Red Letter

February 2024
C++ — 2 sec — 512 MB

Today is a red letter day for the witches and wizards of the Guild of Sorcerers. Everyone is spending these 24 hours in the merriment of singing, dancing, spell-casting, and fruit punch. Of course, since it is a red letter day, everyone is also sending red letters to their friends, family, and arch-rivals.

Red letters are always sent by owl — the fastest and most reliable form of communication. However, there is *one* way in which snail mail beats avian information: price. With the price of stamps these days, sending a red letter can cost an arm and a leg... and a perhaps another arm too.

For historic reasons, stamps are paid per letter, not by weight. Thus, scrimping sorcerers nest letters *inside* other letters to cut costs. All red letters are rectangular, and a red letter can fit inside another red letter if its width and height are strictly smaller than the enclosing letter's width and height. Due to the magical properties of gravity, letters may not be rotated.

The Postmaster General of the Guild of Sorcerers has received a pile (more like a mountain) of **n** red letters. Unfortunately, they only have one stamp. They want to determine the maximum number of nested red letters that they can send with the single stamp.

INPUT You will be given a single integer, **n**, denoting the number of red letters received by the Postmaster General. This will be followed by **n** lines, each containing two integers, **w** and **h**, giving the width and height of a red letter, respectively.

$1 \leq \mathbf{n} \leq 2^{20}$
$1 \leq \mathbf{w}, \mathbf{h} \leq 2^{31}$

OUTPUT Output a single integer, **s**, giving the maximum number of letters that can be sent using the one stamp.

SAMPLE For example, suppose the Postmaster General has received 5 red letters with dimensions 2x3, 1x1, 5x4, 4x6, and 3x3. They can send 3 of these letters by putting the 1x1 letter inside the 3x3 letter inside the 4x6 letter. This is the maximum number of red letters that can be sent with the single stamp.

INPUT	OUTPUT
5 2 3 1 1 5 4 4 6 3 3	3
4 3 5 4 4 5 4 6 2	1