It's time to remember the disastrous moment of the old school math. Yes, the little math problem with the monkey climbing on an oiled bamboo. It goes like:

> "A monkey is trying to reach the top of an oiled bamboo. When he climbs up 3 feet, he slips down 2 feet. Climbing up 3 feet takes 3 seconds. Slipping down 2 feet takes 1 second. If the pole is 12 feet tall, how much time does the monkey need to reach the top?"

When I was given the problem, I took it seriously. But after a while I was thinking of killing the monkey instead of doing the horrible math! I had rather different plans (!) for the man who oiled the bamboo.

Now we, the problem-setters, got a similar oiled bamboo. So, we thought we could do better than the traditional monkey. So, I tried first. I jumped and climbed up 3.5 feet (better than the monkey! Huh!) But in the very next second I just slipped and fell off to the ground. I couldn't remember anything after that, when I woke up, I found myself in a bed and the anxious faces of the problem setters around me. So, like old school times, the monkey won with the oiled bamboo.

So, I made another plan (somehow I want to beat the monkey), I took a ladder instead of the bamboo. Initially I am on the ground. In each jump I can jump from the current rung (or the ground) to the next rung only (can't skip rungs). Initially I set my strength factor k. The meaning of k is, in any jump I can't jump more than k feet. And if I jump exactly k feet in a jump, k is decremented by 1. But if I jump less than k feet, k remains same.

For example, let the height of the rungs from the ground are 1, 6, 7, 11, 13 respectively and k be 5. Now the steps are:

1. Jumped 1 foot from the ground to the 1st rung (ground to 1). Since I jumped less than k feet, k remains 5.
2. Jumped 5 feet for the next rung (1 to 6). So, k becomes 4.
3. Jumped 1 foot for the 3rd rung (6 to 7). So, k remains 4.
4. Jumped 4 feet for the 4th rung (7 to 11). This k becomes 3.
5. Jumped 2 feet for the 5th rung (11 to 13). And so, k remains 3.

Now you are given the heights of the rungs of the ladder from the ground, you have to find the minimum strength factor k, such that I can reach the top rung.

Input

Input starts with an integer T (≤ 500), denoting the number of test cases.

Each case starts with a line containing an integer n denoting the number of rungs in the ladder. The next line contains n space separated integers, $r_1, r_2, \ldots, r_n$ ($1 \leq r_1 < r_2 < \ldots < r_n \leq 10^7$) denoting the heights of the rungs from the ground.

For all cases, $1 \leq n \leq 10$, except 5 cases where $10 < n \leq 10^5$.

Output

For each case, print the case number and the minimum value of k as described above.

Sample Input

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2
5
1 6 7 11 13
4
3 9 10 14
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Sample Output

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Case 1: 5
Case 2: 6
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