Problem 1—Othello

Lisa and Martin frequently enjoy playing the classic board game Othello. (If you don't know the rules of the game, the rules are enclosed in the problems packet). However, as smart as they are, they each use the same strategy: on his/her turn, each player places a piece to flip as many of the opponent's pieces as possible. (This, incidentally, is a terrible strategy.) They also enjoy playing the game with different starting configurations other than the official one. Given the initial configuration, you are to print the state of the board after the conclusion of the game.

INPUT SPECIFICATION. The input file is divided into a number of cases. Each case begins with a list of pieces. Each piece is 3 characters long followed by **<EOLN>**. The first character is B or W, reflecting the color of the piece. The second character is the row number and the third is the column number of the piece. (Note: the official rules give the columns the letters A-H, but, in this problem, the columns are numbered 1-8.) The pieces can appear in any order, but all will be valid locations, and none will be repeated. "DONE **<EOLN>**" will follow the last piece in each case. An additional "DONE**<EOLN>**" will follow the last input case.

OUTPUT SPECIFICATION. The game is played to its conclusion (black moves first); each player places the piece that flips the most opponent pieces on that turn. (If there is more than one piece that flips the same number, choose the one with the lowest row number. If there is more than one in the same row, choose the one with the lowest column number.) The output cases appear in the same order as the corresponding input cases. Each output case begins with "Case *cs*:**<EOLN>**" where *cs* is the case number. Then follow the eight lines, each containing eight characters followed by **<EOLN>**. B, W, and _ (underscore) correspond to black, white, and unoccupied. An extra **<EOLN>** follows the printed board. Then follows the line "There are *b* black pieces and *w* white pieces.**<EOLN>**". An extra **<EOLN>** follows each output case.

SAMPLE INPUT.
```
B44<EOLN>
W45<EOLN>
W54<EOLN>
B55<EOLN>
B11<EOLN>
B88<EOLN>
B18<EOLN>
B81<EOLN>
DONE<EOLN>
B11<EOLN>
B88<EOLN>
B81<EOLN>
B18<EOLN>
DONE<EOLN>
DONE<EOLN>
<EOF>
```

SAMPLE OUTPUT.
```
Case•1:<EOLN>
BBBBBBWB<EOLN>
BBBWBWBB<EOLN>
BBBBBBBB<EOLN>
WWBWWBBB<EOLN>
BWBBBWBB<EOLN>
BWBBBBWB<EOLN>
BWWWWWWW<EOLN>
BWBBBBBB<EOLN>
<EOLN>
There•are•45•black•pieces•and•19•wh
ite•pieces.<EOLN>
<EOLN>
Case•2:<EOLN>
B_____B<EOLN>
_____<EOLN>
_____<EOLN>
_____<EOLN>
_____<EOLN>
_____<EOLN>
_____<EOLN>
B_____B<EOLN>
<EOLN>
There•are•4•black•pieces•and•0•whit
e•pieces.<EOLN>
<EOLN>
<EOF>
```