

## Problem Jimbo

Input file        `stdin`  
 Output file     `stdout`



Figure 1: The tarot reading of the problem *Jimbo*

Gimi has recently discovered a new game called Talatro. In this game, Gimi has a deck of  $N$  cards, and his goal is to maximize the score obtained by playing exactly 5 cards.

At the beginning, the score is determined by two components:

- Chips, denoted by  $C$ , initialized with 0.
- Multiplier, denoted by  $M$ , initialized with 1.

Each card played by Gimi can modify the values of  $C$  and  $M$ . There are 4 types of cards:

- 1  $x$ : Adds  $x$  to  $C$ . More precisely,  $C \leftarrow C + x$ .
- 2  $x \ y$ : Adds  $x$  to  $C$  and adds  $y$  to  $M$ . More precisely,  $C \leftarrow C + x$ ,  $M \leftarrow M + y$ .
- 3  $x \ z$ : Adds  $x$  to  $C$  and multiplies  $M$  by  $z$ . More precisely,  $C \leftarrow C + x$ ,  $M \leftarrow M \cdot z$ .
- 4  $x \ y \ z$ : Adds  $x$  to  $C$ , then adds  $y$  to  $M$ , and finally multiplies  $M$  by  $z$ . More precisely,  $C \leftarrow C + x$ ,  $M \leftarrow (M + y) \cdot z$ .

The final score is calculated as the product of  $C$  and  $M$ . Gimi is free to choose the order in which he plays the cards. The question is: what is the maximum score he can achieve?

### Task

Write a program that, given as input  $N$  (the total number of cards in the deck) and the description of the  $N$  cards, determines the maximum score Gimi can obtain.

### Input data

The input file contains on the first line the natural number  $N$ , representing the total number of cards in the deck. The following  $N$  lines each describe one card, with each line starting with the value  $t_i$ , indicating the type of card  $i$ . Depending on the type of the card, the corresponding values follow:

- For  $t_i = 1$ , the value  $x_i$  is given.
- For  $t_i = 2$ , the values  $x_i$  and  $y_i$  are given.
- For  $t_i = 3$ , the values  $x_i$  and  $z_i$  are given.
- For  $t_i = 4$ , the values  $x_i$ ,  $y_i$ , and  $z_i$  are given.

## Output data

The output file will contain on the first line a single natural number, representing the maximum achievable score.

## Constraints

- $5 \leq N \leq 1\,000$ .
- $1 \leq x_i, y_i \leq 1\,000$ , for any  $1 \leq i \leq N$ .
- $2 \leq z_i \leq 100$ , for any  $1 \leq i \leq N$ .

#	Points	Constraints
1	8	$5 \leq N \leq 10$
2	10	$5 \leq N \leq 15$
3	24	$x_1 = x_2 = \dots = x_N$
4	18	All cards of types 2 and 4 will have the same $y$ , and all cards of types 3 and 4 will have the same $z$ .
5	23	There will be no cards of type $t = 4$ .
6	17	No additional restrictions.

## Examples

stdin	stdout	Explanations
<pre>6 1 3 1 5 2 1 1 3 1 2 4 1 1 2 3 1 3</pre>	<pre>324</pre>	<p>The optimal playing order is: the cards with indices 2, 3, 5, 4, and 6.</p> <p>Initially: <math>C = 0</math>, <math>M = 1</math>.</p> <p>After card 2: <math>C = 5</math>, <math>M = 1</math></p> <p>After card 3: <math>C = 6</math>, <math>M = 2</math></p> <p>After card 5: <math>C = 7</math>, <math>M = 6</math></p> <p>After card 4: <math>C = 8</math>, <math>M = 12</math></p> <p>After card 6: <math>C = 9</math>, <math>M = 36</math></p> <p>Final score: <math>C \cdot M = 9 \cdot 36 = 324</math>.</p> <p>A different order of playing these cards may lead to lower scores.</p>