Problem 3116: Kth Smallest Amount With Single Denomination Combination

Problem Information

Difficulty: Hard
Acceptance Rate: 19.30%
Paid Only: No
Tags: Array, Math, Binary Search, Bit Manipulation, Combinatorics, Number Theory

Problem Description

You are given an integer array `coins` representing coins of different denominations and an integer `k`.

You have an infinite number of coins of each denomination. However, you are **not allowed** to combine coins of different denominations.

Return the `kth` **smallest** amount that can be made using these coins.

Example 1:

Input: coins = [3,6,9], k = 3

Output: 9

Explanation: The given coins can make the following amounts: Coin 3 produces multiples of 3: 3, 6, 9, 12, 15, etc. Coin 6 produces multiples of 6: 6, 12, 18, 24, etc. Coin 9 produces multiples of 9: 9, 18, 27, 36, etc. All of the coins combined produce: 3, 6, _**9**_ , 12, 15, etc.

Example 2:

Input: coins = [5,2], k = 7

Output: 12

Explanation: The given coins can make the following amounts: Coin 5 produces multiples of 5: 5, 10, 15, 20, etc. Coin 2 produces multiples of 2: 2, 4, 6, 8, 10, 12, etc. All of the coins combined produce: 2, 4, 5, 6, 8, 10, _**12**_ , 14, 15, etc.

Constraints:

* `1 <= coins.length <= 15` * `1 <= coins[i] <= 25` * `1 <= k <= 2 * 109` * `coins` contains pairwise distinct integers.

Code Snippets

C++:

```
class Solution {
public:
long long findKthSmallest(vector<int>& coins, int k) {

}
};
```

Java:

```
class Solution {
public long findKthSmallest(int[] coins, int k) {

}
}
```

Python3:

```
class Solution:
def findKthSmallest(self, coins: List[int], k: int) -> int:
```