Competitive Programming and Contests

Holiday Planning

As the last hands-on of your class is due to few days before Christmas, you are ready to plan your Christmas holiday traveling around Europe, to visit different cities. You have a tour guide to Europe, which presents a different itinerary for each city. Each itinerary specifies how many different attractions can be visited per day. As an example, this is the itinerary for Florence

Day		1	2	3	4
number of attractions		3	2	1	4

This means that if you spend two days in Florence you will have the chance to visit $3 + 2 = 5$ different attractions. You want to visit as many attractions as you can, considering that you only have a limited number of days on vacation before the oral exam. Your task is to write a program to organize your holiday. Note that you can visit the attractions in the order provided by the guide, meaning that if you spend one day in Florence you will visit 3 attractions (i.e., you cannot "cherry pick" the 4 attractions of the last day).

You are provided with the number of attractions you can visit for each of the D days, in each city. The number of cities is n. Your goal is to identify the maximum number of attractions the tourist can visit. The time complexity of your solution should be $O(nD^2)$.

Input. The first line contains n and D. Then, the following n lines contain each D different integer values and describe the itineraries I.

Output. The maximum number of attractions that you can visit.

Example

Input

```
2 3      // n D
3 2 1    // Florence
3 1 1    // London
```

Output

```
8   // 2 days in Florence, 1 day in London
```