Arup's Steps

Filename: *steps*

For Christmas, Arup got a Fitbit. The only thing he likes more than taking lots of steps is looking at the data when he gets a chance to download it. Typically, on Fridays, after he parks, he walks in between several destinations: his car, his office, the Keurig machine, the HEC-308 lab where some COP 4516 students are and HEC-202, where the rest of the students are.

He'd like for you to make some pre-calculations for him, so that he doesn't have to go to the trouble of downloading data from his fitbit.

The Problem

Given the number of steps between various destinations as well as his path for a morning, determine the number of steps Arup has walked.

The Input

The first line of input will contain a single positive integer, n ($n \leq 26$), representing the number of locations Arup visits on morning walks. The locations will be lettered from 'A' to the n^{th} uppercase letter in the alphabet.

The next n lines will each contain n space separated integers. The first of these lines will contain the number of steps Arup takes to travel from the location lettered 'A' to each of the different locations in alphabetic order. The second of these lines will contain the number of steps Arup takes to travel from the location lettered 'B' to each of the different locations, in alphabetic order, and so on. The number of steps from a location to itself will always be 0, and the number of steps between any pair of distinct locations will be a positive integer less than or equal to 10,000. It is possible that the number of steps it takes Arup to go from location x to location y is different than the number of steps it takes him to go from location y to location x, for any distinct locations x and y.

The following line will contain a single positive integer, t ($t \leq 1000$), representing the number of morning walks of Arup's you have to evaluate. The following t lines each contain a single string of uppercase letters describing Arup's morning walk for that input case. The first letter of each string indicates the starting position for the walk and each subsequent letter represents the next location visited on the walk. The last letter of each string represents Arup's ending location for the walk. For example, if the input string is ACBCE, then this indicates that Arup starts at location A, walks directly to location C, then visits location B, followed by location C and then ends at location E. No other intermediate locations are visited, even if they save him steps. Each of these strings will contain in between 2 and 100 characters, inclusive and not contain the same letter appearing twice in a row.

The Output

For each test case, output a single integer representing the number of steps Arup took on the morning described in the test case.

Sample Input

```
5
0 750 825 649 720
730 0 125 200 53
807 125 0 100 127
649 185 100 0 139
720 53 127 139 0
3
ABCDEDBDE
ADED
AB
```

Sample Output

```
1777
927
750
```