

PROBLEM 1

Jump on Platforms

Time and memory limits: 1 second, 256 MB

After an exhausting day, what could possibly bring you more delight than playing the latest innovative triple-A gaming masterpiece, *Jump on Platforms*?

The game consists of N tiny platforms arranged from left to right. The i th platform is located at position P_i , measured in metres from the left edge of the world. Additionally, since this is a high-quality game with no bugs whatsoever, no two platforms occupy the same position.

To complete the game, you must start on platform 1. You first jump to platform 2, then platform 3, and continue in this riveting order until you reach platform N . You cannot skip any platforms.

Critics say that *Jump on Platforms* has a very high skill ceiling. To verify this claim, you'd like to know the length, in metres, of the longest jump you need to make to complete the game.

Subtasks and Constraints

Your program will be graded using many secret tests. Every test follows some rules:

- $2 \leq N \leq 200\,000$.
- $1 \leq P_i \leq 1\,000\,000\,000$.
- The P_i are given in increasing order. That is, $P_1 < P_2 < \dots < P_N$.

The secret tests are divided into subtasks. Your program must correctly solve **every test** within a subtask to earn the marks for that subtask:

- For Subtask 1 (30 points), $N = 2$.
- For Subtask 2 (40 points), $N = 3$.
- For Subtask 3 (30 points), no special rules apply.

Input

Your solution must read input and print output. We recommend using the solution templates (which you can find on the competition website) to help you with input and output.

The input follows a specific format:

- The first line contains the integer N .
- The second line contains N integers $P_1, P_2, \dots, P_N$, the positions of the platforms in increasing order.

Output

Your program must output the length, in metres, of the longest jump needed to complete the game.

Sample Input 1

2
3 5

Sample Output 1

2

Sample Input 2

3
1 2 5

Sample Output 2

3

Sample Input 3

5
5 6 7 11 14

Sample Output 3

4

Explanation

- In the 1st sample case, you only need to jump from platform 1 (at position 3) to platform 2 (at position 5). This jump is 2 metres long.
- In the 2nd sample case, the two jumps are 1 metre and 3 metres long. The longest jump is 3 metres.
- In the 3rd sample case, the jumps are 1, 1, 4, and 3 metres long. The longest jump is 4 metres.