Problem H. Set of Intervals

Input file:	standard input
Output file:	standard output
Time limit:	2 seconds
Memory limit:	512 megabytes

Prof. Pang has a multi-set of intervals $S = \{[l_i, r_i]\}(l_i < r_i)$.

Prof. Pang will perform the following operation for $|S| - 1$ times:

- Select two intervals $[a, b]$ and $[c, d]$ from S, and then choose two integers x, y satisfying $x \in [a, b], y \in [c, d], x < y$. After that, delete $[a, b]$ and $[c, d]$ from S, and add $[x, y]$ to S.

It's easy to find that S contains exactly one interval after the operations, and Prof. Pang will get the interval as a gift.

Now Prof. Pang wants you to calculate how many different intervals he can get.

Input

The first line contains one integer T ($1 \le T \le 10^4$), the number of test cases.

For each test case, the first line contains one integer n ($1 \le n \le 10^5$) — the size of S. Each of the following n lines contains two integers l_i and r_i ($1 \le l_i < r_i \le 10^9$), describing the i-th interval in S.

It is guaranteed that the sum of n over all test cases is no more than 10^5.

Output

For each test case, output one line containing the answer to Prof. Pang's question.

Example

standard input	standard output
4 1 1 1000000000 2 1 1000000000 1 1000000000 4 1 2 3 4 5 6 7 8 4 1 3 2 4 5 8 6 7	1 499999999500000000 26 28