Problem D
Jack The Lumberjack

Problem ID: jackthelum
CPU Time limit: 1 secor
Memory limit: 1024 ME

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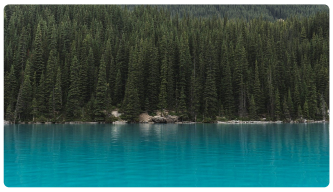
Source: 2019 Virginia Te
School Programming Co



Source: Conifer Forest by Pexels

Jack the Lumberjack used to love chopping down trees. Jack is getting older and is becoming tired of this activity he used to love. He thinks of an idea, 'The Big One', and fantasizes about going out into the forest one last time to harvest as many trees as possible.

Jack calls the forest administrator for his local evergreen forest. The forest administrator tells him about how the population changes for each species of tree. For each species k, S_k trees are planted in year B_k. For the next Y_k years, the population increases by I_k per year. After Y_k years, it will decrease by the same amount I_k per year, until possibly dying out.

Armed with this information, Jack wants to figure out the maximum amount of trees that could be harvested at once from now until the future. If he is no longer around to do it, his descendants will be!

Assume all populations change instantly and at the same time, once per year. Jack would assess each population's size after the yearly change occurred.

Input

The input contains a single test case. The first line contains an integer N ($1 \leq N \leq 1\,000$) representing the number of tree species in the forest.

Each of the following N lines represents a single tree species population. Each of these population lines contains 4 integer numbers `Y I S B` ($0 \leq Y \leq 1\,000\,000$, $0 \leq I \leq 1\,000$, $0 \leq S \leq 1\,000\,000$, $0 \leq B \leq 1\,000\,000$). where S is the starting population size, B the year in which the population is planted, Y the number of years during which the population increases each year by I before it decreases by I until it (possibly) dies out.

Output

Print the maximum amount of trees that can be harvested in any single year.

Sample Input 1

```
1
10 10 0 5
```

Sample Output 1

```
100
```

Sample Input 2

```
3
5 10 0 4
10 10 10 1
5 5 0 0
```

Sample Output 2

```
145
```