Problem 2533: Number of Good Binary Strings

Problem Information

Difficulty: Medium
Acceptance Rate: 52.51%
Paid Only: Yes
Tags: Dynamic Programming

Problem Description

You are given four integers `minLength`, `maxLength`, `oneGroup` and `zeroGroup`.

A binary string is **good** if it satisfies the following conditions:

* The length of the string is in the range `[minLength, maxLength]`. * The size of each block of consecutive `1`'s is a multiple of `oneGroup`. * For example in a binary string `00 _11_ 0 _1111_ 00` sizes of each block of consecutive ones are `[2,4]`. * The size of each block of consecutive `0`'s is a multiple of `zeroGroup`. * For example, in a binary string `_00_ 11 _0_ 1111 _00_` sizes of each block of consecutive zeros are `[2,1,2]`.

Return _the number of**good** binary strings_. Since the answer may be too large, return it **modulo** `109 + 7`.

Note that `0` is considered a multiple of all the numbers.

Example 1:

Input: minLength = 2, maxLength = 3, oneGroup = 1, zeroGroup = 2 **Output:** 5 **Explanation:** There are 5 good binary strings in this example: "00", "11", "001", "100", and "111". It can be proven that there are only 5 good strings satisfying all conditions.

Example 2:

Input: minLength = 4, maxLength = 4, oneGroup = 4, zeroGroup = 3 **Output:** 1 **Explanation:** There is only 1 good binary string in this example: "1111". It can be proven that there is only 1 good string satisfying all conditions.

Constraints:

* `1 <= minLength <= maxLength <= 105` * `1 <= oneGroup, zeroGroup <= maxLength`

Code Snippets

C++:

```
class Solution {
public:
int goodBinaryStrings(int minLength, int maxLength, int oneGroup, int
zeroGroup) {

}
};
```

Java:

```
class Solution {
public int goodBinaryStrings(int minLength, int maxLength, int oneGroup, int
zeroGroup) {

}
}
```

Python3:

```
class Solution:
def goodBinaryStrings(self, minLength: int, maxLength: int, oneGroup: int,
zeroGroup: int) -> int:
```