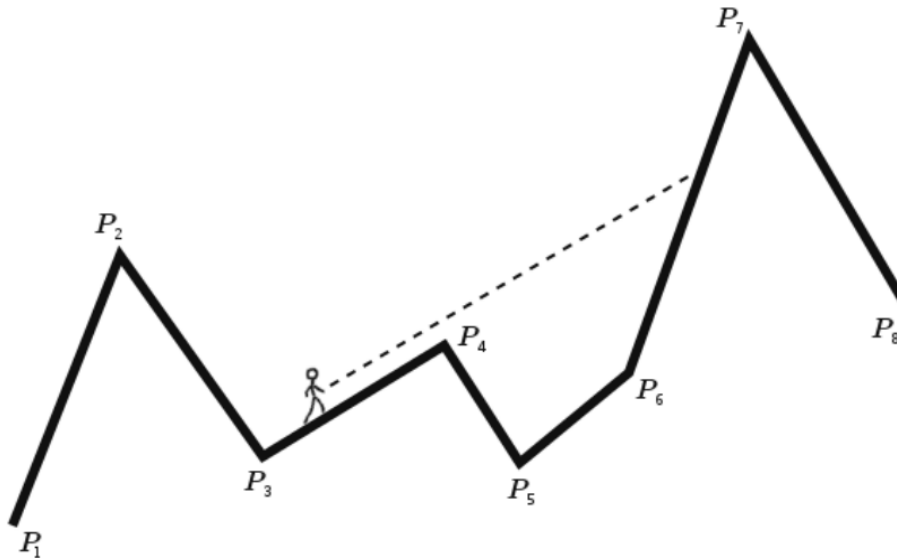


6928 Mountainous landscape

You travel through a scenic landscape consisting mostly of mountains — there are 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 $P_1P_2 \dots P_n$ 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 any point of P_jP_{j+1} is visible from P_iP_{i+1} (lies **strictly above** the ray $\overrightarrow{P_iP_{i+1}}$).

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 ($2 \leq n \leq 100000$) — 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 ($0 \leq x_1 < x_2 < \dots < x_n \leq 10^9$; $0 \leq y_i \leq 10^9$).

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.

Sample Input

```

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
```

Sample Output

```
0 3 6 5 6 0 0
6 4 4 0 6 0
```