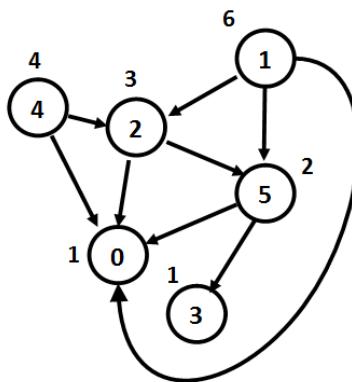


Problem 5 – Salaries

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: $\text{salary}(2) = 1$ $\text{salary}(0) = \text{salary}(2) = 1$ $\text{salary}(1) = \text{salary}(2) = 1$ $\text{salary}(3) = \text{salary}(2) + \text{salary}(1) = 2$

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