Problem 292: Nim Game

Problem Information

Difficulty: Easy
Acceptance Rate: 58.80%
Paid Only: No
Tags: Math, Brainteaser, Game Theory

Problem Description

You are playing the following Nim Game with your friend:

* Initially, there is a heap of stones on the table. * You and your friend will alternate taking turns, and **you go first**. * On each turn, the person whose turn it is will remove 1 to 3 stones from the heap. * The one who removes the last stone is the winner.

Given `n`, the number of stones in the heap, return `true` _if you can win the game assuming both you and your friend play optimally, otherwise return_`false`.

Example 1:

Input: n = 4 **Output:** false **Explanation:** These are the possible outcomes: 1. You remove 1 stone. Your friend removes 3 stones, including the last stone. Your friend wins. 2. You remove 2 stones. Your friend removes 2 stones, including the last stone. Your friend wins. 3. You remove 3 stones. Your friend removes the last stone. Your friend wins. In all outcomes, your friend wins.

Example 2:

Input: n = 1 **Output:** true

Example 3:

Input: n = 2 **Output:** true

Constraints:

* `1 <= n <= 231 - 1`

Code Snippets

C++:

```
class Solution {
public:
bool canWinNim(int n) {

}
};
```

Java:

```
class Solution {
public boolean canWinNim(int n) {

}
}
```

Python3:

```
class Solution:
def canWinNim(self, n: int) -> bool:
```