# Baltic OI '12 P2 - Mobile

**Time limit:** 0.6s **Memory limit:** 64M

### Baltic Olympiad in Informatics: 2012 Day 1, Problem 2

The well-known mobile network operator Totalphone has set up a number of new base transceiver stations in order to cover a newly-built highway with its network. As always the programmers of Totalphone have been sloppy; as a result, the transmission power cannot be set up individually for the stations, but one can only set the transmission power to a fixed common value for all the stations. In order to minimize power consumption, the company wants to know the maximal distance of a point on the highway to the nearest base transceiver station.

## Constraints

$1 \leq N \leq 10^6$

$1 \leq L \leq 10^9$

$|x_i|, |y_i| \leq 10^9$

**Subtask 1 [25%]**

$1 \leq N \leq 5\,000$

**Subtask 2 [25%]**

$1 \leq N \leq 10^5$

**Subtask 3 [50%]**

No additional constraints.

## Input Specification

The first line of input contains two space-separated integers $N$ and $L$ representing the number of base transceiver stations and the length of the highway, respectively.

$N$ lines follow, each containing a pair of integers $x_i$ and $y_i$, which describes the coordinates of a base transceiver station. All points are distinct. Coordinates are sorted in the non-decreasing order with respect to $x_i$ coordinates. If two values of $x_i$ are the same, then coordinates are sorted with respect to $y_i$ coordinates in increasing order.

The highway is a straight line ranging from $(0, 0)$ to $(L, 0)$.

## Output Specification

The only line of output should contain a single number - the maximal distance of a point on the highway to the nearest base transceiver station. Your output will be regarded as correct if it is within an absolute error of $10^{-3}$ of the correct answer.

## Sample Input

```
2 10
0 0
11 1
```

## Sample Output

```
5.545455
```