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Race Time!

Problem Code: **AMCS03**

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After attending Amrita summer training camp, N programmers, getting bored of programming, decided to have a car race. Each of them bring their own car to the race.

As the camp also includes school children, to level the playing field, some of the coders are allowed to have a head start. The i^{th} programmer starts his race at a distance D_i ahead of the starting line at time $T = 0$. The speed of the car of the i^{th} coder is equal to S_i .

After time T , the position of i^{th} coder will be $P_i(T) = S_i * T + D_i$. Let's define $f(T) = \max(P_i(T)) - \min(P_j(T))$. The race ends at time $T = K$. You need to find the minimum value of $f(T)$ during the whole race.

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Input

The first line of the input contains two integers **N** and **K** denoting the number of coders and the duration of the race.

The next **N** lines contains two integers each, i^{th} line contains **S_i** and **D_i**.

Output

Output the minimum value of $f(\mathbf{T})$ during the whole race exactly upto 6 places after the decimal point.

Constraints

- $1 \leq N \leq 10^5$
- $1 \leq K \leq 10^5$
- $1 \leq S_i \leq 10^5$
- $0 \leq D_i \leq 10^5$

Example

Input :

```
2 10
20 0
10 10
```

Output :

```
0.000000
```

Explanation

At $t = 1$ sec, both the coders will have same position, which makes $f(1) = 0$.

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Problem level: Unavailable

Date Added: 4-07-2015

Time Limit: 1 secs

Source Limit: 50000 Bytes

Languages: CPP14, C, JAVA, PYTH 3.6, PYTH, PYP3, CS2, ADA, PYPY, TEXT, PAS fpc, NODEJS, RUBY, PHP, GO, HASK, TCL, PERL, SCALA, LUA, BASH, JS, LISP sbcl, PAS gpc, BF, CLOJ, D, CAML, FORT, ASM, FS, WSPC, LISP clisp, SCM guile, PERL6, ERL, CLPS, ICK, NICE, PRLG, ICON, SCM chicken, PIKE, SCM qobi, ST, NEM

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CodeChef (/) - A Platform for Aspiring Programmers

CodeChef was created as a platform to help programmers make it big in the world of **algorithms**, **computer programming**, and **programming contests**. At CodeChef we work hard to revive the geek in you by hosting a **programming contest** at the start of the month and two smaller programming challenges at the middle and end of the month. We also aim to have training sessions and discussions related to **algorithms**, **binary search**, technicalities like **array size** and the likes. Apart from providing a platform for **programming competitions**, CodeChef also has various algorithm tutorials and forum discussions to help those who are new to the world of **computer programming**.

Practice Section (/problems/easy) - A Place to hone your 'Computer Programming Skills'

Try your hand at one of our many practice problems and submit your solution in the language of your choice. Our **programming contest** judge accepts solutions in over 55+ programming languages. Preparing for coding contests were never this much fun! Receive points, and move up through the CodeChef ranks. Use our practice section to better prepare yourself for the multiple **programming challenges** that take place through-out the month on CodeChef.

Compete (/contests) - Monthly Programming Contests, Cook-off and Lunchtime

Here is where you can show off your **computer programming skills**. Take part in our 10 days long monthly coding contest and the shorter format Cook-off and Lunchtime **coding contests**. Put yourself up for recognition and win great prizes. Our **programming contests** have prizes worth up to INR 20,000 (for Indian Community), \$700 (for Global Community) and lots more CodeChef goodies up for grabs.

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