

# Updated 1

## Rectilinear Coordinates

Input File: Problem4.txt

Evil Lord has put mines in around a rose area to create obstacles for Fairies. These mines costed many lifes of Fairies. Hence, Fairies handed over this project to Zakoota Laboratories that got expertise in mines. Some genius officer at Zakoota laboratories got the technical details of those mines. According to his observation, the mines are spread according to the rectilinear coordinates. Zakoota laboratories further confirmed the spread of mines are according to the rectilinear coordinates as follows:

A sequence of points  $\langle (x_1, y_1), (x_2, y_2), \dots, (x_n, y_n) \rangle$  are the coordinates of terrain where mines exist.. A sequence of rectilinear points  $\langle (x_1, y_1), (x_2, y_2), \dots, (x_n, y_n) \rangle$  guarantee that there are no mines if we follows this sequence and hence it is safe to move in such a sequence.

A sequence of points  $\langle (x_1, y_1), (x_2, y_2), \dots, (x_n, y_n) \rangle$  is rectilinear if, for each consecutive pair,  $(x_i, y_i)$  and  $(x_{i+1}, y_{i+1})$  either  $x_i = x_{i+1}$  or  $y_i = y_{i+1}$ . Zakoota laboratories are still thinking on how to solve the problem i.e., “Give a sequence of points, we wish to find the longest subsequence which is rectilinear so that the fairies can move safely in this rectilinear path.”

Input:

The input consists of multiple test cases. The first line of input is the number of test cases  $N$ . Each of the following  $N$  lines contain the sequence length followed by the *sequence*  $D$ .

Output:

For each test case, print a single line that says “Case #i:”, where  $i$  is the test case number followed by the sequence. Follow the format of the output given below:

### Sample Input:

2

14 5 3 5 8 6 3 7 8 4 8 5 9 4 3

18 9 3 9 9 5 9 10 9 5 200 200 4 205 200 1 20 205 300

### Sample Output:

Case #1: 5 3 5 8 7 8 4 8 4 3

Case #2: 9 3 9 9 5 9 5 200 205 200 205 300