11. Global Warming

Program Name: warming.java Input File: warming.in

Recent reports on global warming are projecting a future rise in sea levels. Write a program that will take a topological map and update it to show the effects of a particular sea level rise.

Input

The first line of the input file will contain a single integer, *n,* indicating the number of maps that need to be processed. For each map, the input will contain:

1. A single line with integers *r*, *c*, and *m*, where *r* and *c* are the dimensions of the map and *m* is the amount of rise in sea level to simulate.
2. A topological map with *r* rows and *c* columns. Each square unit of the map will be one of:
   ocean – represented by a period ('`.`').
   lake – represented by a lower case letter `w`.
   land – represented by an integer in the range from 1 to 9 (inclusive) which indicates the height of the land above sea level.

Output

For each map, reduce the elevation of all land areas by the sea level rise, replacing any land that would then be at sea level (height 0) or below as an ocean or lake, as appropriate.

The difference between an ocean and a lake is that the lake does not touch the border of the map. Note that it is possible that global warming will cause an ocean to connect to a lake or for a lake to touch the edge of the map. In that case, the lake becomes part of the ocean and should then be represented appropriately (with a period). These types of connections can only happen horizontally or vertically on the map (not diagonally).

Example Input File

```
2
5 5 1
.....
.999.
.919.
.999.
..1..
8 10 3
552111111.
6522www21.
65555w521.
6626ww521.
72w276521.
662666521.
555555521.
222222221.
```

Example Output To Screen

```
.....
.888.
.8w8.
.888.
.....
22........
32........
32222.2...
33w3..2...
4www432...
33w3332...
2222222...
..........
```