Problem F

J97’s Farm

Time limit: 1 second
Memory: 1024 megabytes

Problem Description

In a large field on the ***J97’s*** farm, the owner is facing a challenging problem. His grass field is square-shaped and represented by an **N×N** matrix, with each cell in the matrix containing either **0** or **1**. A **0** represents a cell without grass, while a **1** represents a cell with grass. Since the field is vast and full of grass, the owner decided to release some sheep to eat all the grass.

However, the owner has a very special rule regarding how the sheep eat the grass. Each sheep only likes to eat grass from cells that are connected to each other in four directions: **East**, **West**, **South**, and **North** (**not diagonally**). Each sheep can eat a maximum of **K** grass cells. If a sheep eats **K** cells of grass, it returns to the barn to sleep. Or, if the connected grass patch the sheep wants to eat doesn't have **K** cells, it will eat all the available grass in that patch and then return to the barn.

With this requirement, the farm owner wants to know the minimum number of sheep that need to be released to eat all the grass on the field, so that all sheep eat at the same time.

Problem requirements: Calculate the minimum number of sheep required to eat all the grass on the field.

Input:

- The first line contains two integers **N** and **K** (**$0 < K \leq N \leq 10^3$**).
- The next **N** lines describe the field, where each line contains a string of **0s** and **1s**, where **1** represents a cell with grass and **0** represents a cell without grass.

Output:

- A single integer: the minimum number of sheep required to eat all the grass on the field.

Example:

INPUT	OUTPUT

7 3
1110100
0100100
1010011
1100101
0001100
0001010
0110100
	11