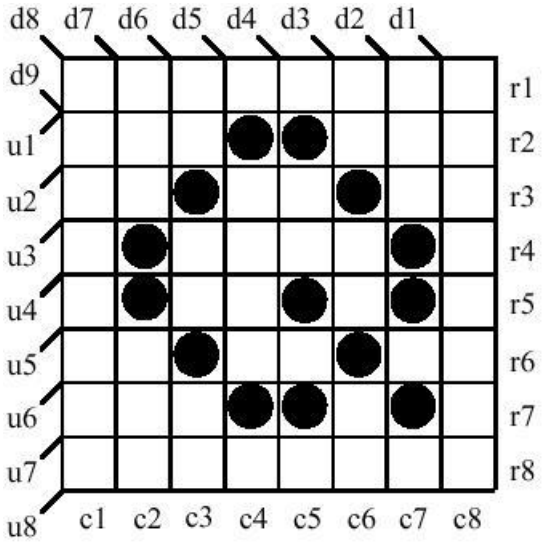
2013 Discrete Digital Tomography

You are given a collection of sealed pizza boxes. The tops and bottoms of the boxes are covered internally with metal foil, but the edges are not. Inside, each box has been divided into r rows and c columns (both in the range 2 to 8 inclusive), after the manner of a chess board. Each of the thus-formed internal squares is either empty or contains a single widget. Widgets absorb beta radiation slightly, so by placing a beta emitter on one side of a box and a receiver on the other side you can tell how many widgets there are in the line of sight between emitter and receiver, but not where they are. By appropriate placement of the emitters and receivers we can determine the occupancies along various lines, i.e. how many widgets there are in each row (r numbers), column (c numbers), down diagonal ($r + c - 1$ numbers), and up diagonal ($r + c - 1$ numbers)

For example, the following 8 by 8 configuration will produce the numbers shown.



0 2 2 2 3 2 3 0 (r_1 .. r_8)

0 2 2 2 3 2 3 0 (c_1 .. c_8)

0 0 0 0 3 2 0 4 0 2 3 0 0 0 0 (d_1 .. d_{15})

0 0 0 0 3 2 0 2 1 2 3 0 1 0 0 (u_1 .. u_{15})

Write a program that will determine the arrangement of widgets in a pizza box, given a set of numbers such as those above. To make life a bit easier for you, the test data for this program will always have a unique solution. Also, the arrangement of widgets will be such that if any proper subset of the squares is revealed, there will always be at least one line with hidden squares such that either all the hidden squares in that line are empty or all the hidden squares in that line are occupied.

Input

The input to the program is a sequence of problems, each consisting of five lines of integers. The first line of each problem contains r and c ($2 \leq r \leq 10$, $2 \leq c \leq 10$), line 2 contains r numbers giving the row occupancies, line 3 contains c numbers giving the column occupancies, line 4 contains $r + c - 1$ numbers giving the down diagonal occupancies and line 5 contains $r + c - 1$ numbers giving the up diagonal occupancies. A line of two zeroes (`0 0`) for r and c terminates the input.

Output

The output of the program is a sequence of pictures, one per input problem except for the terminal one. The first line of the output contains the words '`Pizza box`' followed by a single space and the number

of the problem (a running number starting at 1). The next r lines each contain c characters — either a '`#`' for a full square or '`-`' for an empty square. Leave a blank line between problems.

Sample Input

```
4 3
3 1 1 2
2 1 4
1 2 2 1 0 1
1 1 1 2 1 1
8 8
0 2 2 2 3 2 3 0
0 2 2 2 3 2 3 0
0 0 0 0 3 2 0 4 0 2 3 0 0 0 0
0 0 0 0 3 2 0 2 1 2 3 0 1 0 0
0 0
```

Sample Output

```
Pizza box 1
###
--#
--#
#-#

Pizza box 2
--------
---##---
--#--#--
-#----#-
-#--#-#-
--#--#--
---##-#-
--------
```