Problem 8

Skyline

60 Points

Program Name: skyline.java **Input File: skyline.in**

Given the height of skyscrapers in a city's downtown area, construct the view that an observer to the west would have of those buildings.

Input

The first line of input will contain a single integer, *n*, indicating the number of data sets to process. The remainder of the input consists of those *n* data sets.

Each data set begins with a line containing a single integer, *m* (0 <= *m* <= 9), indicating the size of the downtown area (*m* x *m*). The next *m* lines each contain *m* integers from 0 to 9 representing the heights of buildings. Viewed as a whole, the *m* x *m* array of integers represents an overhead topological view of the city, with north at the top.

Output

For each data set in the input display the following:

1. A single line, "Data Set #X" where X is 1 for the first data set, 2 for the second, etc.
2. The view of the downtown skyline as seen from an observer standing to the west of town. Instead of using true perspective (where buildings would look smaller in the distance), please show a simple projection of the buildings. Each visible building should be represented with an integer from 1 to 9 (inclusive) indicating the distance of the building from the observer, with 1 being the closest possible building (i.e., one that's in the leftmost column of the overhead view). The output view should always be as high as the tallest building, with periods used to fill in space above the tallest buildings.

Example Input File

```
2
5
00005
00004
50003
00002
00001
3
189
015
001
```

Example Output To Screen

```
Data Set #1
5.1..
551..
551..
5515.
55155
Data Set #2
3..
2..
2..
2..
23.
23.
23.
23.
123
```