**Financial Forecasting  
  
Concept of Recursion**

* **Definition**: Recursion is a programming technique where a function calls itself directly or indirectly to solve a problem.

**Components:**

Base Case: The condition under which the recursion stops to prevent infinite loops.

Recursive Case: The part where the function calls itself with a modified argument to move towards the base case.

**Simplification of Problems**

* **Breaking Down Problems**: Recursion is a useful tool for simplifying complex problems by breaking them into smaller, easier-to-manage subproblems.
* **Code Simplicity**: When compared to iterative solutions,this often results to cleaner, more readable code, particularly for problems involving hierarchical or nested data.

**Time Complexity**: O(n). The method calculateFutureValue() has a linear time complexity because the depth of recursion is proportional to the number of periods, resulting in n calls that individually carry out constant-time operations.

**Optimize the recursive solution:**

Memoization:

* Store results of function calls to avoid redundant computations.
* Cache results and reuse them.

Dynamic Programming:

* Iteratively solve subproblems and store results in a table.

Use Iteration:

* Replace recursion with an iterative approach to prevent stack overhead.