Problem K
Steel Slicing
Time Limit: 2.5 Seconds

ISCO(ICPC Steel Company) is a company that buys steel sheets of a certain shape, cuts them into pieces, and sells them in the industry market. Every steel sheet that ISCO buys is a polygon without holes such that each side is either horizontal or vertical with respect to the x-axis. The length of each side is a positive integer. We call such a polygon a *histogon*. See Figure 1(a) for a histogon.

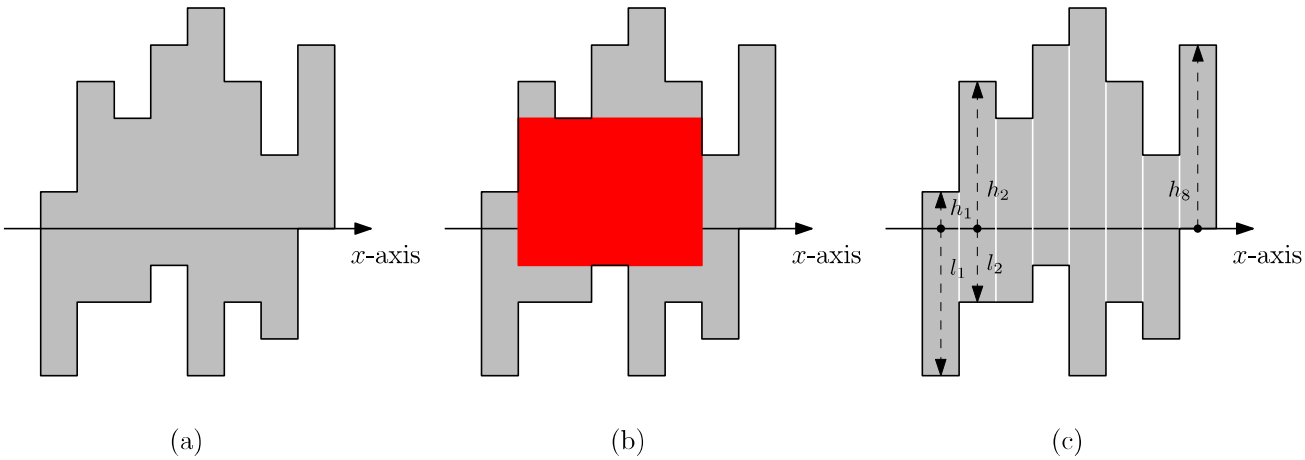

Figure 1. (a) A steel sheet which is a histogon. (b) An axis-aligned rectangle (red) with maximum area contained in the histogon. (c) The histogon is subdivided along vertical lines into 8 rectangular slabs with width 1.

Since the market price of a piece becomes much higher if the piece is a rectangle with larger area, it is desirable to cut a steel sheet so as to get a rectangle of maximum area. Thus, the task is to find a rectangle contained in a steel sheet with largest area. We assume that the rectangle should be axis-aligned, that is, every side is horizontal or vertical with respect to the x-axis. Formally, this problem can be stated as follows. Given a histogon, find an axis-aligned rectangle with maximum area contained in the histogon. Figure 1(b) shows an axis-aligned rectangle with maximum area that is contained in the histogon in Figure 1(a).

A histogon with width n can be subdivided along vertical lines into n rectangular slabs with width 1. The histogon in Figure 1(a) can be subdivided along vertical lines into 8 rectangular slabs, as shown in Figure 1(c). These slabs are numbered from 1 to n in order along the x-axis such that the leftmost slab has number 1. To ease the description, we assume that the x-axis intersects every slab. The x-axis intersects every slab in Figure 1(c). Then, slab i can be represented by two values, h_i and l_i, where h_i denotes the vertical length of slab i lying above the x-axis and l_i denotes the vertical length of slab i lying below the x-axis.

Given a histogon with width n, write a program to output the maximum area among the axis-aligned rectangles contained in the histogon.

Input

Your program is to read from standard input. The input starts with a line containing one integer n ($1 \leq n \leq 200{,}000$), where n is the width of the input histogon. The slabs are numbered from 1 to n such that the leftmost slab has number 1. In the following n lines, the i-th line contains 2 nonnegative integers that represent h_i and l_i ($0 \leq h_i, l_i \leq 1{,}000{,}000{,}000$).

Output

Your program is to write to standard output. Print exactly one line. The line should contain the maximum area among rectilinear rectangles contained in the given histogon.

The following shows sample input and output for two cases.

Sample Input 1	Output for the Sample Input 1
8 1 4 4 2 3 2 5 1 6 4 4 2 2 3 5 0	20

Sample Input 2	Output for the Sample Input 2
5 23 15 23 17 3 22 15 3 5 1	76