

# Jellyfish and Inscryption

Input file:            **standard input**  
Output file:           **standard output**  
Time limit:            2 seconds  
Memory limit:         1024 megabytes

Jellyfish loves playing a game called “Inscryption” which is played on a directed acyclic graph with  $n$  vertices and  $m$  edges. All edges  $a \rightarrow b$  satisfy  $a < b$ .

You need to move from vertex 1 to vertex  $n$  along the directed edges, and then fight with the final boss.

You will collect **cards** and **props** in the process.

Each **card** has two attributes: HP and damage. If a **card**'s HP is  $a$  and its damage is  $b$ , then the power of the **card** is  $a \times b$ .

Each **prop** has only one attribute: power.

In addition to vertex 1 and vertex  $n$ , there are some vertices that trigger special events. The special events are:

1. You will get a **card** with  $a$  HP, and  $b$  damage.
2. If you have at least one **card**, choose one of your **cards** and increase its HP by  $x$ .
3. If you have at least one **card**, choose one of your **cards** and increase its damage by  $y$ .
4. You will get a **prop** with  $w$  power.

When you get to vertex  $n$ , you can choose **at most one** of your **cards** and multiply its damage by  $10^9$ .

The final boss is very strong, so you want to maximize the sum of the power of all your **cards** and **props**. Find the maximum possible sum of power of all your **cards** and **props** if you play the game optimally.

## Input

The first line contains two integers  $n$  and  $m$  ( $2 \leq n \leq 200$ ,  $n - 1 \leq m \leq \min(\frac{n(n-1)}{2}, 2000)$ ) — the number of the vertices and the number of the edges.

In the following  $n$  lines, the  $i$ -th ( $1 \leq i \leq n$ ) line describes the special event that will trigger on vertex  $i$ :

- 0 — no special events.
- 1 **a b** ( $1 \leq a, b \leq 200$ ) — you will get a card with  $a$  HP, and  $b$  damage.
- 2 **x** ( $1 \leq x \leq 200$ ) — if you have at least one card, choose one of your cards and increase its HP by  $x$ .
- 3 **y** ( $1 \leq y \leq 200$ ) — if you have at least one card, choose one of your cards and increase its damage by  $y$ .
- 4 **w** ( $1 \leq w \leq 10^6$ ) — you will get a prop with  $w$  power.

In the following  $m$  lines, each line contains two integers  $u$  and  $v$  ( $1 \leq u < v \leq n$ ) representing a directed edge from vertex  $u$  to vertex  $v$ .

It is guaranteed that every edge  $(u, v)$  appears at most once.

It is guaranteed that there are no special events on vertex 1 and vertex  $n$ .

It is guaranteed that for all  $i$ , there exists a path from vertex 1 to vertex  $n$  that passes through vertex  $i$ .

## Output

Output a single integer — the maximum sum of the power of all your cards and props.

## Examples

standard input	standard output
<pre>6 8 0 1 2 10 1 6 6 2 8 3 10 0 1 2 1 3 2 4 2 5 3 4 3 5 4 6 5 6</pre>	<pre>100000000000</pre>
<pre>4 3 0 4 1000000 4 1000000 0 1 2 2 3 3 4</pre>	<pre>2000000</pre>
<pre>16 15 0 1 1 10 1 10 1 2 4 3 4 1 20 20 2 30 3 20 1 1 100 2 9 1 1 200 2 9 3 10 1 190 100 2 10 0 1 2 2 3 3 4 4 5 5 6 6 7 7 8 8 9 9 10 10 11 11 12 12 13</pre>	<pre>20000000005600</pre>
<pre>13 14 14 15 15 16</pre>	<pre>Page 3 of 4</pre>

## Note

In the first example, we will play the game in the following order:

- move from vertex 1 to vertex 2, get a card with 2 HP, and 10 damage.
- move from vertex 2 to vertex 4, choose the card we get from vertex 2 and increase its HP by 8.
- move from vertex 4 to vertex 6, choose the card we get from vertex 2 and multiply its damage by  $10^9$ .

In the end, we will have a card with  $(2 + 8) = 10$  HP and  $10 \times 10^9 = 10^{10}$  damage, Its power is  $10 \times 10^{10} = 10^{11}$ . Because we only have the card we get from vertex 2, so the sum of power of all your cards and props is  $10^{11}$ .