Shopping Malls (malls)

Luca's friend is tired of all new technological startup being created and, in response, wants to start a traditional business: a shopping mall.

Before constructing the physical structure, she plans to carefully analyze the locations of already existing malls, as she obviously does not want to see her business cannibalized by competitors.

Figure 1: One of the many shopping malls near Bergamo.

On the path from Milan to Bergamo (near where Luca lives) there is an astonishing number of big malls, approximately aligned on a "virtual straight road". With the help of some acquaintances, she has obtained information about N malls. For each one, it is known the distance in kilometers from the center of Milan, considered at distance 0 by convention.

The new mall must be constructed within this "virtual road" of lenght K, extremes included. Luca has been called to find the best position for his friend's new activity: where should he advise her to build the mall, in order to *maximize* the *minimum* distance with an existing mall?

☞ Among the attachments of this task you may find a template file `malls.*` with a sample incomplete implementation.

Input

The first line contains two integers N and K, respectively the number of malls and the length (in kilometers) of the "virtual road" they are approximately placed on. The second line contains N integers D_i, the distances (in kilometers) of the malls.

Output

You need to write a single line with an integer: the optimal distance at which the new mall should be constructed.

Constraints

- $1 \leq N \leq 100\,000$.
- $10 \leq K \leq 1\,000\,000\,000$.
- $N < K$.
- $0 \leq D_i \leq K$ for each $i = 0 \ldots N-1$.
- There are never two shopping malls at the same position.
- If there are multiple optimal solutions, you can output any of them.

Scoring

Your program will be tested against several test cases grouped in subtasks. In order to obtain the score of a subtask, your program needs to correctly solve all of its test cases.

– **Subtask 1** (0 points) Examples.

– **Subtask 2** (10 points) $N = 1$.

– **Subtask 3** (40 points) $N \leq 100$, $K \leq 1\,000$.

– **Subtask 4** (25 points) $N \leq 500$

– **Subtask 5** (25 points) No additional limitations.

Examples

input	output
5 50 17 4 36 41 44	27
3 50 22 34 41	0

Explanation

In the **first sample case** an optimal solution is to construct the new mall at distance 27. The nearest competitor is 9 kilometers away, at distance 36.

In the **second sample case** the smartest move is to construct the new mall right in the center of Milan (at distance 0, by definition). The nearest competitor is 22 kilometers away, at distance 22.