

## B. Sereja and Table

time limit per test: 1 second  
memory limit per test: 256 megabytes  
input: standard input  
output: standard output

Sereja has an  $n \times m$  rectangular table  $a$ , each cell of the table contains a zero or a number one. Sereja wants his table to meet the following requirement: each connected component of the same values forms a rectangle with sides parallel to the sides of the table. Rectangles should be filled with cells, that is, if a component form a rectangle of size  $h \times w$ , then the component must contain exactly  $hw$  cells.

A connected component of the same values is a set of cells of the table that meet the following conditions:

- every two cells of the set have the same value;
- the cells of the set form a connected region on the table (two cells are connected if they are adjacent in some row or some column of the table);
- it is impossible to add any cell to the set unless we violate the two previous conditions.

Can Sereja change the values of at most  $k$  cells of the table so that the table met the described requirement? What minimum number of table cells should he change in this case?

### Input

The first line contains integers  $n$ ,  $m$  and  $k$  ( $1 \leq n, m \leq 100$ ;  $1 \leq k \leq 10$ ). Next  $n$  lines describe the table  $a$ : the  $i$ -th of them contains  $m$  integers  $a_{i1}, a_{i2}, \dots, a_{im}$  ( $0 \leq a_{i,j} \leq 1$ ) — the values in the cells of the  $i$ -th row.

### Output

Print -1, if it is impossible to meet the requirement. Otherwise, print the minimum number of cells which should be changed.

### Examples

input
5 5 2 1 1 1 1 1 1 1 1 1 1 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1
output
1

  

input
3 4 1 1 0 0 0 0 1 1 1 1 1 1 0
output
-1

  

input
3 4 1 1 0 0 1 0 1 1 0 1 0 0 1
output

