

7237 Wheel of Numbers

A new gambling machine called “the wheel of numbers” is introduced. It is made up with a large wheel, which is equally divided into n segments. Each segment contains a digit between 0 and 9, inclusively. Initially you are given two m -digit numbers X and Y ($X \leq Y$). Note that these numbers may begin with 0. Then, you shoot a ball aiming at the fast-rotating wheel. Your ball will hit one of its segments. Then, you take m consecutive segments clockwise from there and obtain an m -digit number Z . You win if $X \leq Z \leq Y$ and lose otherwise.

For example, assume that the wheel is divided into $n = 8$ segments, and let $[3, 7, 8, 3, 1, 9, 2, 7]$ be the numbers by picking one segment and reading numbers clockwise. If $X = 200$ and $Y = 311$, you win if your ball hits the segment with 2 as your number $Z = 273$ and surely $X = 200 \leq 273 \leq 311 = Y$.

Once you are given the wheel, X and Y , you would like to know your winning probability. It can be calculated easily if you know how many times the numbers satisfying the above mentioned condition appear on the wheel. Write a program that counts the number of their occurrences.



Input

Your program is to read from standard input. The input consists of T test cases. The number of test cases T is given in the first line of the input. Each test case starts with a line containing two integers, n ($1 \leq n \leq 100$) and m ($1 \leq m \leq 9$ and $m \leq n$), where n is the number of segments in the wheel and m is the length of X and Y . The next line contains m digits representing where each digit is between 0 and 9, inclusively, and separated by a space. The next line contains m digits representing Y as mentioned above. The following line contains n digits, separated by a space, obtained by reading numbers clockwise starting at some segment of the wheel. Again each digit is between 0 and 9, inclusively.

Output

Your program is to write to standard output. Print exactly one line for each test case. The line should contain an integer representing the number of occurrences of m -digit number Z contained in the wheel such that $X \leq Z \leq Y$. Note that if the same number appears more than twice, count them separately. For example, if 123 is the only number between X and Y and it appears twice on the wheel, the answer is 2, not 1.

The following shows sample input and output for three test cases.

Sample Input

```
3
8 3
2 0 0
3 1 1
3 7 8 3 1 9 2 7
5 2
8 8
```

```
9 9
1 3 2 5 4
6 3
0 0 0
9 9 9
1 2 3 4 5 6
```

Sample Output

```
1
0
6
```