



Input

The input consists of several test cases. Each test case begins with an integer n ($0 \leq n \leq 10^5$) giving the number of mummies in the desert. The following n lines each contain two integers x and y , indicating that there is initially a mummy at coordinates (x, y) of the desert, where x and y are both bounded by 10^6 in absolute value. Your starting position is $(0, 0)$, and no mummy starts at this position.

The last test case is followed by a line containing the number -1 .

Output

For each test case, display its test case number followed by the maximum number of time steps until you are caught (measured as the total number of turns that you get), or the word “never” if you can avoid capture indefinitely.

Follow the format of the sample output.

| Sample input | Output for the Sample Input |
|--|-----------------------------|
| 4 -3 5 3 4 -6 -2 1 -5 1 0 -1 -1 | Case 1: 4 Case 2: never |