
9. Paint

Program Name: Paint.java

Input File: paint.dat

You have taken a job as a house painter for the summer. You have decided to write a program to determine how many gallons of paint you will need to complete each job. You will be given a floor plan of the house to be painted and a starting position marked by an asterisk (*). The walls of the rooms are marked by a string of X's, open doors are marked by one or more dashes (-), and closed doors are marked by one or more equal (=) signs. You are to paint the walls and ceiling of all rooms that you can enter from the starting position without opening a door.

You have decided to write a program that will mark all areas to be painted in this order:

1. any open door and the spaces on either side of the open door will be marked with a C to denote a ceiling area.
2. all remaining spaces that are along a wall or along a closed door will be marked with a W to denote a wall area.
3. all remaining spaces that can be reached will be marked with a C.

Your program will also determine the number of gallons of paint you will need for the job. Each W will require 0.2 gallons of paint and each C will require 0.1 of a gallon of the same paint.

Input

The first line will contain a single integer that indicates the number of jobs that will follow. For each job, the first line will contain a single integer n that indicates the number of rows in the house to be painted. Each of the following n lines will contain a string with symbols with only spaces, walls, open doors or closed doors. Additionally, the interior of one room will contain an asterisk (*) to indicate the starting position. The outside boundaries will contain only wall or closed door symbols.

Output

For each job, you are to print the completed floor plan followed by the number of gallons of paint that you need to buy for the job. Paint can only be bought in one gallon containers. Output one blank line after each job.

Example Input File

```
1
9
XXXXXXXX==XXXXXXXXXXXXXXXXXX
X          X          X
X      *      X          X
X          -          X
X          X          X
XXXXXXXX==XXXXXXX--XXXXXXXXXX
X          X          -    X
X          X          X    =
XXXXXXXXXXXXXXXXXXXX==XXXXX==XX
```

Example Output to Screen

```
XXXXXXXX==XXXXXXXXXXXXXXXXXX
XWWWWWWWWWWXWWWWWWWWWWX
XWCCCCCCCCXWCCCCCCCCX
XWCCCCCCCCCCCCCCCCCCCCX
XWWWWWWWWWWXWWWWCCWWWWX
XXXXXXXX==XXXXXXXXCCXXXXXXXXX
X          XWWWWCCWWWWCCWWWWX
X          XWWWWWWWWWWXWWWW=
XXXXXXXXXXXXXXXXXXXX==XXXXX==XX
18
```