A new gangster is trying to take control of the city. He makes a list of his $N$ adversaries (e.g. gangster 1, gangster $2, \ldots$ gangster $N-1$, gangster $N$ ) and plans to get rid of them.
$K$ mercenaries are willing to do the job. The gangster can use any number of these mercenaries. But he has to honor one condition set by them: they have to be assigned in such a way that they eliminate a consecutive group of gangsters in the list, e.g. gangster $i$, gangster $i+1, \ldots$, gangster $j-1$, gangster $j$, where the following is true: $1 \leq i \leq j \leq N$.

While our new gangster wants to kill all of them, he also wants to pay the least amount of money. All mercenaries charge a different amount to kill different people. So he asks you to help him minimize his expenses.

## Input Format

The first line contains two space-separated integers, $N$ and $K$. Then $K$ lines follow, each containing $N$ integers as follows:
The $j^{\text {th }}$ number on the $i^{\text {th }}$ line is the amount charged by the $i^{\text {th }}$ mercenary for killing the $j^{\text {th }}$ gangster on the list.

## Constraints

- $1 \leq N \leq 20$
- $1 \leq K \leq 10$
- $0 \leq$ amount charged $\leq 10000$


## Output Format

Just one line, the minimum cost for killing the $N$ gangsters on the list.

## Sample Input

```
3 2
14 1
2 2
```


## Sample Output

5

## Explanation

The new gangster can assign mercenary 1 to kill gangster 1, and mercenary 2 to kill gangster 2 and gangster 3.

