

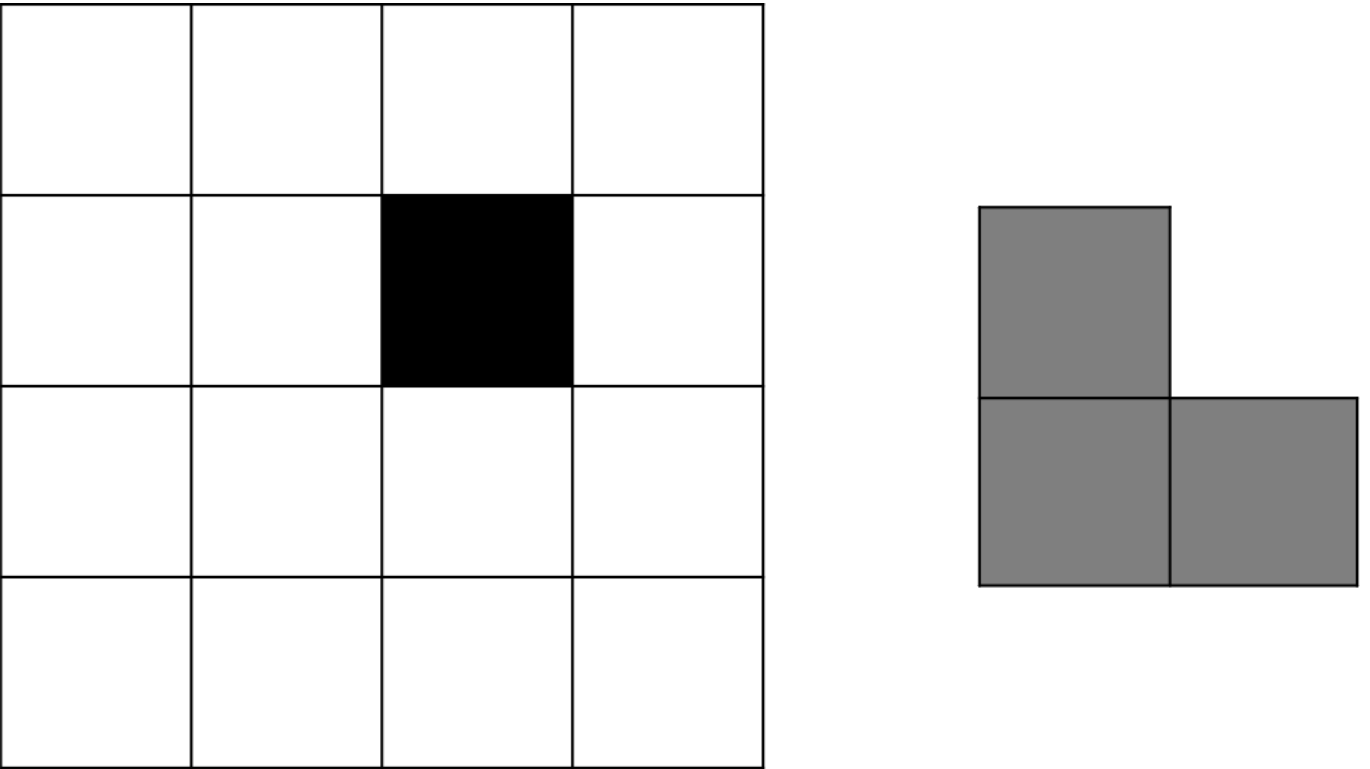
pC Tans Covered

Description

The **tangram** is a dissection puzzle consisting of seven flat polygons, called tans, which are put together to form shapes. The objective is to replicate a pattern (given only an outline) generally found in a puzzle book using all seven pieces without overlap.

Now, ShihHeng create a tangram-like game on his own. There is only one kind of L-shaped tans, like below picture. Our goal is using these tans to fill up square table, which contains some black grids. Every tans can not overlap with each other.

Unfortunately, he is too clumsy to find a solution about some certain square table. Can you help ShihHeng find solution about tans-covered game.



Input

The first line contains two integer N and L , indicating the number of black grids and the length of a square table. In the next N lines, each line contains two integers x_i and y_i , representing the coordinate of the black square. The coordinate starts from upper left corner (0, 0).

Sample Input 1 0 1 represents that black grid is on left most and second from top.

- L is the power of 2
- $2^1 \leq L \leq 2^{13}$
- $1 \leq N \leq L^2$
- $0 \leq x, y < L$
- Chess board can be covered.

- Chess board is composed of at least 4^t adjacent components with same size $(2^{k'} \times 2^{k'})$, which contain one black grid. $1 \leq k' \leq k$

Subtask 1 (20%)

- $N = 1$
- $2 \leq L \leq 4$

Subtask 2 (30%)

- $N = 1$
- $2 \leq L \leq 64$

Subtask 3 (35%)

- Chess board can be covered.

Subtask 4 (15%)

- No other restriction.

Output

Please output the chess board after filling with L-shape tans. In the same L-shape tan, it will be represented by an integer starts with 1 and increment. The position of black grids is 0.

Hint

If you have no idea, you can see Non-Programming part Problem 5.

Sample Input 1

```
1 2
0 1
```

Sample Output 1

```
1 0
1 1
```

Sample Input 2

```
4 4
0 0
0 2
```

```
2 0
2 2
```

Sample Output 2

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

輸入規則

- N 代表黑色格子數量
- L 代表棋盤的寬, $L = 2^k$, $1 \leq k \leq 13$
- $2 \cdot N + 1$ 行是黑色格子的座標
- 棋盤由至少 4^t 個相鄰的一樣大小 $2^{k'} \times 2^{k'}$ 的子區塊, 每個子區塊都只包含一個黑色方塊, $1 \leq k' < k$
- 棋盤的左上角是 $(0, 0)$, $(2, 1)$ 代表從左邊數來第三行, 由上數來第二列的格子

輸出規則

- 黑色方格的地方都是 0
- 每個 L 型方塊都從 1 開始
- 每個格子中間都用空格隔開

提示

相信大家已經知道在 $2^k \times 2^k$ 只有一個黑色方格的話該怎麼做了, 也就是說只有一個方格的話一定可以覆蓋, 那是不是有方法可以使得在一定範圍內只有一個黑色方格呢?

操作說明

1. 請各位同學下載檢查用的程式跟測資
 - check_ans
 - testdata/
2. 把 check_ans 跟 testdata 放在同個目錄底下
3. 請在 Linux 的環境下執行 (不方便的可以請同學協助)

```
./check_ans <程式的絕對路徑>
./check_ans /tmp/your/ac/code
```

4. 把結果產生的 result 跟你的程式上傳到繳交區