

C. Messenger in MAC

time limit per test: 3 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

In the new messenger for the students of the Master's Assistance Center, Keftemerum, an update is planned, in which developers want to optimize the set of messages shown to the user. There are a total of n messages. Each message is characterized by two integers a_i and b_i . The time spent reading the set of messages with numbers p_1, p_2, \dots, p_k ($1 \leq p_i \leq n$, all p_i are **distinct**) is calculated by the formula:

$$\sum_{i=1}^k a_{p_i} + \sum_{i=1}^{k-1} |b_{p_i} - b_{p_{i+1}}|$$

Note that the time to read a set of messages consisting of **one** message with number p_1 is equal to a_{p_1} . Also, the time to read an empty set of messages is considered to be 0.

The user can determine the time l that he is willing to spend in the messenger. The messenger must inform the user of the maximum possible size of the set of messages, the reading time of which does not exceed l . Note that the maximum size of the set of messages can be equal to 0.

The developers of the popular messenger failed to implement this function, so they asked you to solve this problem.

Input

Each test consists of multiple test cases. The first line contains a single integer t ($1 \leq t \leq 5 \cdot 10^4$) — the number of test cases. The description of the test cases follows.

The first line of each test case contains two integers n and l ($1 \leq n \leq 2000$, $1 \leq l \leq 10^9$) — the number of messages and the time the user is willing to spend in the messenger.

The i -th of the next n lines contains two integers a_i and b_i ($1 \leq a_i, b_i \leq 10^9$) — characteristics of the i -th message.

It is guaranteed that the sum of n^2 over all test cases does not exceed $4 \cdot 10^6$.

Output

For each test case, output a single integer — the maximum possible size of a set of messages, the reading time of which does not exceed l .

Example

input

Copy

```
5
5 8
4 3
1 5
2 4
4 3
2 3
1 6
4 10
3 12
4 8
2 1
2 12
5 26
24 7
8 28
30 22
```

Codeforces Round 932 (Div. 2)

Finished

→ Practice?

Want to solve the contest problems after the official contest ends? Just register for practice and you will be able to submit solutions.

Register for practice

→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ Problem tags

binary searchbrute forceconstructive algorithmsdata structuresdpgreedy sortings*1800

No tag edit access

→ Contest materials

Announcement (en)

Tutorial (en)

```
3 8
17 17
5 14
15 3
1000000000 998244353
179 239
228 1337
993 1007
```

output

Copy

```
3
1
2
1
0
```

Note

In the first test case, you can take a set of three messages with numbers $p_1 = 3$, $p_2 = 2$, and $p_3 = 5$. The time spent reading this set is equal to $a_3 + a_2 + a_5 + |b_3 - b_2| + |b_2 - b_5| = 2 + 1 + 2 + |4 - 5| + |5 - 3| = 8$.

In the second test case, you can take a set of one message with number $p_1 = 1$. The time spent reading this set is equal to $a_1 = 4$.

In the fifth test case, it can be shown that there is no such non-empty set of messages, the reading time of which does not exceed l .

[Codeforces](#) (c) Copyright 2010-2024 Mike Mirzayanov
The only programming contests Web 2.0 platform
Server time: Apr/10/2024 19:32:09^{UTC+5.5} (i1).
Desktop version, switch to [mobile version](#).
[Privacy Policy](#)

Supported by



ITMO UNIVERSITY