Film — Part Two

Anticipating the income from DVD sales, *Greenlight Casting Couch* are getting ready to produce several new films. For each of their new films they have determined which of the available actors would be suitable for playing the lead role. Given this information, they need to consider the different ways they can apportion films to actors, so they know which films to green-light.

The studio is prolific, if a little over-eager, and filming is set to commence on all the selected films at the same time. Each film can only have a single lead actor and, due to the simultaneous filming, no actor can appear in more than one film.

Given a list of films and the actors suitable for playing the lead roles in each, determine in how many different ways the lead actors can be assigned to the films. (All the other roles will be assigned later on the casting couch). Note that, it is not necessary for every actor (or film) to be assigned in every allotment of actors to films; indeed, one possible choice is to assign no actors to any of the films.

For example, suppose A could star in films 2 and 3, B could star in 1 and 2, and C can only star in 2. There are 12 possible allotments; 5 allotments where only one actors is assigned to a film, 5 where two actors are assigned, 1 where three actors are assigned and 1 where no actors are assigned.

The input will consist of a sequence of lines each containing two numbers; the first number a_i ($1 \leq a_i \leq 100$) identifying an actor and the second f_i ($1 \leq f_i \leq 100$) identifying a film for which they could play the lead role. The input will be terminated by the line -1 -1.

You should output a single integer m, indicating the number of valid allotments of actors to films. [For all test cases $m < 2^{31}$.]

Sample Input

```
2 3
4 5
1 1
2 7
1 5
6 3
6 2
4 1
8 8
-1 -1
```

Sample Output

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112
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