



3183. The Number of Ways to Make the Sum Premium

Medium  Topics  Hint

You have an **infinite** number of coins with values 1, 2, and 6, and **only** 2 coins with value 4.

Given an integer `n`, return the number of ways to make the sum of `n` with the coins you have.

Since the answer may be very large, return it **modulo** `109 + 7`.

Note that the order of the coins doesn't matter and `[2, 2, 3]` is the same as `[2, 3, 2]`.

Example 1:

Input: `n = 4`

Output: `4`

Explanation:
Here are the four combinations: `[1, 1, 1, 1]`, `[1, 1, 2]`, `[2, 2]`, `[4]`.

Example 2:

Input: `n = 12`

Output: `22`

Explanation:
Note that `[4, 4, 4]` is **not** a valid combination since we cannot use 4 three times.

Example 3:

Input: `n = 5`

Output: `4`

Explanation:
Here are the four combinations: `[1, 1, 1, 1, 1]`, `[1, 1, 1, 2]`, `[1, 2, 2]`, `[1, 4]`.

Constraints:

- `1 <= n <= 105`

Seen this question in a real interview before? 1/5

Yes No

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 Topics


Array Dynamic Programming

 Hint 1

Consider using dynamic programming.

 Hint 2

Define `dp[i][x]` as the number of ways to make the sum `x` using only the first `i` coins; and define `coin[i]` as the value of coin `i`.

 Hint 3

We can calculate `dp[i][x]` as the sum of `dp[i - 1][x]` and `dp[i][x - coin[i]]`.

 Hint 4

Remember that 4 can at most be multiplied twice, so we calculate the `dp` for our infinite coins and then manually handle the existence of 4.

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 Discussion (1)

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