Defeat the Swarm

In a galaxy far far away, on a planet life evolved much like our own planet. Scientists working in pursuit of unlimited and sustainable energy finally had a breakthrough. They had found a dark dimension and opened portals to extract energy from it. They started opening more and more portals without realising that energy wasn't the only thing traveling through those portals. An organism had started invading their world, they named it the Swarm. They tried to close the portals when they discovered the swarm but they were unable to do that.

After invading, Swarm started creating hives. When they destroyed a hive, they found a way to defeat the swarm. When a hive was destroyed they found out that each tier in the hive has an energy source. Each tier in each hive has a different size and when it is destroyed, it opens multiple portals based on that tier's size. But if they would destroy the energy source at the base(bottom tier) then it would close the number of portals equal to the size of the base tier.

Upon the destruction of a hive's tier with size X

i) X new portals are opened

ii) 1 energy source can be collected

Upon the destruction of T number of energy sources at the base of hive with base size Y

i) T * Y number of portals close

The number of portals opened/closed was based on the size of each tier in the hive. They started collecting energy sources from smaller hives where the number of newly opened portals would be small and destroyed them at the base of hives that had big bases to close more portals. They mapped the size of each hive. Now they know the size of each hive and want to close as many portals as they can and need your help.

Note: Energy sources can only be destroyed at the base of a hive. In the event of destroying an energy source, closed portals do not change by the above tiers in a hive, Those only depend on the size of the base tier. But destruction of all tiers (including base tier) opens new portals based on the size of the tier and each tier contains 1 energy source.

Example:

If there are 5 hives with sizes as follows:

0 0 18 0 0

0 0 47 0 17

2 6 95 37 39

Each column represents 1 hive. The 1st, 2nd and 4th hive only have one tier, the 3rd hive has three tiers and the 5th has two tiers.

Then we would destroy 1st hive that results in 2 open portals and 1 energy source

For the 2nd one, 6 new portals are opened and 1 more energy source is collected So our total becomes 8 opened portals and 2 energy sources. Upon destroying the 3rd hive our total becomes 168 open portals and 5 energy sources.

Destroying all 5 energy sources at the base of 3rd hive (as there is no bigger hive base ahead) and we will be able to close 5 * 95 = 475 portals. As 168 portals were opened by the destruction of 1st, 2nd & 3rd hives so 475 - 168 = 307 is the number of additional portals closed.

After destroying the 4th site we collect 1 energy source and 37 portals are open and after the 5th site's destruction total becomes 3 energy sources and 93 open portals. Destroying all 3 collected energy sources at 5th site will result in 3 * 39 = 117. As 93 portals were opened by the destruction of 4th & 5th hive so our additional closed portals are 117 - 93 = 24.

So total additional portals closed are 307 + 24 = 331

Another Example:

Again 3 hives with following sizes:

0 0 0

0 0 0

90 80 70

In this case we won't be able to close any additional portals. Because we are only getting one energy source as all of these have only one tier and the biggest hive is the first one. So we would destroy the energy source at the same site where we are getting it for maximum impact.

Your program should read a file with the input format given below and output the number of additional portals closed in a file as described below.

Constraints:

0 < Number Of hives > 100000

0 < Max tiers of a hive > 1000

Min tiers of a hive > 0

0 < Hive tier Size > 100000

Order of hives can not be changed

Input Format:

Input will be read from a file.

The first line will have two numbers, i and j. Representing the number of rows and columns.

Next i lines have the size data for j hives.

Output Format:

Output the number of additionally closed portals.

Sample Input:

3 5

0 0 18 0 0

0 0 47 0 17

2 6 95 37 39

Sample Output:

331

Sample Input:

3 3

0 0 0

0 0 0

90 80 70

Sample Output:

0

Sample Input:

2 5

0 0 300 0 0

500 1000 1000 2 1

Sample Output:

1200

Sample Input:

4 6

2 0 0 0 0 0

42 0 0 0 24 0

89 0 0 0 33 0

200 3 4 11 55 13

Sample Output:

667

Your Response IN PROGRESS

After you submit your response, you cannot edit it.

Write Your Code Here

Choose Lang

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1
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Run Code

THIS RESPONSE HAS NOT BEEN SAVED.

Submit your response