The 28th Annual
ACM International Collegiate
Programming Contest
ASIA Regional - Seoul

Practice Problem A
Smallest Enclosing Interval
Input: sei.in

A set S of closed intervals whose end points are integers is given. Find the length of the smallest enclosing interval that contains all the given intervals.
For example, if the set of given intervals is S ={[1,3],[6,7],[2,4]}, then the length of the smallest enclosing interval is 6.

Input

The input consists of T test cases. The number of test cases T is given in the first line of the input file. Each test case consists of two lines. The first line has an integer n, $1 \le n \le 1000$, that denotes the number of intervals in a set S. The second line contains a sequence of n pair of integers $i_1, j_1, i_2, j_2, \cdots, i_n, j_n$ which represent the n intervals ($0 \le i_k, j_k \le 10000$).

Output

Print exactly one line for each test case. The line should contain one integer that represents the length of the smallest enclosing interval that encloses all the given intervals.

Sample input	Sample output
3 3 1 2 1 3 1 4 2 2 4 1 5 1 1 5	3 4 4