

PROBLEMS SUBMIT CODE MY SUBMISSIONS STATUS STANDINGS CUSTOM INVOCATION

M. Cellular Network

time limit per test: 3 seconds🕒
memory limit per test: 256 megabytes

You are given n points on the straight line — the positions (x -coordinates) of the cities and m points on the same line — the positions (x -coordinates) of the cellular towers. All towers work in the same way — they provide cellular network for all cities, which are located at the distance which is no more than r from this tower.

Your task is to find minimal r that each city has been provided by cellular network, i.e. for each city there is at least one cellular tower at the distance which is no more than r .

If $r = 0$ then a tower provides cellular network only for the point where it is located. One tower can provide cellular network for any number of cities, but all these cities must be at the distance which is no more than r from this tower.

Input

The first line contains two positive integers n and m ($1 \leq n, m \leq 10^5$) — the number of cities and the number of cellular towers.

The second line contains a sequence of n integers $a_1, a_2, ..., a_n$ ($-10^9 \leq a_i \leq 10^9$) — the coordinates of cities. It is allowed that there are any number of cities in the same point. All coordinates a_i are given in non-decreasing order.

The third line contains a sequence of m integers $b_1, b_2, ..., b_m$ ($-10^9 \leq b_j \leq 10^9$) — the coordinates of cellular towers. It is allowed that there are any number of towers in the same point. All coordinates b_j are given in non-decreasing order.

Output

Print minimal r so that each city will be covered by cellular network.

Examples


input	Copy
<pre>3 2 -2 2 4 -3 0</pre>	
output	Copy
<pre>4</pre>	

input	Copy
<pre>5 3 1 5 10 14 17 4 11 15</pre>	
output	Copy
<pre>3</pre>	

ICPC Assiut University Training - Juniors Phase 1 Sheets-2022

Public

Participant




→ Group Contests

- Juniors Phase 1 Practice #5 (Bitmask, Bitset, Bits)
- Juniors Phase 1 Practice #4 (Binary search , Two pointers)
- Juniors Phase 1 Practice #3 (STL 2)
- Juniors Phase 1 Practice #2 (STL 1)
- Juniors Phase 1 Practice #1 (Prefix sum , Frequency Array)

Juniors Phase 1 Practice #4 (Binary search , Two pointers)

Finished

Practice



→ About Time Scaling

This contest uses time limits scaling policy (depending on a programming language). The system automatically adjusts time limits by the following multipliers for some languages. Despite scaling (adjustment), the time limit cannot be more than 30 seconds. Read the details by the [link](#).

→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ Submit?

Language: GNU G++20 13.2 (64 bit, win

Choose file: Choose File No file chosen

Submit

→ Last submissions

Submission	Time	Verdict
312631865	Mar/27/2025 03:02	Accepted