Google Code Jam '11 Qualification Round Problem A - Bot Trust

Time limit: 60.0s **Memory limit:** 1G

Blue and Orange are friendly robots. An evil computer mastermind has locked them up in separate hallways to test them, and then possibly give them cake.

Each hallway contains 100 buttons labeled with the positive integers $\{1, 2, \ldots, 100\}$. Button k is always k meters from the start of the hallway, and the robots both begin at button 1. Over the period of one second, a robot can walk one meter in either direction, or it can press the button at its position once, or it can stay at its position and not press the button. To complete the test, the robots need to push a certain sequence of buttons in a certain order. Both robots know the full sequence in advance. How fast can they complete it?

For example, let's consider the following button sequence:

```
O 2, B 1, B 2, O 4
```

Here, `O 2` means button 2 in Orange's hallway, `B 1` means button 1 in Blue's hallway, and so on. The robots can push this sequence of buttons in 6 seconds using the strategy shown below:

Time	Orange	Blue
1	Move to button 2	Stay at button 1
2	Push button 2	Stay at button 1
3	Move to button 3	Push button 1
4	Move to button 4	Move to button 2
5	Stay at button 4	Push button 2
6	Push button 4	Stay at button 2

Note that Blue has to wait until Orange has completely finished pushing `O 2` before it can start pushing `B 1`.

Input Specification

The first line of the input gives the number of test cases, T. T test cases follow.

Each test case consists of a single line beginning with a positive integer N, representing the number of buttons that need to be pressed. This is followed by N terms of the form `R_i P_i` where R_i is a robot color (always `O` or `B`), and P_i is a button position.

Output Specification

For each test case, output one line containing `Case #x: y`, where x is the case number (starting from 1) and y is the minimum number of seconds required for the robots to push the given buttons, in order.

Limits

$1 \leq P_i \leq 100$ for all i.

Memory limit: 1GB.

Small dataset

$1 \leq T \leq 20$.

$1 \leq N \leq 10$.

Time limit: 30 seconds.

Large dataset

$1 \leq T \leq 100$.

$1 \leq N \leq 100$.

Time limit: 60 seconds.

Sample Input

```
3
4 O 2 B 1 B 2 O 4
3 O 5 O 8 B 100
2 B 2 B 1
```

Sample Output

```
Case #1: 6
Case #2: 100
Case #3: 4
```

Note

This problem has different time limits for different batches. If you exceed the Time Limit for any batch, the judge will incorrectly display `>60.000s` regardless of the actual time taken. Refer to the **Limits** section for batch-specific time limits.