# 2973   Map Labeler

Map generation is a difficult task in cartography. A vital
part of such task is automatic labeling of the cities in a map;
where for each city there is text label to be attached to its
location, so that no two labels overlap. In this problem, we
are concerned with a simple case of automatic map labeling.

Assume that each city is a point on the plane, and its
label is a text bounded in a square with edges parallel to x
and y axis. The label of each city should be located such
that the city point appears exactly in the middle of the top
or bottom edges of the label. In a *good labeling*, the square
labels are all of the same size, and no two labels overlap,
although they may share one edge. Figure 1 depicts an
example of a good labeling (the texts of the labels are not shown.)
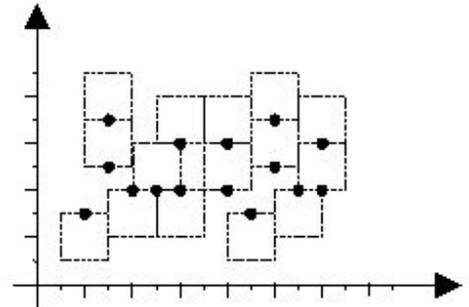
Given the coordinates of all city points on the map as integer values, you are to find the maximum
label size (an integer value) such that a good labeling exists for the map.

Input

The first line contains a single integer t ($1 \leq t \leq 10$), the number of test cases. Each test case starts
with a line containing an integer m ($3 \leq m \leq 100$), the number of cities followed by m lines of data each
containing a pair of integers; the first integer (X) is the x and the second one (Y) is the y coordinates
of one city on the map ($-10000 \leq X, Y \leq 10000$). Note that no two cities have the same (x, y)
coordinates.

Output

The output will be one line per each test case containing the maximum possible label size (an integer
value) for a good labeling.

Sample Input

```
1
6
1 1
2 3
3 2
4 4
10 4
2 5
```

Sample Output

```
2
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