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PROBLEMS SUBMIT CODE MY SUBMISSIONS STATUS STANDINGS CUSTOM INVOCATION

The problem statement has recently been changed. View the changes.

C. Cherry Bomb

time limit per test: 2 seconds memory limit per test: 256 megabytes

Two integer arrays a and b of size n are **complementary** if there exists an integer x such that $a_i+b_i=x$ over all $1\leq i\leq n$. For example, the arrays a=[2,1,4] and b=[3,4,1] are complementary, since $a_i+b_i=5$ over all $1\leq i\leq 3$. However, the arrays a=[1,3] and b=[2,1] are not complementary.

Cow the Nerd thinks everybody is interested in math, so he gave Cherry Bomb two integer arrays a and b. It is known that a and b both contain n **non-negative** integers not greater then k.

Unfortunately, Cherry Bomb has lost some elements in b. Lost elements in b are denoted with -1. Help Cherry Bomb count the number of possible arrays b such that:

- a and b are complementary.
- All lost elements are replaced with non-negative integers no more than k.

Input

The first line of the input contains a single integer t ($1 \le t \le 10^4$) — the number of test cases.

The first line of each test case contains two integers n and k ($1 \le n \le 2 \cdot 10^5$, $0 \le k \le 10^9$) — the size of the arrays and the maximum possible value of their elements.

The second line contains n integers a_1, a_2, \ldots, a_n ($0 \le a_i \le k$).

The third line contains n integers b_1,b_2,\ldots,b_n $(-1\leq b_i\leq k)$. If $b_i=-1$, then this element is missing.

It is guaranteed that the sum of n over all test cases does not exceed $2\cdot 10^5$.

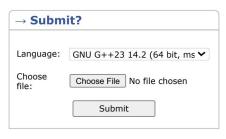
Output

Output exactly one integer, the number of ways Cherry Bomb can fill in the missing elements from b such that a and b are complementary.

Example

input	Сору
7	
3 10	
1 3 2	
-1 -1 1	
5 1	
0 1 0 0 1	
-1 0 1 0 -1	
5 1	
0 1 0 0 1 -1 1 -1 1 -1	
5 10	
1 3 2 5 4	
-1 -1 -1 -1 -1	
5 4	
1 3 2 1 3	
1 -1 -1 1 -1	
5 4	
1 3 2 1 3	
2 -1 -1 2 0	
5 5	
5 0 5 4 3	
5 -1 -1 -1 -1	
output	Сору
1	
0	
0	
· ·	





ightarrow Last submissions		
Submission	Time	Verdict
317052719	Apr/24/2025 19:00	Accepted
317049441	Apr/24/2025 18:54	Wrong answer on test 1
317048684	Apr/24/2025 18:53	Wrong answer on test 1
317045368	Apr/24/2025 18:47	Wrong answer on test 1
317044674	Apr/24/2025 18:46	Wrong answer on test 1

7 0 1 0

Note

In the first example, the only way to fill in the missing elements in b such that a and b are complementary is if b=[2,0,1].

In the second example, there is no way to fill in the missing elements of b such that a and b are complementary.

In the fourth example, some b arrays that are complementary to a are: [4,2,3,0,1],[7,5,6,3,4], and [9,7,8,5,6].

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