Problem J. Sichuan Provincial Contest

Input file:	`standard input`
Output file:	`standard output`
Time limit:	5 seconds
Memory limit:	256 megabytes

You are going to participate in the SCCPC.

You have found a tree with n nodes, where each node has an uppercase English character attached to it. Let's denote the character attached to node i as S_i.

You want to know how many simple paths containing exactly five nodes u, v, x, y, z exist in this tree such that the sequence $S_u S_v S_x S_y S_z$ exactly forms the string `SCCPC`.

Input

The first line contains a positive integer T ($1 \le T \le 10^4$), indicating the number of test cases.

For each test case, the first line contains an integer n ($1 \le n \le 10^6$), representing the number of nodes in the tree.

The second line contains a string S of length n, composed only of uppercase English letters, where the i-th character S_i is the character attached to the i-th node of the tree.

The next $n-1$ lines each contain two integers x_i, y_i ($1 \le x_i, y_i \le n, x_i \ne y_i$), indicating that there is an edge connecting nodes x_i and y_i in the tree.

It is guaranteed that the sum of n across all test cases does not exceed 2×10^6.

Output

For each test case, output a single integer on a new line representing the number of simple paths.

Example

standard input	standard output
2 5 SCCPC 1 2 2 3 3 4 4 5 7 SCCPCCC 1 2 2 3 3 4 4 5 4 6 4 7	1 3