Problem E
Even Paths

Last year, Arthur participated in the Vietnamese Robotic Olympiad with a malfunctioning robot. This year, he decided to participate one more time.

The challenge for contestants this year is much harder. The playing field is a square grid, with the bottom left corner at $(0, 0)$ and the upper right corner at (M, M). In each of the $(M + 1)^2$ grid points, there is a light. Initially, exactly N lights are turned on. The robot is allowed to have multiple runs and its target is to turn off all the lights.

A valid run of the robot is a sequence of grid points $(px_0, py_0), (px_1, py_1), \cdots, (px_k, py_k)$ where:

- these $k + 1$ points should be inside the playing field (formally $0 \le px_i, py_i \le M$ for every $0 \le i \le k$);
- these points are pairwise distinct;
- two consecutive grid points must be neighbor, i.e. $|px_i - px_{i+1}| + |py_i - py_{i+1}| = 1$ for every $0 \le i < k$;
- the length of the path (k) must be an **even** number.

According to the rules of the Olympiad, in a run, whenever the robot passes through a grid point, it can choose to turn off the light there. However, as Arthur's robot is buggy again, his robot decides to **always switch the light** (on to off, off to on) whenever the robot passes through a grid point. In other words, all $k + 1$ lights at $(px_0, py_0), (px_1, py_1), \cdots, (px_k, py_k)$ are switched.

With this buggy robot, it is even hard just to turn off all the lights. Your task is to help Arthur to accomplish that. He will be extremely thankful if you manage to turn off all the lights. The number of runs does not need to be minimized, but it should not exceed $10\,000$.

Input

The input starts with an integer T — the number of test cases ($T \le 100\,000$). The T test cases follow with the format:

- The first line consists of 2 integers M and N ($1 \le M \le 50$, $0 \le N \le (M + 1)^2$).
- In the next N lines, the i-th one consists of 2 integers x_i, y_i presenting the location of a light which is turned on at the beginning. All these locations are pairwise distinct.

It is guaranteed that the sum of N in all the test cases does not exceed $100\,000$.

Output

For each test case in the input:

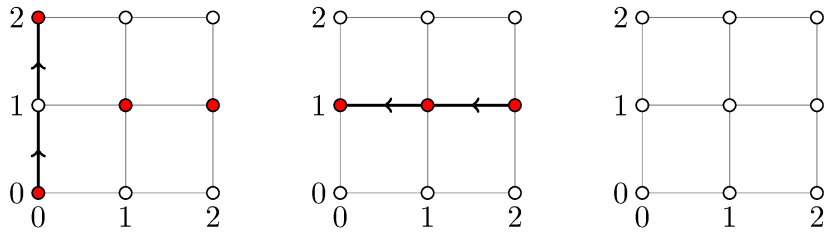
- If it is impossible to turn off all the lights using at most $10\,000$ runs, print -1.

- Otherwise, you should print P ($0 \le P \le 10\,000$) — the number of paths on the first line, followed by P lines describing P paths. Each line should start with an integer k — the length of the path, followed by $(k+1)$ pairs of integers px_i, py_i ($0 \le i \le k$) representing coordinates of points in the path.

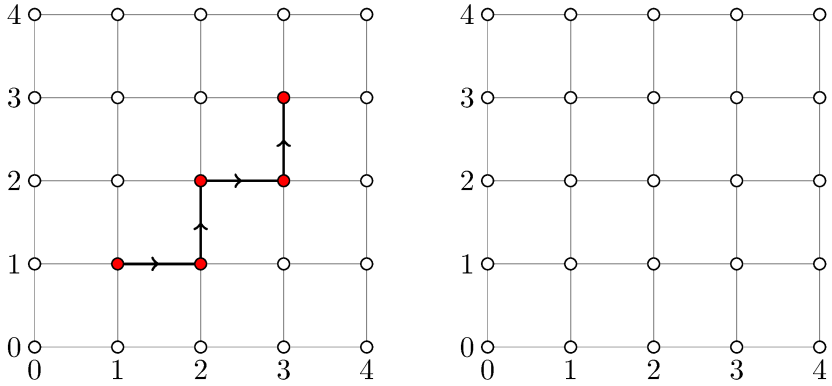
If there are multiple solutions, you can output any of them.

Explanation of the sample

The following 3 images show the first sample: the original grid and the first run, the grid after the first run and the second run, the grid after the second run. The white circle denotes a light turned off, a red circle denotes a light turned on.



The following 2 images show the second sample: the original grid and the first run, the grid after the first run. The white circle denotes a light turned off, a red circle denotes a light turned on.



Sample Input 1	Sample Output 1
2 2 4 0 0 0 2 1 1 2 1 4 5 1 1 2 1 2 2 3 2 3 3	2 2 0 0 0 1 0 2 2 2 1 1 1 0 1 1 4 1 1 2 1 2 2 3 2 3 3