Problem 2836: Maximize Value of Function in a Ball Passing Game

Problem Information

Difficulty: Hard
Acceptance Rate: 29.90%
Paid Only: No
Tags: Array, Dynamic Programming, Bit Manipulation

Problem Description

You are given an integer array `receiver` of length `n` and an integer `k`. `n` players are playing a ball-passing game.

You choose the starting player, `i`. The game proceeds as follows: player `i` passes the ball to player `receiver[i]`, who then passes it to `receiver[receiver[i]]`, and so on, for `k` passes in total. The game's score is the sum of the indices of the players who touched the ball, including repetitions, i.e. `i + receiver[i] + receiver[receiver[i]] + ... + receiver(k)[i]`.

Return the **maximum** possible score.

Notes:

* `receiver` may contain duplicates. * `receiver[i]` may be equal to `i`.

Example 1:

Input: receiver = [2,0,1], k = 4

Output: 6

Explanation:

Starting with player `i = 2` the initial score is 2:

Pass | Sender Index | Receiver Index | Score ---|---|---|--- 1 | 2 | 1 | 3 2 | 1 | 0 | 3 3 | 0 | 2 | 5 4 | 2 | 1 | 6 **Example 2:**

Input: receiver = [1,1,1,2,3], k = 3

Output: 10

Explanation:

Starting with player `i = 4` the initial score is 4:

Pass | Sender Index | Receiver Index | Score ---|---|---|--- 1 | 4 | 3 | 7 2 | 3 | 2 | 9 3 | 2 | 1 | 10

Constraints:

* `1 <= receiver.length == n <= 105` * `0 <= receiver[i] <= n - 1` * `1 <= k <= 1010`

Code Snippets

C++:

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

}
};
```

Java:

```
class Solution {
public long getMaxFunctionValue(List<Integer> receiver, long k) {

}
}
```

Python3:

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