Week 12

Topic: Dynamic Programming

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416. Partition Equal Subset Sum

- Difficulty: Medium
- Problem URL: https://leetcode.com/problems/partition-equal-subset-sum/
- Description:
  判斷一個整數陣列是否可以被分成兩個子集合，且這兩個子集合的元素總和相等。

Example1:

Input: nums = [1,5,11,5]
Output: true
Explanation: The array can be partitioned as [1, 5, 5] and [11].

Example2:

Input: nums = [1,2,3,5]
Output: false
Explanation: The array cannot be partitioned into equal sum subsets.

詳細說明與約束條件請參考 Leetcode 網站。

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887. Super Egg Drop

- Difficulty: Hard
- Problem URL: https://leetcode.com/problems/super-egg-drop/
- Description:
  現有 k 顆相同的雞蛋和一棟有 n 層的建築，樓層從 1 到 n 編號。這棟建築存在一個「臨界樓層」f，滿足以下條件：如果你從高於 f 的樓層丟雞蛋，雞蛋會碎；如果從 f 樓或更低樓層丟下，雞蛋不會碎。你不知道 f 是多少，但可以透過丟雞蛋來測試。在每一次操作中，你可以從任意樓層丟下一顆「未破掉」的雞蛋。如果雞蛋碎了，它就不能再用；如果沒碎，還能繼續用於後續的測試。你的目標是設計一個策略，使你能在最少的測試次數內，保證找出 f 的確切數值，並回傳這個最少測試次數。

Example1:

Input: k = 1, n = 2
Output: 2
Explanation: Drop the egg from floor 1. If it breaks, we know that f = 0.
Otherwise, drop the egg from floor 2. If it breaks, we know that f = 1.
If it does not break, then we know f = 2.
Hence, we need at minimum 2 moves to determine with certainty what the value of f is.

Example2:

Input: k = 2, n = 6
Output: 3

Example3:

Input: k = 3, n = 14
Output: 4

詳細說明與約束條件請參考 Leetcode 網站。

312. Burst Balloons

- Difficulty: Hard
- Problem URL: https://leetcode.com/problems/burst-balloons/
- Description:
  從一個整數陣列 nums 中戳破所有氣球，並讓你獲得的總硬幣數量最大。每次戳破一顆氣球，你會得到的分數為：左側氣球數值 × 當前氣球數值 × 右側氣球數值。如果左右超出陣列範圍，則當作是數值為 1 的虛擬氣球。

Example1:

Input: nums = [3,1,5,8]
Output: 167
Explanation:
nums = [3,1,5,8] --> [3,5,8] --> [3,8] --> [8] --> []
coins =   3*1*5   +   3*5*8   +   1*3*8   +   1*8*1 = 167

Example2:

Input: nums = [1,5]
Output: 10

詳細說明與約束條件請參考 Leetcode 網站。