

750 8 Queens Chess Problem

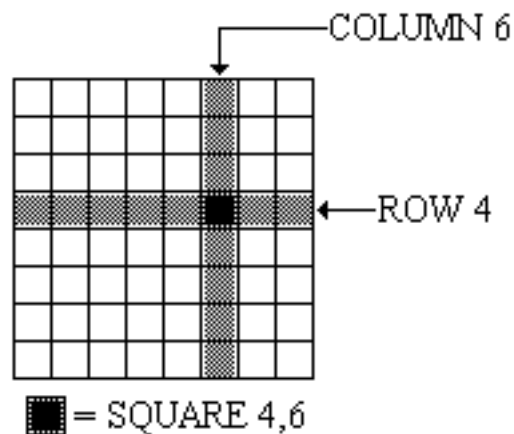
In chess it is possible to place eight queens on the board so that no one queen can be taken by any other. Write a program that will determine all such possible arrangements for eight queens given the initial position of one of the queens.

Do not attempt to write a program which evaluates every possible 8 configuration of 8 queens placed on the board. This would require 8^8 evaluations and would bring the system to its knees. There will be a reasonable run time constraint placed on your program.

Input

Input to your program will be two numbers separated by a blank. The numbers represent the square on which one of the eight queens must be positioned. A valid square will be represented; it will not be necessary to validate the input.

To standardize our notation, assume that the upper left-most corner of the board is position (1,1). Rows run horizontally and the top row is row 1. Columns are vertical and column 1 is the left-most column. Any reference to a square is by row then column; thus square (4,6) means row 4, column 6.



Output

Output from your program will consist of a one-line-per-solution representation.

Each solution will be sequentially numbered $1 \dots N$. Each solution will consist of 8 numbers. Each of the 8 numbers will be the ROW coordinate for that solution. The column coordinate will be indicated by the order in which the 8 numbers are printed. That is, the first number represents the ROW in which the queen is positioned in column 1; the second number represents the ROW in which the queen is positioned in column 2, and so on.

The sample input below produces 4 solutions. The full 8×8 representation of each solution is shown below.

DO NOT SUBMIT THE BOARD MATRICES AS PART OF YOUR SOLUTION!

| SOLUTION 1 | SOLUTION 2 | SOLUTION 3 | SOLUTION 4 |
|-----------------|-----------------|-----------------|-----------------|
| 1 0 0 0 0 0 0 0 | 1 0 0 0 0 0 0 0 | 1 0 0 0 0 0 0 0 | 1 0 0 0 0 0 0 0 |
| 0 0 0 0 0 0 1 0 | 0 0 0 0 0 0 1 0 | 0 0 0 0 0 1 0 0 | 0 0 0 0 1 0 0 0 |
| 0 0 0 0 1 0 0 0 | 0 0 0 1 0 0 0 0 | 0 0 0 0 0 0 0 1 | 0 0 0 0 0 0 0 1 |
| 0 0 0 0 0 0 0 1 | 0 0 0 0 0 1 0 0 | 0 0 1 0 0 0 0 0 | 0 0 0 0 0 1 0 0 |
| 0 1 0 0 0 0 0 0 | 0 0 0 0 0 0 0 1 | 0 0 0 0 0 0 1 0 | 0 0 1 0 0 0 0 0 |
| 0 0 0 1 0 0 0 0 | 0 1 0 0 0 0 0 0 | 0 0 0 1 0 0 0 0 | 0 0 0 0 0 0 1 0 |
| 0 0 0 0 0 1 0 0 | 0 0 0 0 1 0 0 0 | 0 1 0 0 0 0 0 0 | 0 1 0 0 0 0 0 0 |
| 0 0 1 0 0 0 0 0 | 0 0 1 0 0 0 0 0 | 0 0 0 0 1 0 0 0 | 0 0 0 1 0 0 0 0 |

Submit only the one-line, 8 digit representation of each solution as described earlier. Solution #1 below indicates that there is a queen at Row 1, Column 1; Row 5, Column 2; Row 8, Column 3; Row 6, Column 4; Row 3, Column 5; ... Row 4, Column 8.

Include the two lines of column headings as shown below in the sample output and print the solutions in lexicographical order.

Sample Input

1 1

Sample Output

| SOLN | COLUMN |
|------|-----------------|
| # | 1 2 3 4 5 6 7 8 |
| 1 | 1 5 8 6 3 7 2 4 |
| 2 | 1 6 8 3 7 4 2 5 |
| 3 | 1 7 4 6 8 2 5 3 |
| 4 | 1 7 5 8 2 4 6 3 |