

Problem E. Vanya and Lanterns

Time limit 1000 ms

Mem limit 262144 kB

Vanya walks late at night along a straight street of length l , lit by n lanterns. Consider the coordinate system with the beginning of the street corresponding to the point 0, and its end corresponding to the point l . Then the i -th lantern is at the point a_i . The lantern lights all points of the street that are at the distance of at most d from it, where d is some positive number, common for all lanterns.

Vanya wonders: what is the minimum light radius d should the lanterns have to light the whole street?

Input

The first line contains two integers n, l ($1 \leq n \leq 1000, 1 \leq l \leq 10^9$) — the number of lanterns and the length of the street respectively.

The next line contains n integers a_i ($0 \leq a_i \leq l$). Multiple lanterns can be located at the same point. The lanterns may be located at the ends of the street.

Output

Print the minimum light radius d , needed to light the whole street. The answer will be considered correct if its absolute or relative error doesn't exceed 10^{-9} .

Sample 1

Input	Output
7 15 15 5 3 7 9 14 0	2.5000000000

Sample 2

Input	Output
2 5 2 5	2.0000000000

Note

Consider the second sample. At $d = 2$ the first lantern will light the segment $[0, 4]$ of the street, and the second lantern will light segment $[3, 5]$. Thus, the whole street will be lit.