Fence Posts

Lea has recently bought a new garden. The previous owner did not care very much for it, therefore it is quite a mess. The fencing is in an especially bad condition, fence posts are everywhere inside the garden and on unnecessary points of the boundary. Lea wants to fence in an area as big as possible using the existing fence posts and fences that run in straight lines between those posts. Help Lea by telling her which posts cannot be removed without altering the size of the garden.

Input

The first line of the input contains an integer t. t test cases follow, each of them separated by a blank line.

Each test case starts with an integer n, the number of fence posts, n lines follow, The i-th line contains two integers x_i, y_i, the x- and y-coordinates of the i-th fence post.

Output

For each test case, output one line containing "Case #i: x" where i is its number, starting at 1, and x is a space-separated list of the indices (in the ascending order) of those fence posts that cannot be removed without altering the size of the garden. Fence posts are indexed starting at 1. Each line of the output should end with a line break.

Constraints

- $1 \leq t \leq 20$
- $3 \leq n \leq 10000$
- $0 \leq x_i, y_i \leq 1000$
- All points will be distinct.
- There will be at least three non-collinear points.

Sample Input 1

```
2
4
0 0
1 1
3 0
0 3

4
0 0
2 2
1 1
0 2
```

Sample Output 1

```
Case #1: 1 3 4
Case #2: 1 2 4
```

Sample Input 2

```
6
4
3 8
2 7
5 1
6 5

6
6 6
4 5
2 4
9 1
7 2
9 4

4
0 4
8 0
8 1
8 5

6
5 7
1 6
8 1
4 2
2 0
6 5

8
2 2
6 7
0 1
0 4
8 3
10 6
9 6
3 1

3
0 3
9 3
9 8
```

Sample Output 2

```
Case #1: 1 2 3 4
Case #2: 1 3 4 6
Case #3: 1 2 4
Case #4: 1 2 3 5
Case #5: 2 3 4 5 6 8
Case #6: 1 2 3
```