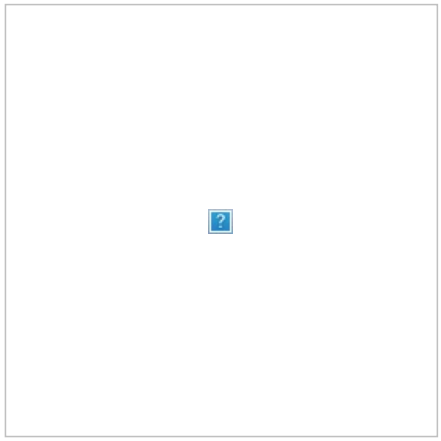
[PI006] - Satellite Distance



You have been watching two satellites for a long time, and every day you measure the height that they pass above your house.

You are curious what is the minimum distance that they have been from each other in the same day.

Task

You are given two sequences of numbers. Print the minimum pointwise difference between them.

Input

You will receive three lines as input.

In the first line, you will receive an integer `n` (`1 <= n <= 1'000`), corresponding to the number of days.

In the second line, you will receive `n` integers `a_1, a_2, ..., a_n` separated by spaces; each number `a_i` (`1 <= a_i <= 1'000`) corresponds to the height of the first satellite on day `i`.

In the third line, you will receive `n` integers `b_1, b_2, ..., b_n` separated by spaces; each number `b_i` (`1 <= b_i <= 1'000`) corresponds to the height of the second satellite on day `i`.

Ouput

Print an integer that corresponds to the closest each satellite has been from each other. This distance is expressed by the difference in heights.

Example 1

Input

```
3
1 2 10
10 14 8
```

Output

```
2
```

Explanation

There are three differences:

- The difference between `1` and `10` is `9`.
- The difference between `2` and `14` is `12`.
- The difference between `10` and `8` is `2`.

Therefore, the minimum difference is `2`.

Example 2

Input

```
5
291 720 789 576 62
499 865 278 746 628
```

Output