2020/9/11 F2 - Reachable Cells

Contest Duration: 2018-10-13(Sat) 20:00 (http://www.timeanddate.com/worldclock/fixedtime.html? iso=20181013T2100&p1=248) ~ 2018-10-13(Sat) 22:30 (http://www.timeanddate.com/worldclock/fixedtime.html? iso=20181013T2330&p1=248) (local time) (150 minutes) Back to Home (/home)

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Time Limit: 9 sec / Memory Limit: 1024 MB

Score: 1500 points

Problem Statement

Problem F and F2 are the same problem, but with different constraints and time limits.

We have a board divided into N horizontal rows and N vertical columns of square cells. The cell at the i-th row from the top and the j-th column from the left is called Cell (i, j). Each cell is either empty or occupied by an obstacle. Also, each empty cell has a digit written on it. If $A_{i,j}=$ ' 1 ', ' 2 ', ..., or ' 9 ', Cell (i,j) is empty and the digit $A_{i,j}$ is written on it. If $A_{i,j}=$ '#', Cell (i, j) is occupied by an obstacle.

Cell Y is reachable from cell X when the following conditions are all met:

- Cells X and Y are different.
- Cells X and Y are both empty.
- One can reach from Cell X to Cell Y by repeatedly moving right or down to an adjacent empty cell.

Consider all pairs of cells (X, Y) such that cell Y is reachable from cell X. Find the sum of the products of the digits written on cell X and cell Y for all of those pairs.

Constraints

- 1 < N < 1500
- $A_{i,j}$ is one of the following characters: '1', '2', ... '9' and '#'.

Input

Input is given from Standard Input in the following format:

```
egin{array}{c} N \ A_{1,1}A_{1,2}\dots A_{1,N} \ A_{2,1}A_{2,2}\dots A_{2,N} \ dots \ A_{N,1}A_{N,2}\dots A_{N,N} \end{array}
```

Output

Print the sum of the products of the digits written on cell X and cell Y for all pairs (X,Y) such that cell Y is reachable from cell X.

Sample Input 1 Copy

```
2
11
11
```

Sample Output 1 Copy

```
5 Сору
```

There are five pairs of cells (X,Y) such that cell Y is reachable from cell X, as follows:

- X = (1,1), Y = (1,2)
- X = (1,1), Y = (2,1)
- X = (1,1), Y = (2,2)
- X = (1, 2), Y = (2, 2)
- X = (2,1), Y = (2,2)

The product of the digits written on cell X and cell Y is 1 for all of those pairs, so the answer is 5.

Sample Input 2 Copy

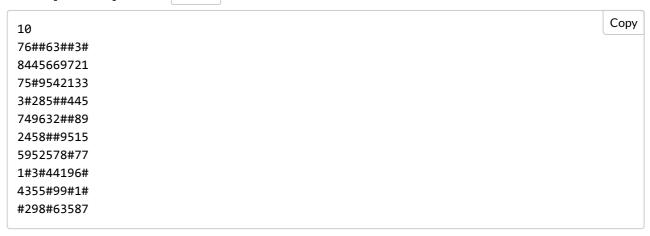
Сору

4 1111 11#1 1#11 1111

Sample Output 2 Copy

47 Сору

Sample Input 3 Copy



Sample Output 3 Copy

36065 Copy

Sample Input 4 Copy

10
4177143673
7########
5#1716155#
6#4####5#
2#3#597#6#
6#9#8#3#5#
5#2#899#9#
1#6####6#
6#5359657#
5########

Sample Output 4 copy

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6525

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 $I = https\%3A\%2F\%2Fatcoder.jp\%2Fcontests\%2Fagc028\%2Ftasks\%2Fagc028_f2\%3Flang\%3Den\&title = F2\%20-f2\%2Fatcoder.jp\%2Fcontests\%2Fagc028\%2Ftasks\%2Fagc028_f2\%3Flang\%3Den\&title = F2\%20-f2\%2Fatcoder.jp\%2Fcontests\%2Fagc028\%2Ftasks\%2Fagc028_f2\%3Flang\%3Den\&title = F2\%20-f2\%2Fatcoder.jp\%2Fcontests\%2Fagc028\%2Ftasks\%2Fagc028_f2\%3Flang\%3Den\&title = F2\%20-f2\%2Fatcoder.jp\%2Fcontests\%2Fagc028\%2Ftasks\%2Fagc028_f2\%3Flang\%3Den\&title = F2\%20-f2\%2Fatcoder.jp\%2Fatco$

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