4653   Array Game

There is a single-player game played on a one-dimensional infinite-from-both-ends array containing integers, '+' signs and '-' signs. In each turn, the player can move all integers one cell to the left or one cell to the right (signs remain fixed).

The player's initial score is 0; when an integer I moves into a cell containing the sign S ('+' or '-'), the integer is removed from the array and the score is increased by $S \times I$.

The player can stop the game anytime he/she wants.

Below you can see the initial and the following states of the array, after two *right moves* are made.

Your task is to find the maximum possible score one can get from a given initial array.

Input

There are multiple test cases in the input. The first line of each test case starts with N ($1 \le N \le 100$), the number of integers, followed by N_p ($1 \le N_p \le 100$), the number of '+' signs and N_m ($1 \le N_m \le 100$), the number of '-' signs.

Each of the next N lines contains two integers p_i ($-300 \le p_i \le 300$), the position and v_i ($-9 \le v_i \le 9$), the value of the i-th integer. The following line contains N_p integers indicating the positions of the '+' signs. The following line contains N_m integers indicating the positions of the '-' signs. The positions are all between -300 and 300, and no two elements (integers and signs) are initially placed at the same position. The input terminates with a line containing '0 0 0'.

Output

For each test case write a single line containing the maximum possible score.

Sample Input

```
3 2 1
0 2
6 -1
3 5
5 9
1
1 1 1
10 5
3
```

```
7
0 0 0
```

Sample Output

```
3
0
```