
Problem A. Coolbits

Input file: **standard input**
Output file: **standard output**
Time limit: 1 second
Memory limit: 256 megabytes

Given n intervals $[l_1, r_1], [l_2, r_2], \dots, [l_n, r_n]$, one must select an integer from each of the intervals and calculate their bitwise and value b . What's the maximum possible b one can get?

Input

There are multiple test cases. The first line of the input contains an integer T , indicating the number of test cases. For each test case:

The first line contains an integer n ($1 \leq n \leq 10^5$), indicating the number of intervals.

For the following n lines, the i -th line contains two integers l_i and r_i ($0 \leq l_i \leq r_i \leq 10^9$), indicating the i -th interval.

It's guaranteed that the sum of n of all test cases will not exceed 10^6 .

Output

For each test case output one line containing one integer, indicating the maximum possible b one can get.

Example

standard input	standard output
2	6
3	100
0 8	
2 6	
3 9	
1	
1 100	

Note

For the first sample test case, one can select 7, 6 and 7 from the three intervals and get their bitwise and value 6.