(Adv.) Competitive Programming

Submit until 10.05.2019 13:30, via the judge interface

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Problem: exam (1 second timelimit)

Today is the exam for theoretical computer science. Unfortunately, you have neither listened to the lectures nor have you studied at all. But well, there is always next year to try again. Of course you still wanted to go to the exam, because you might have gotten lucky with easy tasks. The problem is ... you don't even know what any of the symbols and words mean. So you can't solve anything. But it would also be embarrassing to just get up and leave after 10 minutes. So you decide to stay.

After a while you notice, that your neighbor has some chocolate lying next to him. And you're starting to get hungry. He looks so concentrated, that maybe he wouldn't notice if you borrowed a little of it.

It's a kind of weird chocolate, however. It's a rectangle made up of smaller square pieces. But all the pieces are made out of different types of chocolate, some of which you like more than the others. Since you have lots of time anyway, you assign a numerical value to each of the pieces. Obviously you want to steal chocolate with as much value as possible, but if you cut out weird shapes your neighbor might notice that something's missing. The solution: Just remove one piece from each row, so later you can make it look like a rectangle again. And your neighbor won't notice, because it's just one column less and who knows the exact size of their chocolate anyway. To minimize the time you spend cutting the chocolate, you begin from the upper row. (No turning the chocolate, that would be to loud.) In each row you only take the piece below the one you chose in the row above or one of the two directly next to it. After that you will just fit the two halves together and enjoy your pieces of chocolate.

You can see an example of this technique in Figure 1.

Input First, there is a line with $2 \leq w, h \leq 2000$, the width and the height of the chocolate. The following h lines each describe one row of the chocolate: They contain w numerical values $0 \leq n_{i,j} \leq 100000$ of the pieces in that row.

Output Compute the maximum amount of value you can get by stealing the chocolate.

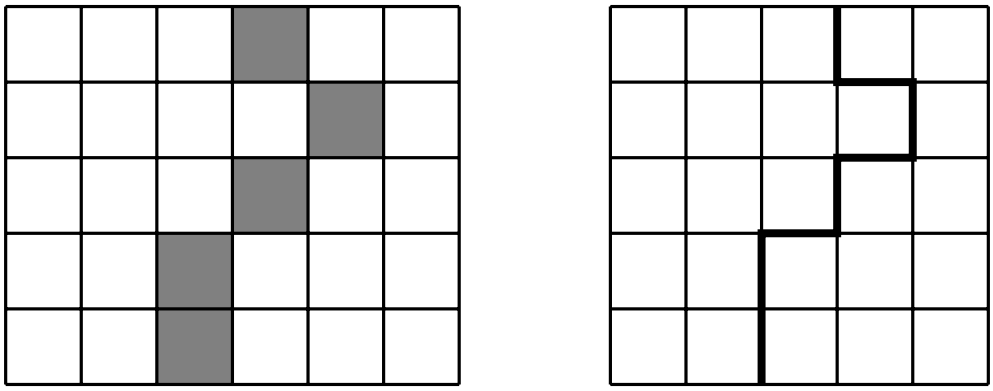

Figure 1: A chocolate with size 6×5. Left before cutting, right after cutting.

Sample input

```
2 3
5 2
1 3
4 2
```

Sample output

```
12
```

```
3 5
0 1 10
1 2 5
3 0 1
2 1 4
0 2 1
```

```
22
```