DMOPC '19 Contest 2 P2 - Squares

Time limit: 3.0s **Memory limit:** 64M

You are given an $N \times M$ grid of squares. Each square contains a number a_i, $1 \leq i \leq N \times M$, the cost to travel through that square. You are starting at the most top-left square. At each turn you may choose to move down or right but not both. Find the minimum cost it would take you to travel to the most bottom-right square.

Constraints

In all tests,
$2 \leq N, M \leq 500$
$1 \leq a_i \leq 10^6$

Input Specification

The first line contains two integers, N and M, the dimensions of the grid of squares (N rows and M columns).
The next N lines each contains M integers, a_i, the cost to travel through that square in the grid.

Output Specification

Output on a single line, the minimum sum of costs to travel from the most top-left square to the most bottom-right square.

Sample Input

```
3 4
3 1 2 4
9 8 7 6
2 8 9 2
```

Sample Output

```
18
```

Explanation for Sample Output

We can take the path $3 \to 1 \to 2 \to 4 \to 6 \to 2$, which gives us the sum of 18. There are no paths that yield a smaller sum.