Mobile

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.

Input data

The first line of text file **mobile.in** consists of two integers N($1 \le N \le 10^6$) and L($1 \le L \le 10^9$) 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, y_i ($-10^9 \le x_i, y_i \le 10^9$) 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 data

The first and only line of the text file **mobile.out** 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 differs by at most 10^{-3} from the precise result.

Example

Input data (file `mobile.in`)	Output data (file `mobile.out`)

`2 10`
`0 0`
`11 1`
	`5.545455`

Grading

Test cases where N≤5000 are worth 25 points.

Test cases where N≤100000 are worth 50 points.

Warning

Use at least double precision floating point numbers for your computations, as smaller types may fail to give the precision required for solving the problem.