

# Problem H. Race Time!

Time limit	1000 ms
Code length Limit	50000 B
OS	Linux

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  $i^{\text{th}}$  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  $i^{\text{th}}$  coder is equal to  $S_i$ .

After time  $T$ , the position of  $i^{\text{th}}$  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.

## 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,  $i^{\text{th}}$  line contains  $S_i$  and  $D_i$ .

## Output

Output the minimum value of  $f(T)$  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  $f(1) = 0$ .