 9 000000005 5 800000003 0 001000000 2 001000001 0 800000002 0 001000002 5 001000002 3 000000007 12 001000002 0 001000002 9 000000006 5 001000001 12 001000003 4 800000002 8 000000008 5 000000006 2 800000000 10 001000003 12 000000006 11 001000000 2 000000005 11 800000000 3 001000003 3 800000003 2 800000000 11 000000006 0 800000001 0 000000008 6	0 3 2 1 4 1 0 1 1 1

Note for Example 2

It is worth noting that an earlier vote that is cast for an invalid identification number is considered as a vote within the limit of K votes and it can prevent later votes from being counted. For instance, phone number 800000003 votes 3 times for contestants whose identification numbers are 3, 0, and 2, respectively. The second vote is invalid, yet it is counted toward the vote limit. Consequently, the third vote for number 2 is not counted.