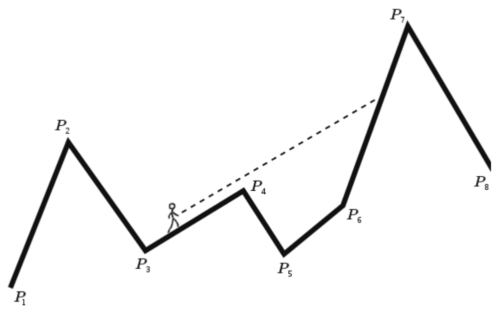
Problem L. Landscape

Input file:	*standard input*
Output file:	*standard output*
Time limit:	9.2 seconds
Memory limit:	512 mebibytes

You travel through a scenic landscape consisting mostly of mountains – there are n landmarks (peaks and valleys) on your path. You pause for breath and wonder: which mountain are you currently seeing on the horizon?



Formally: you are given a polygonal chain $P_1P_2\ldots P_n$ in the plane. The x coordinates of the points are in strictly increasing order. For each segment P_iP_{i+1} of this chain, find the smallest index $j > i$, for which at least one point of P_jP_{j+1} is visible from P_iP_{i+1} (lies **strictly above** the ray $P_i\overrightarrow{P_{i+1}}$).

Input

The first line of input contains the number of test cases T. The descriptions of the test cases follow:

The first line of each test case contains an integer n ($2 \le n \le 100\,000$) – the number of vertices on the chain.

Each of the following n lines contains integer coordinates x_i, y_i of the vertex P_i ($0 \le x_1 < x_2 < \ldots < x_n \le 10^9$; $0 \le y_i \le 10^9$).

Output

For each test case, output a single line containing $n - 1$ space-separated integers. These should be the smallest indices of chain segments visible to the right, or 0 when no such segment exists.

Example

standard input	standard output
2 8 0 0 3 7 6 2 9 4 11 2 13 3 17 13 20 7 7 0 2 1 2 3 1 4 0 5 2 6 1 7 3	0 3 6 5 6 0 0 6 4 4 0 6 0