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## E. Money Buys Happiness

time limit per test: 3 seconds

memory limit per test: 256 megabytes

input: standard input

output: standard output

Being a physicist, Charlie likes to plan his life in simple and precise terms.

For the next  $m$  months, starting with no money, Charlie will work hard and earn  $x$  pounds per month. For the  $i$ -th month ( $1 \leq i \leq m$ ), there'll be a single opportunity of paying cost  $c_i$  pounds to obtain happiness  $h_i$ .

Borrowing is not allowed. Money earned in the  $i$ -th month can only be spent in a later  $j$ -th month ( $j > i$ ).

Since physicists don't code, help Charlie find the maximum obtainable sum of happiness.

### Input

The first line of input contains a single integer  $t$  ( $1 \leq t \leq 1000$ ) — the number of test cases.

The first line of each test case contains two integers,  $m$  and  $x$  ( $1 \leq m \leq 50$ ,  $1 \leq x \leq 10^8$ ) — the total number of months and the monthly salary.

The  $i$ -th of the following  $m$  lines contains two integers,  $c_i$  and  $h_i$  ( $0 \leq c_i \leq 10^8$ ,  $1 \leq h_i \leq 10^3$ ) — the cost and happiness on offer for the  $i$ -th month. Note that some happiness may be free ( $c_i = 0$  for some  $i$ 's).

It is guaranteed that the sum of  $\sum_i h_i$  over all test cases does not exceed  $10^5$ .

### Output

For each test case, print a single integer, the maximum sum of happiness Charlie could obtain.

### Example

input

Copy

```
7
1 10
1 5
2 80
0 10
200 100
3 100
70 100
100 200
150 150
5 8
3 1
5 3
3 4
1 5
5 3
2 5
1 5
2 1
5 3
```

### Codeforces Round 946 (Div. 3)

Finished

Practice



### → Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

### → Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

### → Submit?

Language: GNU G++20 13.2 (64 bit, wi)

Choose file: Choose File No file chosen

Submit

### → Problem tags

dp

No tag edit access

### → Contest materials

- Announcement (en)
- Tutorial

```
2 5
2 4
4 1
5 1
3 4
5 2
2 1
1 2
3 5
3 2
3 2
```

**output**[Copy](#)

```
0
10
200
15
1
9
9
```

**Note**

In the first test case, Charlie only gets paid at the end of the month, so is unable to afford anything.

In the second test case, Charlie obtains the free happiness in the first month.

In the third test case, it's optimal for Charlie to buy happiness in the second month. Even with money left at the end, Charlie could not go back in time to obtain the happiness on offer in the first month.

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