

Suitable Envelope

Input file: **standard input**
Output file: **standard output**
Time limit: 1 second
Memory limit: 512 megabytes

Semyon Igorevich is the head of the programming club. The students from his club went to an off-site programming contest by the sea at the famous educational center “Cassiopeia”. Unfortunately, Semyon Igorevich could not attend the contest, and his students decided to send him greetings from the sea by sending beautiful paper postcards.

Each of the n students bought a postcard, each postcard being a rectangle with a height of h_i and a width of w_i . To optimize the sending of postcards, the students decided to buy one large envelope and put all the postcards in it one atop of the other. The envelope is a rectangle with a height of H and a width of W . A postcard is placed in the envelope such that the sides of the postcard are parallel to the sides of the envelope. A postcard can be rotated by 90° . A postcard fits in the envelope if its sides do not exceed the corresponding parallel sides of the envelope.

The students want the purchased envelope to have the minimum area $H \cdot W$.

Determine the height and width of the envelope so that all postcards can be placed in it and its area is minimized.

Input

The first line contains an integer n , $1 \leq n \leq 10^5$ — the number of students. In the following n lines, the height and width of each postcard h_i and w_i are given, ($1 \leq h_i, w_i \leq 10^9$).

Output

Output two integers H and W — the height and width of the suitable envelope. If the sides are not equal, output the smaller side first.

Examples

standard input	standard output
3 1 2 3 1 4 2	2 4
2 1 1 2 2	2 2