Given several segments of line (int the X axis) with coordinates $[L_i, R_i]$. You are to choose the minimal amount of them, such they would completely cover the segment $[0, M]$.

Input

The first line is the number of test cases, followed by a blank line.

Each test case in the input should contains an integer M ($1 \leq M \leq 5000$), followed by pairs "L_i R_i" ($|L_i|, |R_i| \leq 50000$, $i \leq 100000$), each on a separate line. Each test case of input is terminated by pair '`0 0`'.

Each test case will be separated by a single line.

Output

For each test case, in the first line of output your programm should print the minimal number of line segments which can cover segment $[0, M]$. In the following lines, the coordinates of segments, sorted by their left end (L_i), should be printed in the same format as in the input. Pair '`0 0`' should not be printed. If $[0, M]$ can not be covered by given line segments, your programm should print '`0`' (without quotes).

Print a blank line between the outputs for two consecutive test cases.

Sample Input

```
2

1
-1 0
-5 -3
2 5
0 0

1
-1 0
0 1
0 0
```

Sample Output

```
0

1
0 1
```