

Problem E. EASA Examination Mission

Sana has gone on a journey to a mysterious planet discovered recently by EASA (Economical Aeronautics and Space Administration). One of her tasks is to examine any object she finds on the surface of the new planet, in order to determine how valuable it is, and how much can be earned by selling it to the creatures of other planets.

The object found can be made of one of n types of extraterrestrial materials, with equal probability.

For each type of material, she knows its price per ton p_i and the quantity c_i (expressed in tons) needed to test if the object is made of that particular material. The portion of the material used in the testing process is altered and can not be sold anymore. Help her do this task, in a way that the expected profit is maximized.

Input

The first line contains two integers n and g ($1 \leq n \leq 10^5$, $1 \leq g \leq 10^9$) where n is the number of extraterrestrial materials and g is the weight of the mysterious material.

Each of the next n lines contains two integers p_i and c_i ($1 \leq p_i \leq 10^9$) where p_i is the price per ton of the material and c_i is the quantity needed to test if the object is made of that particular material.

It is guaranteed that sum of c_i is less than or equal to g .

Output

The only line of output consist of two non-negative integers a and b , representing $\frac{a}{b}$ which is an irreducible fraction equal to maximum expected profit.

Examples

test	answer
2 5 10 2 1 1	22 1
4 5 4 1 3 2 2 1 1 1	15 2
3 10 10 4 3 3 2 1	32 1

Note

In testcase 1 we only perform the second test (in case the test is unsuccessful we know the object is made of material type 1). We are left with 4 tons, that have an equal probability to bring a profit of 10 or 1 per ton.



In testcase 2 we perform the tests 1 3 4, in this order.

In testcase 3 we test for 3, and in case of failure for 2.