

# Task: HOT

## Hotel



CEOI 2011, Day 2. Source file hot.\* Available memory: 64 MB.

10.07.2011

Your friend owns a hotel at the seaside in Gdynia. The summer season is just starting and he is overwhelmed by the number of offers from potential customers. He asked you for help in preparing a reservation system for the hotel.

There are  $n$  rooms for rent in the hotel, the  $i$ -th room costs your friend  $c_i$  dollars of upkeep (only if it is rented) and has capacity of  $p_i$  people. You may assume that the upkeep of a room is never cheaper than the upkeep of any smaller room, that is, of any room which can hold a smaller number of people.

Each day the reservation system will be receiving multiple offers, each of them specifying the amount of dollars for rental of any room ( $v_j$ ) and the minimal capacity of the requested room ( $d_j$ ). As your friend wants to enjoy the summer himself, he decided not to accept more than  $o$  offers each day.

Knowing you are a skilled programmer, your friend asked you to implement the part of the system which finds the maximum profit (total income from renting rooms minus their upkeep) he can make by accepting some of the offers.

## Input

The first line of the standard input contains three integers  $n$ ,  $m$ , and  $o$  ( $1 \leq n, m \leq 500\,000$ ,  $1 \leq o \leq m$ ), denoting the number of rooms in the hotel, the number of offers received for one particular day and the maximum number of offers your friend is willing to accept. The next  $n$  lines describe the rooms, with the  $i$ -th of these lines containing two integers  $c_i$ ,  $p_i$  ( $1 \leq c_i, p_i \leq 10^9$ ). The next  $m$  lines describe the offers, with the  $j$ -th of these lines containing two integers  $v_j$ ,  $d_j$  ( $1 \leq v_j, d_j \leq 10^9$ ).

You may assume that in test cases worth 40 points in total an additional inequality  $n, m \leq 100$  holds.

## Output

The first and only line of the standard output should contain one integer equal to the maximum profit your friend can achieve accepting at most  $o$  of the offers. Note that the profit might get big.

## Example

For the input data:

```
3 2 2
150 2
400 3
100 2
200 1
700 3
```

the correct result is:

```
400
```

**Explanation of the example:** Your friend can accept both offers, renting rooms number 2 and 3.