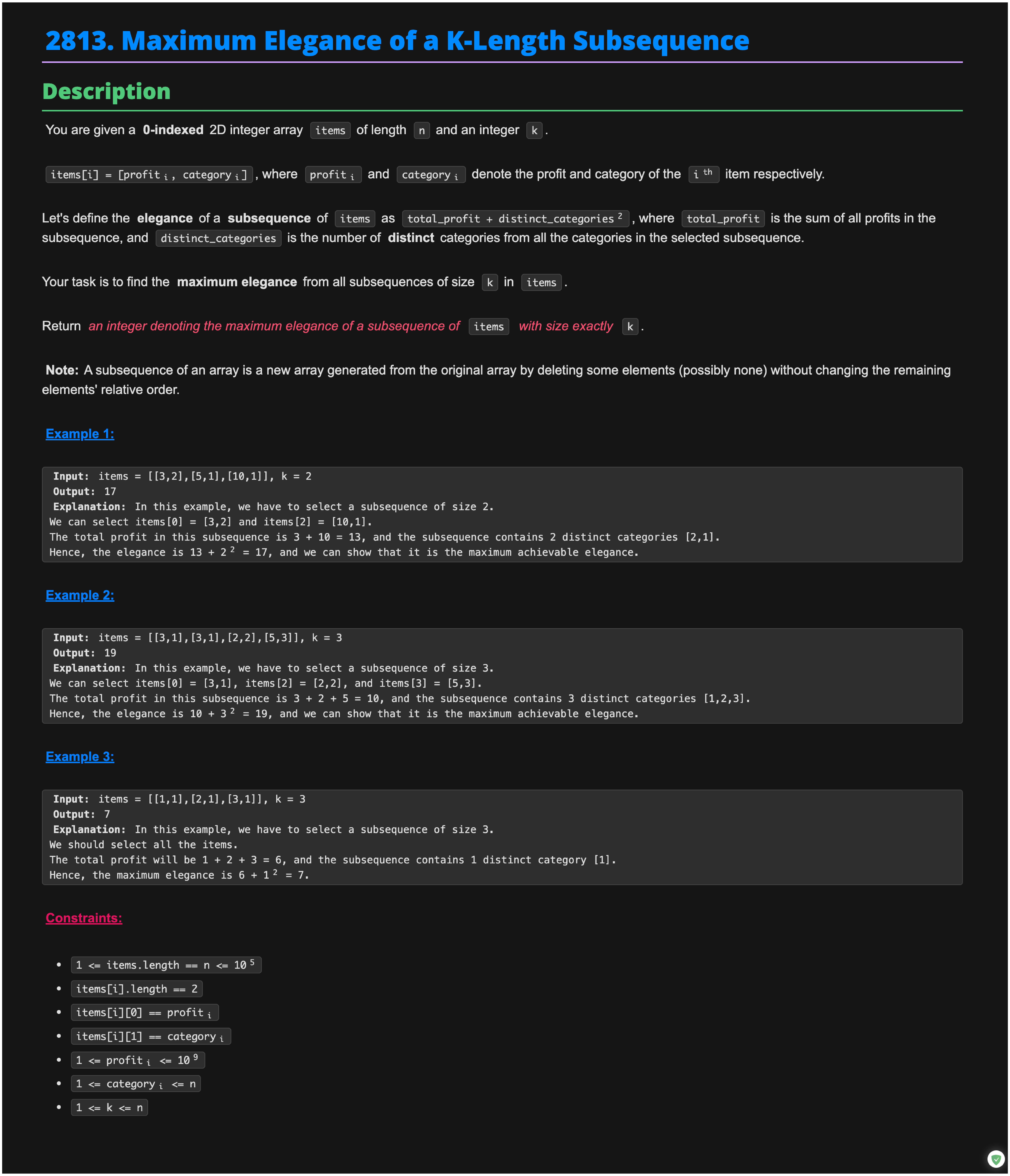

2813. Maximum Elegance of a K-Length Subsequence

Description

You are given a **0-indexed** 2D integer array `items` of length `n` and an integer `k`.

$items[i] = [profit_i, category_i]$, where $profit_i$ and $category_i$ denote the profit and category of the i^{th} item respectively.

Let's define the **elegance** of a **subsequence** of `items` as $total\_profit + distinct\_categories^2$, where `total_profit` is the sum of all profits in the subsequence, and `distinct_categories` is the number of **distinct** categories from all the categories in the selected subsequence.

Your task is to find the **maximum elegance** from all subsequences of size `k` in `items`.

Return *an integer denoting the maximum elegance of a subsequence of* `items` *with size exactly* `k`.

Note: A subsequence of an array is a new array generated from the original array by deleting some elements (possibly none) without changing the remaining elements' relative order.

Example 1:

```
Input: items = [[3,2],[5,1],[10,1]], k = 2
Output: 17
Explanation: In this example, we have to select a subsequence of size 2.
We can select items[0] = [3,2] and items[2] = [10,1].
The total profit in this subsequence is 3 + 10 = 13, and the subsequence contains 2 distinct categories [2,1].
Hence, the elegance is 13 + 2^2 = 17, and we can show that it is the maximum achievable elegance.
```

Example 2:

```
Input: items = [[3,1],[3,1],[2,2],[5,3]], k = 3
Output: 19
Explanation: In this example, we have to select a subsequence of size 3.
We can select items[0] = [3,1], items[2] = [2,2], and items[3] = [5,3].
The total profit in this subsequence is 3 + 2 + 5 = 10, and the subsequence contains 3 distinct categories [1,2,3].
Hence, the elegance is 10 + 3^2 = 19, and we can show that it is the maximum achievable elegance.
```

Example 3:

```
Input: items = [[1,1],[2,1],[3,1]], k = 3
Output: 7
Explanation: In this example, we have to select a subsequence of size 3.
We should select all the items.
The total profit will be 1 + 2 + 3 = 6, and the subsequence contains 1 distinct category [1].
Hence, the maximum elegance is 6 + 1^2 = 7.
```

Constraints:

- $1 <= items.length == n <= 10^5$
- `items[i].length == 2`
- $items[i][0] == profit_i$
- $items[i][1] == category_i$
- $1 <= profit_i <= 10^9$
- $1 <= category_i <= n$
- `1 <= k <= n`