A. Queue on Bus Stop

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

It's that time of the year when the Russians flood their countryside summer cottages (dachas) and the bus stop has a lot of people. People rarely go to the dacha on their own, it's usually a group, so the people stand in queue by groups.

The bus stop queue has n groups of people. The i-th group from the beginning has a_i people. Every 30 minutes an empty bus arrives at the bus stop, it can carry at most m people. Naturally, the people from the first group enter the bus first. Then go the people from the second group and so on. Note that the order of groups in the queue never changes. Moreover, if some group cannot fit all of its members into the current bus, it waits for the next bus together with other groups standing after it in the queue.

Your task is to determine how many buses is needed to transport all n groups to the dacha countryside.

Input

The first line contains two integers n and m $(1 \le n, m \le 100)$. The next line contains n integers: $a_1, a_2, ..., a_n$ $(1 \le a_i \le m)$.

Output

Print a single integer — the number of buses that is needed to transport all n groups to the dacha countryside.

Examples

input

```
4 3
2 3 2 1
```

output

```
3
```

input

```
3 4
1 2 1
```

output

```
1
```

B. Pasha Maximizes

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

Pasha has a positive integer a without leading zeroes. Today he decided that the number is too small and he should make it larger. Unfortunately, the only operation Pasha can do is to swap two adjacent decimal digits of the integer.

Help Pasha count the maximum number he can get if he has the time to make at most k swaps.

Input

The single line contains two integers a and k $(1 \le a \le 10^{18};\ 0 \le k \le 100)$.

Output

Print the maximum number that Pasha can get if he makes at most k swaps.

Examples

input

```
1990 1
```

output

```
9190
```

input

```
300 0
```

output

```
300
```

input

```
1034 2
```

output

```
3104
```

input

```
9090000078001234 6
```

output

```
9907000008001234
```

C. Cardiogram

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

In this problem, your task is to use ASCII graphics to paint a cardiogram.

A cardiogram is a polyline with the following corners:

$$(0;0), (a_1;a_1), (a_1+a_2;a_1-a_2), (a_1+a_2+a_3;a_1-a_2+a_3), \dots, (\sum_{i=1}^{n} a_i; \sum_{i=1}^{n} (-1)^{i+1} a_i).$$

That is, a cardiogram is fully defined by a sequence of positive integers $a_1, a_2, \dots, a_n$.

Your task is to paint a cardiogram by given sequence a_i.

Input

The first line contains integer n $(2 \le n \le 1000)$. The next line contains the sequence of integers $a_1, a_2, \dots, a_n$ $(1 \le a_i \le 1000)$. It is guaranteed that the sum of all a_i doesn't exceed 1000.

Output

Print $max\ |y_i - y_j|$ lines (where y_k is the y coordinate of the k-th point of the polyline), in each line print $\sum_{i=1}^{n} a_i$ characters. Each character must equal either « / » (slash), « \ » (backslash), «   » (space). The printed image must be the image of the given polyline. Please study the test samples for better understanding of how to print a cardiogram.

Note that in this problem the checker checks your answer taking spaces into consideration. Do not print any extra characters. Remember that the wrong answer to the first pretest doesn't give you a penalty.

Examples

input

```
5
3 1 2 5 1
```

output

```
     /\
  /\/  \
 /      \
/        \
          \/
```

input

```
3
1 5 1
```

output

```
/\
  \
   \
    \
     \/
```

Note

Due to the technical reasons the answers for the samples cannot be copied from the statement. We've attached two text documents with the answers below.

`http://assets.codeforces.com/rounds/435/1.txt`

`http://assets.codeforces.com/rounds/435/2.txt`

D. Special Grid

time limit per test: 4 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

You are given an $n \times m$ grid, some of its nodes are black, the others are white. Moreover, it's not an ordinary grid — each unit square of the grid has painted diagonals.

The figure below is an example of such grid of size 3×5. Four nodes of this grid are black, the other 11 nodes are white.

Your task is to count the number of such triangles on the given grid that:

- the corners match the white nodes, and the area is positive;
- all sides go along the grid lines (horizontal, vertical or diagonal);
- no side contains black nodes.

Input

The first line contains two integers n and m $(2 \le n, m \le 400)$. Each of the following n lines contain m characters (zeros and ones) — the description of the grid. If the j-th character in the i-th line equals zero, then the node on the i-th horizontal line and on the j-th vertical line is painted white. Otherwise, the node is painted black.

The horizontal lines are numbered starting from one from top to bottom, the vertical lines are numbered starting from one from left to right.

Output

Print a single integer — the number of required triangles.

Examples

input

```
3 5
10000
10010
00001
```

output

```
20
```

input

```
2 2
00
00
```

output

```
4
```

input

```
2 2
11
11
```

output

```
0
```

Note

The figure below shows red and blue triangles. They are the examples of the required triangles in the first sample. One of the invalid triangles is painted green. It is invalid because not all sides go along the grid lines.

E. Special Graph

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

In this problem you will need to deal with an $n \times m$ grid graph. The graph's vertices are the nodes of the $n \times m$ grid. The graph's edges are all the sides and diagonals of the grid's unit squares.

The figure below shows a 3×5 graph. The black lines are the graph's edges, the colored circles are the graph's vertices. The vertices of the graph are painted on the picture for a reason: the coloring is a correct vertex coloring of the 3×5 graph into four colors. A graph coloring is correct if and only if each vertex is painted and no two vertices connected by an edge are painted the same color.

You are given the size of the grid graph $n \times m$ and the colors of some of its vertices. Find any way how to paint the unpainted vertices of the graph in 4 colors to make the final coloring a correct vertex graph coloring. If there is no such correct vertex coloring, say that the answer doesn't exist.

Input

The first line contains two integers n and m $(2 \le n, m \le 1000)$. Each of the next n lines consists of m characters — the given graph. Each character is either «0», «1», «2», «3», «4». Character «0» means that the corresponding vertex is unpainted, otherwise the character means the color of the vertex.

Assume that all the available colors are numbered from 1 to 4.

Output

If there is no way to get correct vertex coloring of the graph, print 0 in a single line. Otherwise print the colored $n \times m$ graph. Print the graph in the same format as in the input.

If multiple answers exist, print any of them.

Examples

input

```
3 5
10101
00020
01000
```

output

```
13131
42424
31313
```

input

```
2 2
00
00
```

output

```
12
34
```

input

```
2 2
11
00
```

output

```
0
```

Note

The answer to the first sample is shown on the picture (1 — green color, 2 — blue, 3 — dark blue, 4 — pink).

In the second sample there exists 4! answers, each of them is considered correct.

In the third sample two vertices with equal colors are connected. So the correct vertex coloring couldn't be obtained.