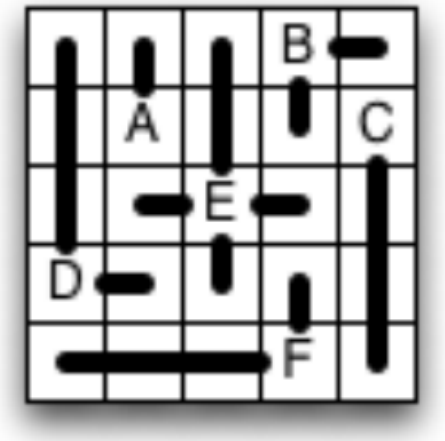
4687 Map Revisited

The fears of the administration of Great County Comprehensive Internet Services (GCCIS) have been confirmed: its employees are unable to produce correct network maps as described in problem 4686. The vice president, Wiley Coyote, was so impressed by your earlier work for GCCIS that he is now offering a day of unlimited junk food if you can deliver a program which produces a map proposal from a map specification.



Input

Input to your program is a map specification consisting of lines with positive integers, single-letter server names, and periods, separated by white space. The sample input below corresponds to the map shown in the image

As in problem 4686, the first line contains s (≤ 52), the number of servers, followed by r and c, the number of rows and columns in the map grid (each ≤ 25). Rows and columns will be numbered top-down and left-to-right, beginning with one.

Each of the next s lines contains a server name, the row and column number where the server is located in the grid, and the number of clients which the server should be connected to.

Output

Output from your program should be a map proposal consisting of r lines containing c words each, separated by single blanks. Each word is either a server name to represent a client connected to that server, or a period to represent a server in the location given by the map specification, or a minus sign if the location contains neither a server nor a client.

The input will always be a valid specification; therefore, the output should always be a valid proposal as described in problem 4686.

Note that if you concatenate an input and the corresponding output for this problem you get an input for problem 4686 which should produce the output '`yes`'.

Sample Input

```
6 5 5
A 2 2 1
B 1 4 2
C 2 5 3
D 4 1 4
E 3 3 5
F 5 4 4
```

Sample Output

```
D A E . B
D . E B .
```

```
D E . E C
. D E F C
F F F . C
```