11. Tic-Tac-Win!

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

Given the current state of a tic-tac-toe board, determine the best move. Here is a chart for determining the strategic value (or 'goodness') of a move. Moves listed first are better:

1. The move causes you to win immediately.
2. The move blocks the other player from a sure win on the next move.
3. The move gives you two potential one-move wins (i.e., you are assured the win since only one can be blocked).
4. The move gives you one potential one-move win.
5. The move is in the middle square.
6. The move is in the top-right square.

For those unfamiliar with the game of tic-tac-toe, the game requires two players who take turns making marks on empty squares of a 3x3 grid. The first player makes an 'X' mark, and the second player makes an 'O' mark, and each is attempting to be the first to have three of his or her marks in a line (vertical, diagonal, or horizontal).

Input

The first line of input will consist of a single integer, *n*, indicating the number of game boards in the input. The following 3*n* lines contain the game boards, with X/O marks and periods representing blanks.

Output

For each game board in the input, display the line, "Board #X", where X is 1 for the first data set, 2 for the second, etc. Then display the game board with the best next move for the 'O' player marked. Note that there will always be a single best move to choose (i.e., no ties).

Example Input File

```
3
.XO
.X.
...
OXO
OXX
..X
...
.X.
...
```

Example Output To Screen

```
Board #1
.XO
.X.
.O.
Board #2
OXO
OXX
O.X
Board #3
..O
.X.
...
```