Problem 2 - Hellish Gag (Programming) (15 points)

Problem Description

The description is adapted from a true story.

Designing ADA Homework #1, the TA -10^{11} has come up with a dark story as a problem description. Because ADA is a course fulfilled with hopes and happiness, his depressing story is considered a hellish gag, and the TA is banished to the uttermost depths of the hell.

Upon noticing -10^{11}'s arrival, Hades, the king of the underworld, decides to grant him an opportunity to resurrect. "If you are able to solve this algorithm problem, you will get a chance to be back to the world.", said Hades, "Here comes the problem. 99% deceased cannot solve it..."

Given 2 arrays p, z of length N and 3 constants a, b, c. Let d_i be the number of j's satisfying all of the following conditions:

- $j \in \{1, 2, \ldots, N\}$
- $j \neq i$
- $p_j > \frac{b}{a} \cdot p_i + \frac{c}{a}$
- $z_j > z_i$

Please find the summation of d_i; that is, $\sum_{i=1}^{N} d_i$.

However, -10^{11} is getting pale and turns unable to solve the problem. To ask for your help, he tells you this story by setting the exact problem in your Homework #1. Please save -10^{11} from the hell (so he could get back to the world and set another problem in your next ADA Homework).

Input

The first line of the input contains 4 numbers N, a, b, c, denoting the the size of 2 arrays and the 3 constants used in the condition description.

Then, N lines follow, the i-th of which contains two non-negative integers, p_i and z_i, denoting the entries of two arrays.

- $1 \leq N \leq 2 \times 10^6$
- $1 \leq a \leq 10^9$
- $0 \leq b \leq 10^9$
- $-10^9 \leq c \leq 10^9$
- $0 \leq p_i, z_i \leq 10^9, \forall i = 1, 2, \ldots, N$

Test Group 0 (0 %)

- Sample Input

Test Group 1 (10 %)

- $N \leq 2000$

Test Group 2 (5 %)

- $b = 0$

Test Group 3 (15 %)

- $(a, b, c) = (1, 1, 0)$
- $[z_1, z_2, \ldots, z_N]$ is a permutation of $[0, 1, \ldots, N-1]$.

Test Group 4 (30 %)

- All z_i's are distinct.

Test Group 5 (40 %)

- No additional constraint.

Output

Output 1 integer, the summation $\sum_{i=1}^{N} d_i$.

Sample Input 1

```
4 1 0 0
0 0
0 0
0 0
0 0
```

Sample Input 2

```
4 1 1 2
1 47
3 22
7 81
5 65
```

Sample Input 3

```
4 2021 0 1111111
123 4
567 8
901 2
345 6
```

Sample Output 1

```
0
```

Sample Output 2

```
3
```

Sample Output 3

```
3
```

Explanation

- In the first test case, $(d_1, d_2, d_3, d_4) = (0, 0, 0, 0)$, so the required is $0 + 0 + 0 + 0 = 0$.
- In the second test case, $(d_1, d_2, d_3, d_4) = (2, 1, 0, 0)$, so the required is $2 + 1 + 0 + 0 = 3$.
- In the third test case, $(d_1, d_2, d_3, d_4) = (1, 0, 1, 1)$, so the required is $1 + 0 + 1 + 1 = 3$.