Maximizing Mission Points

Xander Cage has a list of cities he can visit on his new top-secret mission. He represents each city as a tuple of $(latitude, longitude, height, points)$. The values of $latitude$, $longitude$, and $height$ are distinct across all cities.

We define a mission as a sequence of cities, $c_1, c_2, c_3, \cdots, c_k$, that he visits. We define the total $points$ of such a mission to be the sum of the $points$ of all the cities in his mission list.

Being eccentric, he abides by the following rules on any mission:

- He can choose the number of cities he will visit (if any).
- He can start the mission from any city.
- He visits cities in order of strictly increasing $height$.
- The absolute difference in $latitude$ between adjacent visited cities in his mission must be *at most* d_lat.
- The absolute difference in $longitude$ between adjacent visited cities in his mission must be *at most* d_long.

Given d_lat, d_long, and the definitions for n cities, find and print the maximum possible total $points$ that Xander can earn on a mission.

Input Format

The first line contains three space-separated integers describing the respective values of n, d_lat, and d_long.
Each line i of the n subsequent lines contains four space-separated integers denoting the respective $latitude$, $longitude$, $height$, and $points$ for a city.

Constraints

- $1 \leq n \leq 2 \times 10^5$
- $1 \leq d\_lat, d\_long \leq 2 \times 10^5$
- $1 \leq latitude, longitude, height \leq 2 \times 10^5$
- $-2 \times 10^5 \leq points \leq 2 \times 10^5$

Output Format

Print a single integer denoting the maximum possible $points$ that Xander can earn on a mission.

Sample Input 0

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3 1 1
1 1 1 3
2 2 2 -1
3 3 3 3
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Sample Output 0

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5
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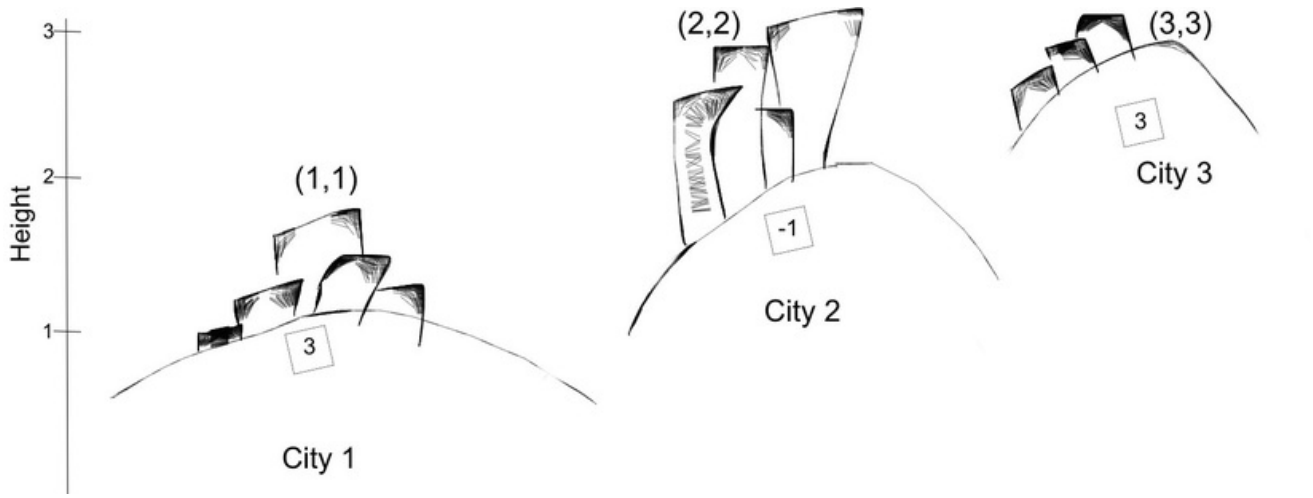
Explanation 0

Xander can start at city 1, then go to city 2, and then go to city 3 for a maximum value of total $points = 3 + -1 + 3 = 5$



Note that he cannot go directly from city 1 to city 3 as that would violate his rules that the absolute difference in $latitude$ between adjacent visited cities be $\leq d\_lat$ and the absolute difference in $longitude$ between adjacent visited cities be $\leq d\_long$. Because $d\_lat = 1$ and $d\_long = 1$, he cannot directly travel between those cities.