



(/en/),  
v1.1.0

CSD Testing System

(/en/)

# Binary search with a check

Cost: 16 | Solved: 37

**Memory limit:** 64 MBs

**Time limit:** 1 s

**Input:** input.txt

**Output:** output.txt

## Task:

In connection with the increasing number of accidents on the railway line of Kostroma - Sudislavl, the railway authorities decided to change the train schedule. A careful analysis of the condition of the railroad track showed that the following train timetable with the stops at the stations is optimal: first the train goes for  $T_1$  minutes at the speed of  $V_1$  meters per minute, then  $T_2$  minutes at the speed of  $V_2$  meters per minute, ... and finally,  $T_N$  minutes at the speed of  $V_N$  meters per minute. The train can stand for some time intervals (its speed will equal zero).

According to the current instruction for ensuring the safety of train traffic, the distance between the locomotives of two consecutive trains must be at least  $L$  meters.

Find the minimal allowable interval in minutes between the departures of trains, allowing them to move according to the schedule without a dangerous approachement.

## Input:

The first line contains two natural numbers  $L$  – the least allowable distance between two trains and  $N$  – the quantity of segments of the railway ( $100 \leq L \leq 1000$ ,  $1 \leq N \leq 1000$ ). The next lines contain  $N$  pairs of two integers  $T_i$  and  $V_i$  that determine the train schedule. ( $1 \leq T_i \leq 1000$ ,  $0 \leq V_i \leq 1000$ ).

## Output:

The minimal allowable interval in minutes between the departures of trains an accuracy of at least 3 characters after the decimal point.

## Example:

Input	Output
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Report a bug (/en/webform-feedback/nojs?submittedfrom=tasks/task/12681)

1000 4	27.500
10 0	
30 80	
15 0	
20 100	