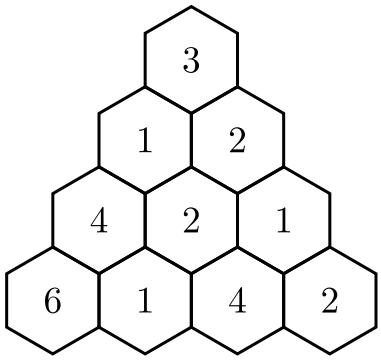
CCC '19 S5 - Triangle: The Data Structure

Time limit: 1.0s **Memory limit:** 512M

Canadian Computing Competition: 2019 Stage 1, Senior #5

In a parallel universe, the most important data structure in computer science is the triangle. A triangle of size M consists of M rows, with the i^{th} row containing i elements. Furthermore, these rows must be arranged to form the shape of an equilateral triangle. That is, each row is centred around a vertical line of symmetry through the middle of the triangle. For example, the diagram below shows a triangle of size 4:



A triangle contains sub-triangles. For example, the triangle above contains ten sub-triangles of size 1, six sub-triangles of size 2 (two of which are the triangle containing $(3, 1, 2)$ and the triangle containing $(4, 6, 1)$), three sub-triangles of size 3 (one of which contains $(2, 2, 1, 1, 4, 2)$). Note that every triangle is a sub-triangle of itself.

You are given a triangle of size N and must find the sum of the maximum elements of every sub-triangle of size K.

Input Specification

The first line contains two space-separated integers N and K ($1 \leq K \leq N \leq 3\,000$).

Following this are N lines describing the triangle. The i^{th} of these lines contains i space-separated integers $a_{i,j}$ ($0 \leq a_{i,j} \leq 10^9$), representing the i^{th} row of the triangle.

For 4 of the 15 available marks, $N \leq 1000$.

Output Specification

Output the integer sum of the maximum elements of every sub-triangle of size K.

Sample Input

```
4 2
3
1 2
4 2 1
6 1 4 2
```

Output for Sample Input

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23
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