784 Maze Exploration

A maze of rectangular rooms is represented on a two dimensional grid as illustrated in figure 1a. Each point of the grid is represented by a character. The points of room walls are marked by the same character which can be any printable character different than '`*`', '`_`' and space. In figure 1 this character is '`X`'. All the other points of the grid are marked by spaces.

```
XXXXXXXXXXXXXXXXXXXX            XXXXXXXXXXXXXXXXXXXX
X   X   X   X   X   X            X###X###X###X   X   X
X           X   X   X            X###########X   X   X
X   X   X   X   X   X            X###X###X###X   X   X
XXXXXX XXX XXXXXXXXXX            XXXXXX#XXX#XXXXXXXXXX
X   X   X   X   X   X            X   X###X###X###X###X
X   X     *         X            X   X###############X
X   X   X   X   X   X            X   X###X###X###X###X
XXXXXXXXXXXXXXXXXXXX            XXXXXXXXXXXXXXXXXXXX
```

a) Initial maze b) Painted maze

Figure 1. Mazes of rectangular rooms

All rooms of the maze are equal sized with all walls 3 points wide and 1 point thick as illustrated in figure 2. In addition, a wall is shared on its full length by the separated rooms. The rooms can communicate through doors, which are positioned in the middle of walls. There are no outdoor doors.

```
      door
        |
      XX XX
      X . X   measured from within the room
door - ...--  walls are 3 points wide
      X . X__
      XXXXX  |
        |___  walls are one point thick
```

Figure 2. A room with 3 doors

Your problem is to paint all rooms of a maze which can be visited starting from a given room, called the 'start room' which is marked by a star ('`*`') positioned in the middle of the room. A room can be visited from another room if there is a door on the wall which separates the rooms. By convention, a room is painted if its entire surface, including the doors, is marked by the character '`#`' as shown in figure 1b.

Input

The program input is a text file structured as follows:

1. The first line contains a positive integer which shows the number of mazes to be painted.
2. The rest of the file contains the mazes.

The lines of the input file can be of different length. The text which represents a maze is terminated by a separation line full of underscores ('_'). There are at most 30 lines and at most 80 characters in a line for each maze

The program reads the mazes from the input file, paints them and writes the painted mazes on the standard output.

Output

The output text of a painted maze has the same format as that which has been read for that maze, including the separation lines. The example below illustrates a simple input which contains a single maze and the corresponding output.

Sample Input

```
1
XXXXXXXXX
X   X   X
X *     X
X   X   X
XXXXXXXXX
X   X
X   X
X   X
XXXXX
-----
```

Sample Output

```
XXXXXXXXX
X###X###X
X#######X
X###X###X
XXXXXXXXX
X   X
X   X
X   X
XXXXX
-----
```