Problem L
Combination Lock

Gael has a padlock with a combination lock. Unlike a typical combination lock which has several rotating discs (one for each digit) from left to right, Gael's combination lock has $R \times C$ rotating discs formed in R rows (numbered from 1 to R) and C columns (numbered from 1 to C). For simplicity, the rotating disc in the i^{th} row and j^{th} column is denoted as rotating disc (i, j).

Similar to a typical combination lock, each rotating disc in Gael's lock has 10 symbols, numbered from 0 to 9. At any point in time, one of the symbols is visible to Gael.

In one operation, Gael can choose one of the $R \times C$ rotating discs and rotate it $\frac{1}{10}$ turn clockwise. This causes the symbol visible to Gael to be increased by 1 if the previously visible symbol is not equal to 9, or to be changed to 0 otherwise.

In a typical combination lock, to open the lock, each rotating disc has to be rotated by exactly the correct amount so that the rotating disc shows a predetermined symbol. However, Gael's lock is mechanically magical and behaves differently.

Gael's lock will open if there exists a symbol m such that the set of rotating discs currently showing the symbol m forms the letter `L`. Formally, the lock will open if there exists a symbol m and integers x, y, δ_x, δ_y ($0 \le m \le 9; 1 \le x - \delta_x < x \le R; 1 \le y < y + \delta_y \le C$) such that the rotating disc (i, j) is showing symbol m if and only if at least one of the following is true:

- $i = x$ and $y \le j \le y + \delta_y$
- $x - \delta_x \le i \le x$ and $j = y$

Currently, the symbol visible on the rotating disc (i, j) is $S_{i,j}$. Help Gael to determine the minimum number of operations needed to open his lock.

Input

Input begins with a line containing two integers: $R\ C$ ($2 \le R, C \le 1000$) representing the number of rows and columns in Gael's combination lock, respectively. The next R lines each contains a string S_i containing C characters between `0` and `9` representing the symbol currently visible on the rotating discs. The j^{th} integer on the i^{th} line is the value of $S_{i,j}$.

Output

Output in a line an integer representing the minimum number of operations needed to open Gael's lock.

Sample Input #1

```
3 5
49581
02777
74386
```

Sample Output #1

```
3
```

Explanation for the sample input/output #1

By doing one operation on the rotating disc $(3, 1)$ and two operations on the rotating disc $(1, 3)$, the rotating discs are showing the following symbols (the operated discs are underlined):

49781
02777
84386

The set of rotating discs currently showing the symbol 7 forms the letter L. In particular, the values $m = 7, x = 2, y = 3, \delta_x = 1, \delta_y = 2$ satisfy the condition specified in the problem description for Gael's lock to be opened.

There is no way to open Gael's lock in less than 3 operations.

Sample Input #2

```
4 5
01010
10101
01010
10101
```

Sample Output #2

```
4
```

Explanation for the sample input/output #2

By doing one operation on the rotating disc $(1, 2)$ and $(2, 3)$ and two operations on the rotating disc $(2, 2)$, the set of rotating discs currently showing the symbol 2 forms the letter L. There is no way to open Gael's lock in less than 4 operations.