A supermarket has a set $Prod$ of products on sale. It earns a profit p_x for each product $x \in Prod$ sold by a deadline d_x that is measured as an integral number of time units starting from the moment the sale begins. Each product takes precisely one unit of time for being sold. A selling schedule is an ordered subset of products $Sell \subseteq Prod$ such that the selling of each product $x \in Sell$, according to the ordering of $Sell$, completes before the deadline d_x or just when d_x expires. The profit of the selling schedule is $Profit(Sell) = \sum_{x \in Sell} p_x$. An optimal selling schedule is a schedule with a maximum profit.

For example, consider the products $Prod = \{a, b, c, d\}$ with $(p_a, d_a) = (50, 2)$, $(p_b, d_b) = (10, 1)$, $(p_c, d_c) = (20, 2)$, and $(p_d, d_d) = (30, 1)$. The possible selling schedules are listed in table 1. For instance, the schedule $Sell = \{d, a\}$ shows that the selling of product d starts at time 0 and ends at time 1, while the selling of product a starts at time 1 and ends at time 2. Each of these products is sold by its deadline. $Sell$ is the optimal schedule and its profit is 80.

schedule	profit
{a}	50
{b}	10
{c}	20
{d}	30
{b,a}	60
{a,c}	70
{c,a}	70
{b,c}	30
{d,a}	80
{d,c}	50

Table 1. Selling schedules

Write a program that reads sets of products from an input text file and computes the profit of an optimal selling schedule for each set of products.

Input

A set of products starts with an integer $0 \leq n \leq 10000$, which is the number of products in the set, and continues with n pairs p_i d_i of integers, $1 \leq p_i \leq 10000$ and $1 \leq d_i \leq 10000$, that designate the profit and the selling deadline of the i-th product. White spaces can occur freely in input. Input data terminate with an end of file and are guaranteed correct.

Output

For each set of products, the program prints on the standard output the profit of an optimal selling schedule for the set. Each result is printed from the beginning of a separate line.

Note for the Sample:

The sample input contains two product sets. The first set encodes the products from table 1. The second set is for 7 products. The profit of an optimal schedule for these products is 185.

Sample Input

```
4 50 2 10 1  20 2  30 1

7 20 1  2 1  10 3 100 2  8 2  5 20 50 10
```

Sample Output

```
80 185
```