Festival Stroll

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

With the quarantine measures lifted, Jack's hometown decides to hold a festival. Jack is still cautious about meeting too many people, so he wants to plan his route through the festival to maximize his happiness using a simple strategy.

The festival has N stalls, numbered from 1 to N. If Jack enters the i-th stall, he meets p_i people and gains happiness h_i. He walks from stall 1 to stall N in order and does not revisit any stall. At each stall, he can either enter it or walk past it.

It is guaranteed that $p_i \geq p_{i+1}$ for all $i < N$, since earlier stalls tend to draw larger crowds.

Jack wants to meet at most P people in total. He also considers only stalls whose happiness exceeds a certain threshold value *threshold*. The *threshold* should be a non-negative integer.

Formally, let ht be Jack's total happiness and m be the number of people he has met. Jack will follow the following strategy.

Jack's strategy (pseudo-code):

```
ht = 0 // initially, the total happiness is zero
m = 0 // initially, he meets zero person
for i = 1 to N:
    if h[i] > threshold and m + p[i] <= P:
        enter stall i
        ht = ht + h[i]
        m = m + p[i]
    else:
        skip stall i
```

Jack wants to choose the value of *threshold* that maximizes his total happiness ht. If multiple thresholds achieve the same maximum happiness, he wants the **minimum** such threshold.

Input

The first line contains a single integer T ($1 \leq T \leq 10^5$) — the number of test cases.

Each test case consists of:

The first line contains two integers N and P ($1 \leq N \leq 2 \cdot 10^5$, $1 \leq P \leq 10^{18}$) — the number of stalls and the maximum number of people Jack wants to meet.

Each of the next N lines contains two integers h_i and p_i ($1 \leq h_i \leq 10^9$, $1 \leq p_i \leq 10^{18}$) — the happiness gained and the number of people met at the i-th stall.

It is guaranteed that the sum of N over all test cases does not exceed $2 \cdot 10^5$.

Additionally, for each test case, the sum of all p_i does not exceed 10^{18} and $p_j \geq p_{j+1}$ for all $j < N$.

Output

For each test case, print two integers — the maximum total happiness Jack can achieve and the minimum threshold to achieve the total happiness.

Example

standard input	standard output
2 4 15 4 6 1 5 3 3 3 1 4 14 4 6 1 5 3 3 3 1	11 0 10 1

Note

In the first test case, Jack can enter every stall without exceeding the maximum number of people he wants to meet. Therefore, the optimal threshold is 0.

In the second test case, if the threshold is set to 0, Jack will skip stall 3, resulting in a total happiness of 8. If the threshold is increased to 1, he will instead skip stall 2 due to the threshold condition, resulting in a total happiness of 10, which is the maximum possible. Threshold value 2 also resulted in total happiness of 10, but it is not minimal.