beCP
2023
Task 2.2: Speedrunning (speedrunning)

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Time limit: 1.5 s Memory limit: 512 MB

Your favorite game is *Super beCP*. You played it a lot. In order to renew your gaming experience, you have decided to start *speedrunning*, an activity consisting in finishing a video game as quickly as possible.

The game *Super beCP* consists of N *worlds*, each being made up of a series of a certain number of *levels*, ordered sequentially.

You know the condition to complete the game and see the credits: by completing K levels, you unlock the final boss level (which is in a separate world from the main N worlds). As soon as you beat the boss level, you gain access to game credits, and the game is considered to be finished. Your goal is to get to the credits as quickly as possible.

At the start of the game, the first level of each of the worlds is available. Each time you validate a level, you unlock the next level of the world (unless you have solved the last level of a world). At any time, you can choose the level to validate at your convenience among all the unlocked levels.

You are a *Super beCP* expert. Thus, for each of the levels, you know very precisely the time (in seconds!) you need to complete the level in question. In order to find the most efficient way to complete the game, you have to choose K levels well in order to minimize the total time taken to validate them. This will then give you access to the boss level and then to the end of the game. We neglect the time taken to select the levels.

Your task is as follows: given the durations to complete the levels, what is the minimum time needed to complete K levels and unlock the boss level?

Input

The first line contains the two integers N and K. The N following line begin by an integer M, then M integers $a_1, a_2, \cdots, a_M$. If the ith line has this format, it means that the ith world is made of M levels whose durations are $a_1, a_2, \cdots, a_M$.

Output

The output consists in a single integer: the minimal time required to finish K levels.

General limits

- $1 \le N \le 500$;
- for every line of the form "$M\ a_1\ a_2\ \cdots\ a_M$", we have
  - $1 \le M \le 1000$;
  - $1 \le a_i \le 10^9$;
- the total number of levels, designed by T and given by the sum of the N values of "M", is inferior to 2000. Moreover, we have $1 \le K \le T$.

Additional constraints

Subtask	Points	Constraints
A	30	$N = 1$
B	30	Every world is made of a single level ($M = 1$ for all lines).
C	15	$1 \le N, K, T \le 10$
D	25	No additional constraint

Important remark: some numbers may exceed the capacity of a 32-bit integer, so use the type `long long`.

Example 1

sample1.in
```
1 3
4 50 20 100 80
```

sample1.out
```
170
```

This example may appear in subtasks A, C and D.

Example 2

sample2.in
```
4 3
1 50
1 20
1 100
1 80
```

sample2.out
```
150
```

This example may appear in subtasks B, C and D.

Example 3

sample3.in
```
3 4
3 60 60 80
2 100 10
3 50 200 100
```

sample3.out
```
220
```

This example may appear in subtasks C and D. A solution consists in validating the first level of the first world, the two levels of the second world and the first level of the third world, for a total time of $60 + 100 + 10 + 50 = 220$ seconds.