L: Televote Resolver

Time Limit: 2 seconds

Gena is watching the International Country and Pop Contest (ICPC). In the ICPC, n teams each perform a song and are awarded points by a jury and by the televote. The jury have given out all of their points, and the number of points each team got from the jury has been announced to the public. It remains to resolve the number of points given by the televote, which are kept secret until they are announced. The protocol for this is as follows:

- The teams are sorted in nondecreasing order by the number of points they got from the jury.
- The announcers iterate over the teams in that order, and announce the number of points they got from the televote.

The winner of the ICPC is the team with the largest sum of jury points and televote points. If more than one team has the largest number of points, one of those teams is picked at random to win.

In addition to the jury points, Gena knows that a total of exactly p points will be given in the televote, but does not know how many televote points any team got until it is announced. It may be possible to know exactly who has won the ICPC before the announcers have announced all the results. Formally, what is the smallest integer $c \geq 0$ such that, after hearing the results of the televote for the first c teams, Gena can uniquely identify the winner of the ICPC?

Input

The first line of input contains a single integer T ($1 \leq T \leq 10^3$), representing the number of test cases.

The descriptions of T test cases follow. Each test case starts with a line containing two integers, n ($2 \leq n \leq 2 \cdot 10^5$) and p ($1 \leq p \leq 10^{18}$).

The next n lines each contain two integers, j and t ($0 \leq j \leq 10^{18}, 0 \leq t \leq p$), the number of points the team earned from the jury and from the televote, respectively. The teams are given in the order in which the announcers announce them.

The values of j are nondecreasing, and the values of t sum to exactly p.

The sum of n over all test cases will not exceed $2 \cdot 10^5$.

Output

For each test case, output the smallest integer c such that, after announcing the results of the televote for the first c teams, the winner of the ICPC is uniquely determined. If the winner is not uniquely determined after all the televote results are announced, output -1.

Sample Input 1	Sample Output 1
3 2 1 0 0 67 1 2 100 1 67 2 33 2 2 1 1 1 1	0 1 -1