# Part 1

A piece of land has recently come up for sale. The land measures 1000km x 1000km. A number of developers have begun to make propositions for the land. Each proposition has an ID to track it and consists of a single rectangle with edges parallel to the edges of the land. Each propositions rectangle is defined as follows:

* The number of kilometres between the left edge of the land and the left edge of the rectangle.
* The number of kilometres between the top edge of the land and the top edge of the rectangle.
* The width of the rectangle in kilometres.
* The height of the rectangle in kilometres.

A proposition like #123 @ 3,2: 5x4 means that proposition ID 123 specifies a rectangle 3 km’s from the left edge, 2 km’s from the top edge, 5 km’s wide, and 4 km’s tall. Visually, it claims the square km’s of land represented by # (and ignores the square km’s of land represented by .) in the diagram below:

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...#####...

...#####...

...#####...

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The problem is that many of the propositions overlap causing two or more propositions to cover part of the same areas. For example, consider the following propositions:

#1 @ 1,3: 4x4

#2 @ 3,1: 4x4

#3 @ 5,5: 2x2

Visually, these claim the following areas:

........

...2222.

...2222.

.11XX22.

.11XX22.

.111133.

.111133.

........

The four square km’s marked with X are claimed by both 1 and 2. (Claim 3, while adjacent to the others, does not overlap either of them.)

If the developers all proceed with their own plans, none of them will have enough land. How many square kilometres are within 2 or more propositions?

# Part 2

Exactly one of the propositions doesn’t overlap by even a single square kilometre.

For example, in the above example only proposition 3 is intact after all the propositions are processed.

What is the ID of the one proposition that doesn’t overlap?