F. Ciel and Gondolas

Time limit: 4s Memory limit: 512 MB

Fox Ciel is in the Amusement Park. And now she is in a queue in front of the Ferris wheel. There are n people (or foxes more precisely) in the queue: we use first people to refer one at the head of the queue, and n-th people to refer the last one in the queue.

There will be k gondolas, and the way we allocate gondolas looks like this:

- When the first gondolas come, the q_1 people in head of the queue go into the gondolas.
- Then when the second gondolas come, the q_2 people in head of the remain queue go into the gondolas.

  ...

- The remain q_k people go into the last (k-th) gondolas.

Note that q_1, q_2, ..., q_k must be positive. You can get from the statement that $\sum_{i=1}^{k} q_i = n$ and $q_i>0$.

You know, people don't want to stay with strangers in the gondolas, so your task is to find an optimal allocation way (that is find an optimal sequence q) to make people happy. For every pair of people i and j, there exists a value u_{ij} denotes a level of unfamiliar. You can assume $u_{ij}=u_{ji}$ for all i,j ($1\le i,j\le n$) and $u_{ii}=0$ for all i ($1\le i\le n$). Then an unfamiliar value of a gondolas is the sum of the levels of unfamiliar between any pair of people that is into the gondolas.

A total unfamiliar value is the sum of unfamiliar values for all gondolas. Help Fox Ciel to find the minimal possible total unfamiliar value for some optimal allocation.

Input

The first line contains two integers n and k ($1\le n\le 4000$ and $1\le k\le min(n,800)$) — the number of people in the queue and the number of gondolas. Each of the following n lines contains n integers — matrix u, ($0\le u_{ij}\le 9$, $u_{ij}=u_{ji}$ and $u_{ii}=0$).

Please, use fast input methods (for example, please use BufferedReader instead of Scanner for Java).

Output

Print an integer — the minimal possible total unfamiliar value.

Examples

input

```
5 2
0 0 1 1 1
0 0 1 1 1
1 1 0 0 0
1 1 0 0 0
1 1 0 0 0
```

output

```
0
```

input

```
8 3
0 1 1 1 1 1 1 1
1 0 1 1 1 1 1 1
1 1 0 1 1 1 1 1
1 1 1 0 1 1 1 1
1 1 1 1 0 1 1 1
1 1 1 1 1 0 1 1
1 1 1 1 1 1 0 1
1 1 1 1 1 1 1 0
```

output

```
7
```

input

```
3 2
0 2 0
2 0 3
0 3 0
```

output

```
2
```

Note

In the first example, we can allocate people like this: {1, 2} goes into a gondolas, {3, 4, 5} goes into another gondolas.

In the second example, an optimal solution is : {1, 2, 3} | {4, 5, 6} | {7, 8}.