code jam

print "hello, world!"

Round 2 2011

A. Airport Walkways

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Problem A. Airport Walkways

This contest is open for practice. You can try every problem as many times as you like, though we won't keep track of which problems you solve. Read the [Quick-Start Guide](#) to get started.

Small input 8 points	Solve A-small
Large input 10 points	Solve A-large

Submissions

Airport Walkways

8pt	Not attempted **2130/2490 users** correct (86%)
10pt	Not attempted **2075/2126 users** correct (98%)

Spinning Blade

8pt	Not attempted **1363/1667 users** correct (82%)
12pt	Not attempted **516/957 users** correct (54%)

Expensive Dinner

13pt	Not attempted **780/1197 users** correct (65%)
17pt	Not attempted **491/645 users** correct (76%)

A.I. War

10pt	Not attempted **261/452 users** correct (58%)
22pt	Not attempted **87/219 users** correct (40%)

Top Scores

acrush	100
mystic	100
meret	100
austrin	100

Problem

You're in an airport, standing at point 0. A corridor of length X leads to the gate, where your plane is about to leave. There are moving walkways in the corridor, each moving with some speed w_i. When you walk or run on one of those, you move with speed (your speed + w_i). The walkways do not change their position; they just make you move faster. The walkways do not overlap: at any given point of the corridor there is at most one walkway, but one walkway can begin at the point where another ends.

Your normal walking speed is S. You are worried that you might not catch your plane, though, so you can run a bit - you can run with speed R for at most t seconds in total. You do not have to run for t consecutive seconds: you can split these t seconds into any number of intervals, or even not use some part of them.

How long does it take you to get to the gate, assuming you choose when to walk and when to run in order to reach it as soon as possible?

Input

The first line of the input gives the number of test cases, T. T test cases follow. Each test case begins with a line containing five integers: X (the length of the corridor, in meters), S (your walking speed, in meters per second), R (your running speed, in meters per second), t (the maximum time you can run, in seconds) and N (the number of walkways).

Each of the next N lines contains three integers: B_i, E_i and w_i - the beginning and end of the walkway (in meters from your starting point) and the speed of the walkway (in meters per second).

Output

For each test case, output one line containing "Case #x: y", where x is the case number (starting from 1) and y is the time (in seconds) you need to reach point **X** if you walk and run optimally. Answers with relative or absolute error of at most 10^{-6} will be accepted.

Limits

$1 \le \mathbf{T} \le 40$.
$1 \le \mathbf{S} < \mathbf{R} \le 100$.
$1 \le \mathbf{w_i} \le 100$.
$0 \le \mathbf{B_i} < \mathbf{E_i} \le \mathbf{X}$.
$\mathbf{E_i} \le \mathbf{B_{i+1}}$.

Small dataset

$1 \le \mathbf{t} \le 100$.
$1 \le \mathbf{X} \le 100$.
$1 \le \mathbf{N} \le 20$.

Large dataset

$1 \le \mathbf{t} \le 10^6$.
$1 \le \mathbf{X} \le 10^6$.
$1 \le \mathbf{N} \le 1000$.

Sample

Input	Output
3	Case #1: 4.000000
10 1 4 1 2	Case #2: 5.500000
4 6 1	Case #3: 3.538095238
6 9 2	
12 1 2 4 1	
6 12 1	
20 1 3 20 5	
0 4 5	
4 8 4	
8 12 3	
12 16 2	
16 20 1	

The best solution in the first case is to start running immediately and run for one second.

Wednesday 23 December 2015 02:31 PM