

Task: PLX

Packing a Backpack

UFAM Workshop, contest #1. Source file plx.* Available memory: 128 MB.

Hansel and Gretel go on a trip. The boy decided to pack everything into one backpack to impress his friend. Moreover, the heavier this backpack is, the better it will make an impression. Of course, Hansel can't just pack all the things he finds at home – after all, the backpack could tear (what a shame!).

In addition, Hansel cannot allow situations in which, for example, he would take the radio but leave the batteries, or take the electric kettle but forget the thermos. For each item i Hansel either specified one item j ($j < i$) without which i would be useless, or he simply stated that i is an item that is useful in itself.

Tell our hero how heavy his backpack can be, so as not to exceed its maximum capacity and not take any useless item.

Input

In the first line of the input there are two integers n and p ($1 \leq n \leq 200$, $1 \leq p \leq 10^6$), specifying the number of items that Hansel is considering taking and the critical weight – if we pack more, the backpack will tear. We number the items from 1 to n .

In the following n lines there are descriptions of items – the description of the i -th item consists of two integers j_i and m_i ($0 \leq j_i < i$, $1 \leq m_i \leq p$), specifying the number of the item that must be in the backpack to be able to pack the i -th item there (if $j_i = 0$, then you can simply pack the i -th item), and weight of the i -th item.

Output

Your program should output one integer: the maximum weight of the backpack's contents that Hansel can obtain.

Example

For the input data:

```
7 11
0 3
0 1
2 3
2 2
4 4
5 3
5 2
```

the correct result is:

```
10
```