COMPLEMENTARY

Like most computer science students, your dream in life is to start a startup. You need to choose **exactly 2** of your N friends to join you in this venture as cofounders.

As we all know, there are three important traits for cofounders to have:

1. Leadership
2. Tenacity
3. A high GPA

To avoid power-grabs within the trio, you wish to ensure that **each of the cofounders** is indispensable - is best among the three at one of the three traits. Note that they must be **strictly better** at the trait than the other two.

As the one with the idea, clearly you are best at leadership. However, you know each of your N friends is both more tenacious and has a higher GPA than you. In other words, you must find two friends, A and B, such that A has higher GPA than B, and B is more tenacious than A.

Finally, your school has M different majors numbered 1 through M, and to ensure a well-rounded team, the two cofounders you choose **must come from different disciplines**.

Ideally, there'd only be one satisfactory pair, so you don't have to choose. Thus, you ask: how many pairs of friends satisfy the conditions?

Input

The first line contains two space-separated integers, N and M.

The second line contains your ratings of the tenacity of your N friends, as N space-separated integers, $a_1, \cdots, a_N$. These will satisfy $1 \leq a_i \leq 10^9$, for $1 \leq i \leq N$. Note that the **friends are sorted from low to high GPA (all GPAs are different)**.

The third line contains the majors of your friends (in the same order) as N space-separated integers, $m_1, \cdots, m_N$. These will satisfy $1 \leq m_j \leq M$, for $1 \leq j \leq N$.

Output

A single number - the number of pairs of friends which can serve as your cofounders, where a valid pair of cofounders consists of two friends from different disciplines such that one is more tenacious, and the other has higher GPA.

Constraints

In all test cases, $1 \leq N, M \leq 10^5$. Beyond the sample input, the tests are divided into batches with additional constraints:

- 10 points worth satisfy $1 \leq N \leq 1000$.
- 30 points worth satisfy the condition that $M = N$ and $m_i = i$ for all $1 \leq i \leq N$. In particular, all friends will have different majors.
- 24 points worth satisfy $1 \leq N \cdot M \leq 10^5$.
- 36 points worth satisfy no further constraints.

Sample explanation

Numbering your friends from 1 to 5, the acceptable pairs are $(2, 3), (2, 5), (3, 4)$.

View submissions (https://cs124.seas.harvard.edu/problem/COMPLEMENTARY/code-submission)

Test cases

Input	Output	Points	Timeout
5 2 1 5 3 2 4 1 2 1 2 1	3	0	100 ms
Hidden	*Hidden*	2	200 ms
Hidden	*Hidden*	2	200 ms
Hidden	*Hidden*	2	200 ms
Hidden	*Hidden*	2	200 ms
Hidden	*Hidden*	2	200 ms
Hidden	*Hidden*	10	400 ms
Hidden	*Hidden*	10	400 ms
Hidden	*Hidden*	10	400 ms
Hidden	*Hidden*	6	300 ms
Hidden	*Hidden*	6	300 ms
Hidden	*Hidden*	6	300 ms
Hidden	*Hidden*	6	300 ms
Hidden	*Hidden*	9	400 ms
Hidden	*Hidden*	9	400 ms
Hidden	*Hidden*	9	400 ms
Hidden	*Hidden*	9	400 ms

Download (https://cs124.seas.harvard.edu/problem/COMPLEMENTARY/test-cases)

Inspired by the "Ultra Cool Programming Contest Control Centre" by Sonny Chan.
Modified for CS 124 by Neal Wu (https://github.com/nealwu), with design help from Martin Camacho.
Further refined by Nikhil Benesch (https://github.com/benesch).