CCCHK '15 S2 - Matching Problem

Time limit: 1.0s **Memory limit:** 256M

Given two positive integers N and M, and two strings S and T of lowercase letters, we generate two strings A and B so that they have the following characteristics:

- A and B have equal string length;
- A is generated by concatenating S for N times;
- B is generated by concatenating T for M times.

It is regarded as a match if the i-th character in A is the same as the i-th character in B. Given N, M, S, T, please write a program to return the number of matches among A and B.

Input Specification

The first line of the input contains 2 integers, representing N and M, separated by a space.

The second and third line contain string S and T, respectively.

It is guaranteed that A and B have equal string length.

- In 20% of the test cases, the length of $A \leq 10^5$.
- In 40% of the test cases, the length of $S \leq 10$ and the length of $T \leq 10$.
- In 100% of the test cases, $N, M \leq 10^9$, the length of $S \leq 10^6$, the length of $T \leq 10^6$.

Output Specification

Print the number of matches among A and B.

Sample Input 1

```
3 5
ababa
aba
```

Sample Output 1

```
8
```

Explanation for Sample 1

$A =$ ababaababaababa, $B =$ abaabaabaabaaba. Hence, $A_i = B_i$ when $i = 1, 2, 3, 6, 10, 13, 14, 15$.

Sample Input 2

```
30 20
abbb
bbaabb
```

Sample Output 2

```
70
```