Pineapple Cakes In the Plate

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1. Topic

Dynamic Programing

2. Description

In this question, you will need to help John to count how many pineapple cakes in the plate.

For example, We will give you a matrix composed of 0 and 1, your mission is to count how many submatrix is in the given matrix . **A submatrix is only composed by 1** ,for example:

1 1 0 0
1 1 0 0
0 0 0 0
0 0 0 0

the above matrix is composed by four 1*1 matrices and one 2*2 matrix. So the pineapple cakes in the plate will be 5.

Another example:

1 1 1
1 1 1
1 1 1

the above matrix is composed by nine 1*1 matrices, four 2*2 matrices and one matrix. So the pineapple cakes in the plate will be 14.

3. Input and output format

The first line is T(1<= T <= 10), which stands for the number of test cases below.
Then the follow number N(1<= N <= 1000) represent that there is a N *N matrix in the plate. For the following N lines, each line will contain N numbers, which is 1 or 0 with no whitespace.
Input:
T
N_1
m_{11} m_{12} m_{13} m_{14}……m_{1n}
m_{21} m_{22} m_{23} m_{24}……m_{2n}

…….

$m_{n1}\ m_{n2}\ m_{n3}\ m_{n4}\ldots\ldots m_{nn}$

N_2

$m_{11}\ m_{12}\ m_{13}\ m_{14}\ldots\ldots m_{1n}$

$m_{21}\ m_{22}\ m_{23}\ m_{24}\ldots\ldots m_{2n}$

…….

$m_{n1}\ m_{n2}\ m_{n3}\ m_{n4}\ldots\ldots m_{nn}$

….

….

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Constraints:

$1 \le N \le 1000$

$1 \le T \le 10$

Output:

The number of pineapple in the plate.

4.   Sample input and output

Input:

1

4

1110

1110

1110

0000

Output:

14

Input:

2

3

111

111

111

2

10

11

Output:

14

3