Problem 920: Number of Music Playlists

Problem Information

Difficulty: Hard
Acceptance Rate: 59.99%
Paid Only: No
Tags: Math, Dynamic Programming, Combinatorics

Problem Description

Your music player contains `n` different songs. You want to listen to `goal` songs (not necessarily different) during your trip. To avoid boredom, you will create a playlist so that:

* Every song is played **at least once**. * A song can only be played again only if `k` other songs have been played.

Given `n`, `goal`, and `k`, return _the number of possible playlists that you can create_. Since the answer can be very large, return it **modulo** `109 + 7`.

Example 1:

Input: n = 3, goal = 3, k = 1 **Output:** 6 **Explanation:** There are 6 possible playlists: [1, 2, 3], [1, 3, 2], [2, 1, 3], [2, 3, 1], [3, 1, 2], and [3, 2, 1].

Example 2:

Input: n = 2, goal = 3, k = 0 **Output:** 6 **Explanation:** There are 6 possible playlists: [1, 1, 2], [1, 2, 1], [2, 1, 1], [2, 2, 1], [2, 1, 2], and [1, 2, 2].

Example 3:

Input: n = 2, goal = 3, k = 1 **Output:** 2 **Explanation:** There are 2 possible playlists: [1, 2, 1] and [2, 1, 2].

Constraints:

* `0 <= k < n <= goal <= 100`

Code Snippets

C++:

```
class Solution {
public:
int numMusicPlaylists(int n, int goal, int k) {

}
};
```

Java:

```
class Solution {
public int numMusicPlaylists(int n, int goal, int k) {

}
}
```

Python3:

```
class Solution:
def numMusicPlaylists(self, n: int, goal: int, k: int) -> int:
```