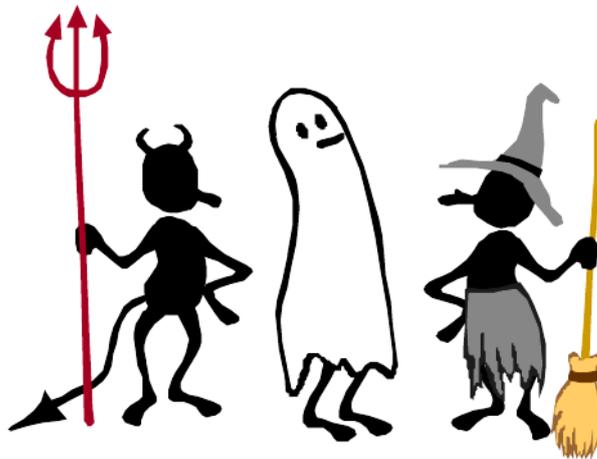


2111 A Committee is a Beast with Many Heads and No Brain

In the wake of the recent controversy over the intrusive questions asked by the US Census Bureau during the 2000 census, Congress has decided that decisive action is required and so, after much debate, it has decided to ... commission a fact-finding study. The Census Bureau has been instructed to form discussion groups of people from around the country and of many different ancestries to help refine the questions for the 2010 census.

To encourage diverse responses, no two members of any discussion group can come from the same ancestry or from the same city. Furthermore, because these people will be together in small meeting rooms for some time, smokers should not be placed in the same group with non-smokers. Finally, the caterer has suggested that serving lunch to these groups would be easier if vegetarians and non-vegetarians were not mixed together.



Write a program to read descriptions of the people participating in the fact-finding study. Your program should then assign these people to discussion groups so that no two people of the same ancestry are together in a group, no two people from the same city are together in a group, no group contains a mixture of smokers and non-smokers, and no group contains a mixture of vegetarians and omnivores (non-vegetarians). The program should also enforce limits on the maximum number of discussion groups and the maximum size of any one group. It is possible that, given such limits, assignment of all people into groups may not be possible. The program should indicate in its output whether or not a suitable assignment of people into groups is possible and, if it is possible, the membership of each group.

Input

All input is taken from the standard input stream. The first line of input will contain two positive integers, separated by one or more blanks. The first integer is the maximum number of discussion groups permitted. The second is the maximum number of people per group.

Each subsequent line of input describes a single person participating in the study. Each person is implicitly identified by number according to the line in which their description occurs. The first line of input, as already noted, describes the number and size of groups rather than a person. Therefore the second line of input describes person #1, the third line describes person #2, etc.

Each person's description has the form:

Ancestry – code City – code Smoker – code Lunch – code

Each of the four codes is separated from the others by one or more blanks. The *Ancestry – code* and *City – Code* are positive integers. The *Smoker – code* is either 'S' or 'N' (Smoker or Non-Smoker). The *Lunch – code* is 'V' or 'O' (Vegetarian or Omnivore). The smoker and lunch codes will always be upper-case letters. No line of input will exceed 80 characters.

The entire set of descriptions is terminated by end-of-file on the input stream. There will be at most 200 descriptions.

Output

All output is to the standard output stream.

If it is not possible to assign all the people to appropriate discussion groups, the program should print 'NO ASSIGNMENT POSSIBLE'.

If an assignment is possible, then the program should print one line of output for each non-empty discussion group. Each line of output should contain the identifying numbers of the people assigned to that group, separated from one another by a single blank character. The numbers in each line may appear in any order. At the end of this listing of group assignments, the program should print 'END OF GROUPS'.

The 'NO ASSIGNMENT POSSIBLE' or 'END OF GROUPS' messages should appear by themselves on a single line starting in the first character position of that line.

Note that, for some inputs, there may be many acceptable assignments. The program may print any acceptable assignment in such cases.

Sample Input

```
5 3
1 1 S V
2 3 S V
3 2 N 0
  1 3 S V
1 1 N 0
4 4 N 0
5 7 N 0
```

Sample Output

```
1 2
5 6 3
4
7
END OF GROUPS
```