12706   Zero-Knowledge Protocol

In cryptography, a **zero-knowledge protocol** is a method by which one party (the *prover*) can prove to another party (the *verifier*) that a given statement is true, without conveying any additional information apart from the fact that the statement is indeed true. We can extend these ideas to verify whether anyone has properly find any pattern in a data stream without enclosing which position these pattern is found.

So, in this problem, you have to exactly match multiple pattern of length M in a number stream of length N and prove it in zero-knowledge protocol. A pattern P of length M will exactly match with a sub-pattern of stream S in i-th index, if and only if,

$$P[1 \ldots M] = S[i \ldots i + M - 1], i + M - 1 \leq N$$

In such case you have to sum i^2 in zero-knowledge protocol and verify it. You can assume that all the pattern indexing is **1-based**.

But, due to laziness and painfulness of generating multiple patterns, you have to use all the **distinct permutations** of given pattern P as multiple patterns.

Input

First line of input will contain the number of test cases, $T \leq 50$ to follow. Each test case starts with a line given N and M. Then follows two lines. First line contains N numbers s_i $(1 \leq i \leq N)$ to denote number stream S and the next line contains M numbers p_i $(1 \leq i \leq M)$ to denote pattern P.

Constraints

- $1 \leq N, M \leq 2 * 10^4$
- $1 \leq s_i, p_i \leq 10^9$

Output

For each case, print the total sum of squared match index in a single line. See the samples for exact formatting.

Output Explanation

On the first test case two distinct permutation of P is possible. Pattern [10 11] is exactly matched with S in index 1 and pattern [11 10] is matched in index 2. So total sum in zeroknowledge protocol is $1^2 + 2^2 = 5$.

On the second test case three distinct permutation of P is possible. Pattern [10 11 11] is exactly matched with S in index 1 and pattern [11 11 10] is matched in index 2. Pattern [11 10 11] doesn't match anywhere. So total sum in zero-knowledge protocol is $1^2 + 2^2 = 5$.

Sample Input

```
2
3 2
10 11 10
10 11
4 3
10 11 11 10
10 11 11
```

Sample Output

5
5