**Understand Recursive Algorithms**

**Recursion:**

* **Definition:** A method of solving problems where the solution involves solving smaller instances of the same problem. A recursive function calls itself with smaller inputs until it reaches a base case.
* **Benefits:** Simplifies complex problems by breaking them down into more manageable subproblems.
* **Drawbacks:** Can lead to excessive computation and stack overflow if not managed properly.

**Analysis**

**Time Complexity Analysis:**

* The time complexity of the predictFutureValue method is O(n), where n is the number of periods. This is because the method calls itself recursively for each period until it reaches the base case.

**Optimization:**

* To avoid excessive computation and potential stack overflow with large periods, we can use memoization or an iterative approach to store already computed values