Problem K – Kind Baker

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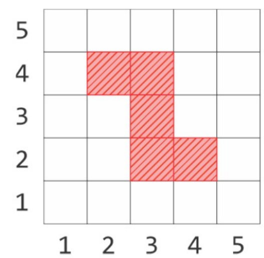
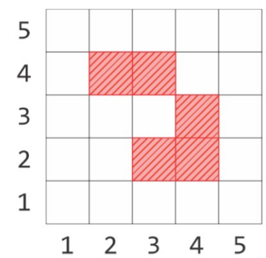
Flora loves baking cakes, and for her company's K-th birthday she promised to bring a special treat: a cake, with K different combinations of toppings to choose from! Unfortunately, she doesn't have much time, so she needs to simplify things a bit.

A cake can be described as a 100×100 grid of square cake pieces. A collection of pieces is connected if, for every pair of pieces in the collection, they are connected directly (they share a side) or indirectly (there is a sequence of pieces such that you can go from one piece to the other through directly connected pieces). The figure below depicts two collections of pieces (only a relevant part of the grid is shown). One collection is connected, while the other one is not.



(a) Connected



(b) Not connected

Flora has a machine that accepts a connected collection of cake pieces and puts a certain topping on each of those pieces. A different topping is applied each time the machine runs. After using the machine a given number of times, each piece will have a (possibly empty) combination of toppings on it. Two pieces are considered to be of different types if they have a different combination of toppings. Flora wants to know the minimum number of times she has to use the machine to achieve exactly K different types of cake pieces, and a possible way to choose a connected collection of cake pieces for each time she will use the machine.

Input

The input consists of a single line that contains an integer K ($1 \leq K \leq 4000$) indicating the number of different types of pieces that the cake must have.

Output

The first line must contain an integer T indicating the minimum number of times that Flora has to use the machine. Each of the next T lines describes a connected collection of cake pieces to drive into the machine the successive times that Flora will use it; the line must contain a positive integer N followed by N different pairs of integers $X_1, Y_1, X_2, Y_2, \ldots, X_N, Y_N$ ($1 \leq X_i, Y_i \leq 100$ for $i = 1, 2, \ldots, N$), indicating that the collection consists of the pieces with coordinates $(X_1, Y_1), (X_2, Y_2), \ldots, (X_N, Y_N)$. It is guaranteed that there exists at least one solution. The coordinates $(1, 1)$ identify the square piece in any corner of the cake.

Sample input 1	Sample output 1
6	3 2 2 3 3 3 3 3 2 3 3 4 3 3 3 3 4 3 4 4

Sample input 2	Sample output 2
2	1 3 100 99 99 99 99 100

The picture below explains the first sample (only a relevant part of the grid is shown). To get exactly $K = 6$ combinations of toppings, Flora has to use the machine a minimum of $T = 3$ times. In the picture, the first topping applied by the machine is represented as a pineapple ($\star$), the second as a cherry ($\blacksquare$), and the third as a blueberry ($\bullet$). The lists of pieces having each combination of toppings are as follows:

1. Only topping 1 ($\star$): $(2, 3)$;
2. Only topping 2 ($\blacksquare$): $(3, 2)$;
3. Only topping 3 ($\bullet$): $(4, 4)$;
4. Toppings 2 ($\blacksquare$) and 3 ($\bullet$): $(4, 3)$;
5. All three toppings: $(3, 3)$;
6. No toppings: rest of the pieces.