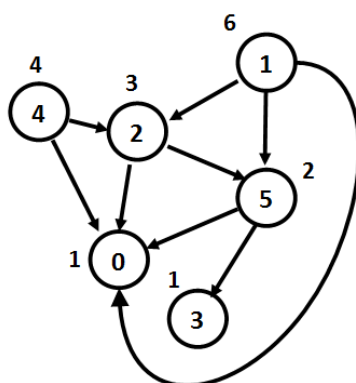


Problem 5 – Salaries

We have a classical **hierarchy** between the employees in a company. The big boss manages directly several people, they manage other people, etc. The people who manage nobody are called **regular employees** and their salaries are **1**. People who manage at least one employee are called **managers**. Each manager takes a salary which is equal to the sum of the salaries of their directly managed employees. Managers cannot manage directly or indirectly (transitively) themselves. See a sample hierarchy in a company along with the salaries computed following the above described rule:



If we have **N** employees, they will be indexed from 0 to **N – 1**. For each employee, you'll be given a string with **N** symbols. The symbol at a given index **i**, either '**Y**' or '**N**', shows whether the current employee is a direct manager of employee **i**.

Hint: find the node with no parent and start a **DFS traversal** from it to calculate the salaries on the tree recursively.

Input

- The input data should be read from the console.
- On the first line you'll be given an integer **N**.
- On the next **N** lines you'll be given strings with **N** symbols (either '**Y**' or '**N**').
- The input data will always be valid and in the format described. There is no need to check it explicitly.

Output

- The output should be printed on the console. It should consist of one line:
- On the only output line print the sum of the salaries of all employees.

Constraints

- **N** will be an integer in the range [1 ... 50].
- For each **i**-th line, the **i**-th symbol will be '**N**'.
- If employee **A** is the manager of employee **B**, **B** will not be a manager of **A**.
- Allowed working time for your program: 0.1 seconds. Allowed memory: 16 MB.

Examples

Input	Output	Comments
1 N	1	Only 1 employee with salary 1.
4 NNYN NNYN NNNN NYYN	5	We have 4 employees. 0, 1, and 3 are managers of 2. 3 is also a manager of 1. Therefore: salary(2) = 1 salary(0) = salary(2) = 1 salary(1) = salary(2) = 1 salary(3) = salary(2) + salary(1) = 2

6 NNNNNN YNYNNY YNNNNY NNNNNN YNYNNN YNNYNN	17	<pre> graph TD 4((4)) --> 2((2)) 2 --> 0((0)) 0 --> 3((3)) 3 --> 0 1((1)) --> 2 1 --> 5((5)) 2 --> 5 5 --> 0 1 -- curved --> 0 </pre>
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