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Menacing bishops X49545_en

Write a program that finds menaces between chess pieces in a given an $n \times n$ chessboard, containing only bishops. The input consists of an integer $n > 0$ followed by a matrix of $n \times n$ characters containing 'o' for a free cell, 'B' for a cell occupied by a bishop.
For instance, in the board below, there is a menace between the bishop in the first row and the one in the third row, and between the bishop in the first row and the one in the fourth. There are no other menaces in this board.

```
6
oooBoo
oBoooo
oooooB
Booooo
oooooo
Booooo
```

Recall that a bishop menaces all positions in the same diagonals that its cell.
You must use the following C++ code, and complete the functions `find_menaces` and `check_board`. Altering the function headers or any other part of the code will render your solution INVALID.

```
#include <iostream>
#include <vector>
using namespace std;

typedef vector<char> Row;
typedef vector<Row> Board;

// Reads a board of size nxn from cin, and returns it.
Board read_board(int n) {
   Board b(n, Row(n));
   for (int i = 0; i < n; ++i) {
      for (int j = 0; j < n; ++j) {
         cin >> b[i][j];
      }
   }
   return b;
}

// writes to cout that there is a menace (i1,j1) <--> (i2,j2)
void write_menace(int i1, int j1, int i2, int j2) {
   cout << "(" << i1 << "," << j1 << ") <--> (" << i2 << "," << j2 << ")" <<end
}

// searches and writes menaces for cell ib,jb in board b
void find_menaces(const Board & b, int ib, int jb) {
   // ADD CODE HERE
}

// searches and writes menaces for all cells in board b
void check_board(const Board& b) {
   // ADD CODE HERE
}

int main() {
   int n;
   int bn = 1;
   while (cin >> n) {
      Board b = read_board(n);
      cout << "board num " << bn << endl;
      ++bn;
      check_board(b);
      cout << "----------------" << endl;
   }
}
```

Exam score: 2.500000 **Automatic part:** 0.000000%

Input

A sequence of boards, each board consists of an integer $n > 0$ followed by an $n \times n$ matrix of characters ('o', 'B'); 'o' indicates a free cell, and 'B' indicates that the position is occupied by a bishop.

Output

For each board in the input, the list of pairs of bishops menacing each othe, with their positions. Follow the format of the examples.

Sample input

```
6
oooBoo
oBoooo
oooooB
Booooo
oooooo
Booooo

4
oooo
oBoB
oooo
oooo

7
ooBoooo
oBooooo
ooooooB
Boooooo
ooooooo
Boooooo
Boooooo
```

Sample output

```
board num 1
(0,3) <--> (3,0)
(0,3) <--> (2,5)
----------------
board num 2
----------------
board num 3
(0,2) <--> (1,1)
----------------
```

Problem information

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