1376. Selling Pieces of Wood

Difficulty : Hard

https://leetcode.com/problems/selling-pieces-of-wood

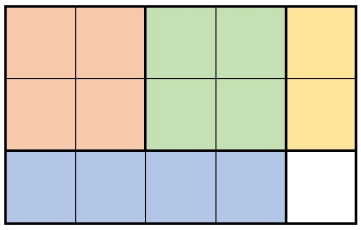
You are given two integers `m` and `n` that represent the height and width of a rectangular piece of wood. You are also given a 2D integer array `prices`, where `prices[i] = [$h_i$, $w_i$, $price_i$]` indicates you can sell a rectangular piece of wood of height h_i and width w_i for $price_i$ dollars.

To cut a piece of wood, you must make a vertical or horizontal cut across the **entire** height or width of the piece to split it into two smaller pieces. After cutting a piece of wood into some number of smaller pieces, you can sell pieces according to `prices`. You may sell multiple pieces of the same shape, and you do not have to sell all the shapes. The grain of the wood makes a difference, so you **cannot** rotate a piece to swap its height and width.

Return *the **maximum** money you can earn after cutting an* `m x n` *piece of wood.*

Note that you can cut the piece of wood as many times as you want.

Example 1:



```
Input: m = 3, n = 5, prices = [[1,4,2],[2,2,7],[2,1,3]]
Output: 19
Explanation: The diagram above shows a possible scenario. It consists of:
- 2 pieces of wood shaped 2 x 2, selling for a price of 2 * 7 = 14.
- 1 piece of wood shaped 2 x 1, selling for a price of 1 * 3 = 3.
- 1 piece of wood shaped 1 x 4, selling for a price of 1 * 2 = 2.
This obtains a total of 14 + 3 + 2 = 19 money earned.
It can be shown that 19 is the maximum amount of money that can be earned.
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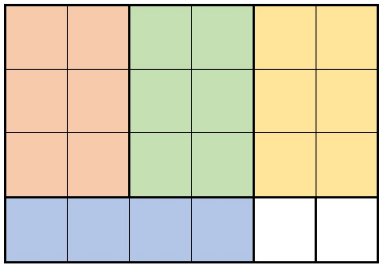
Example 2:



```
Input: m = 4, n = 6, prices = [[3,2,10],[1,4,2],[4,1,3]]
Output: 32
Explanation: The diagram above shows a possible scenario. It consists of:
- 3 pieces of wood shaped 3 x 2, selling for a price of 3 * 10 = 30.
- 1 piece of wood shaped 1 x 4, selling for a price of 1 * 2 = 2.
This obtains a total of 30 + 2 = 32 money earned.
It can be shown that 32 is the maximum amount of money that can be earned.
Notice that we cannot rotate the 1 x 4 piece of wood to obtain a 4 x 1 piece of wood.
```

Constraints:

- `1 <= m, n <= 200`
- `1 <= prices.length <= 2 * 10^4`
- `prices[i].length == 3`
- `1 <= h_i <= m`

- $1 \leq w_i \leq n$
- $1 \leq price_i \leq 10^6$
- All the shapes of wood (h_i, w_i) are pairwise **distinct**.