C. How Many Squares?

time limit per test: 2 seconds
memory limit per test: 64 megabytes

You are given a 0-1 rectangular matrix. What is the number of squares in it? A square is a solid square frame (border) with linewidth equal to 1. A square should be at least 2×2. We are only interested in two types of squares:

1. squares with each side parallel to a side of the matrix;
2. squares with each side parallel to a diagonal of the matrix.

For example the following matrix contains only one square of the first type:

```
0000000
0111100
0100100
0100100
0111100
```

The following matrix contains only one square of the second type:

```
0000000
0010000
0101000
0010000
0000000
```

Regardless of type, a square must contain at least one `1` and can't touch (by side or corner) any foreign `1`. Of course, the lengths of the sides of each square should be equal.

How many squares are in the given matrix?

Input

The first line contains integer t ($1 \le t \le 10000$), where t is the number of test cases in the input. Then test cases follow. Each case starts with a line containing integers n and m ($2 \le n, m \le 250$), where n is the number of rows and m is the number of columns. The following n lines contain m characters each (`0` or `1`).

The total number of characters in all test cases doesn't exceed 10^6 for any input file.

Output

You should output exactly t lines, with the answer to the i-th test case on the i-th line.

Examples

input Copy

```
2
8 8
00010001
00101000
01000100
10000010
01000100
00101000
11010011
11000011
10 10
```

→ **Attention**

The package for this problem was not updated by the problem writer or Codeforces administration after we've upgraded the judging servers. To adjust the time limit constraint, a solution execution time will be multiplied by 2. For example, if your solution works for 400 ms on judging servers, then the value 800 ms will be displayed and used to determine the verdict.

Codeforces Beta Round 11

Finished

Practice

→ **Virtual participation**

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ **Clone Contest to Mashup**

You can clone this contest to a mashup.

Clone Contest

→ **Submit?**

Language: GNU G++23 14.2 (64 bit, ms

Choose file: Choose File No file chosen

Submit

→ **Last submissions**

Submission	Time	Verdict
325671300	Jun/23/2025 13:46	Accepted

```
1111111000
1000001000
1011001000
1011001010
1000001101
1001001010
1010101000
1001001000
1000001000
1111111000
```

output Copy

```
1
2
```

input Copy

```
1
12 11
11111111111
10000000001
10111111101
10100000101
10101100101
10101100101
10100000101
10100000101
10111111101
10000000001
11111111111
00000000000
```

output Copy

```
3
```

→ **Problem tags**

implementation *2200

No tag edit access

→ **Contest materials**

- Announcement (en)

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