

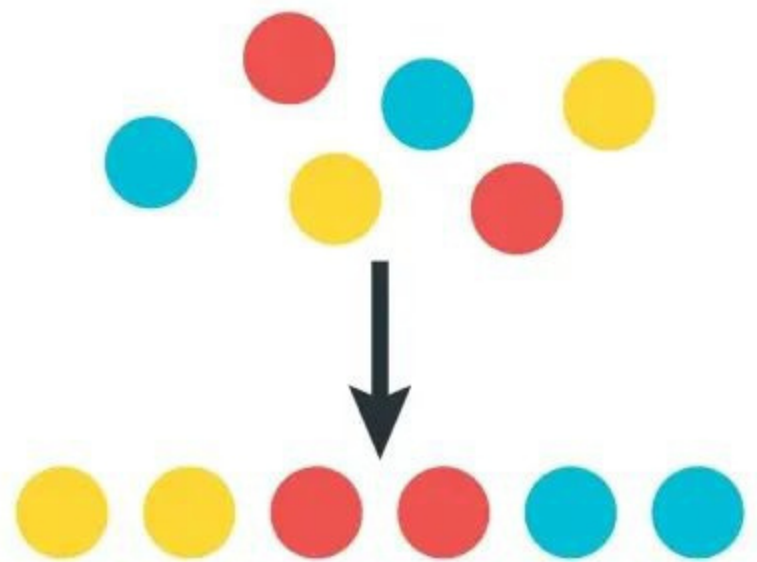
# Top 6 **Algorithms** Every Programmer Should Know



SWIPE <<<

# Sorting Algorithms

- ★ Bubble Sort
- ★ Merge Sort
- ★ Quick Sort
- ★ Heap Sort



# Searching Algorithm

★ Linear Search


★ Binary Search

★ BFS (Breadth First Search)

★ DFS (Depth First Search)

Searched Element

39



13	9	21	15	39	19	27
0	1	2	3	4	5	6



# Recursion Algorithm

Recursion is a problem-solving technique in which the solution is dependent on solutions to smaller instances of the same problem

For user input : 5

Factorial Recursion Function

$$n * f(n-1)$$

Final Result

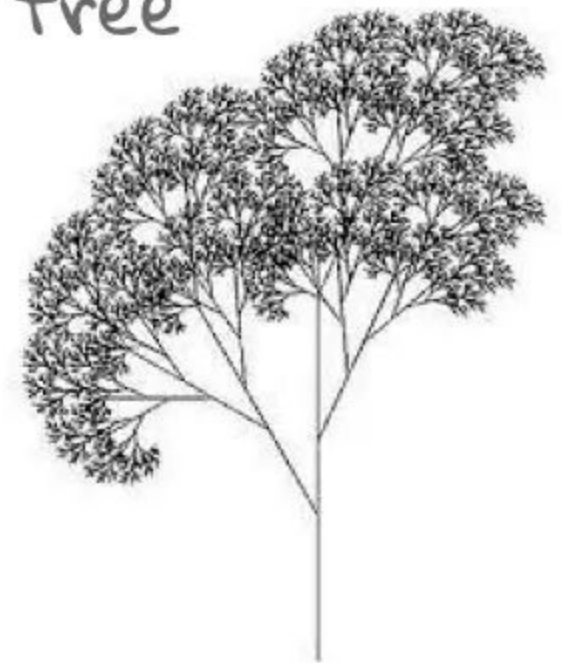
$$5 * f(4) = 5 * 24 = 120$$

$$4 * f(3) = 4 * 6 = 24$$

$$3 * f(2) = 3 * 2 = 6$$

$$2 * f(1) = 2 * 1 = 2$$

its like branches  
of a tree



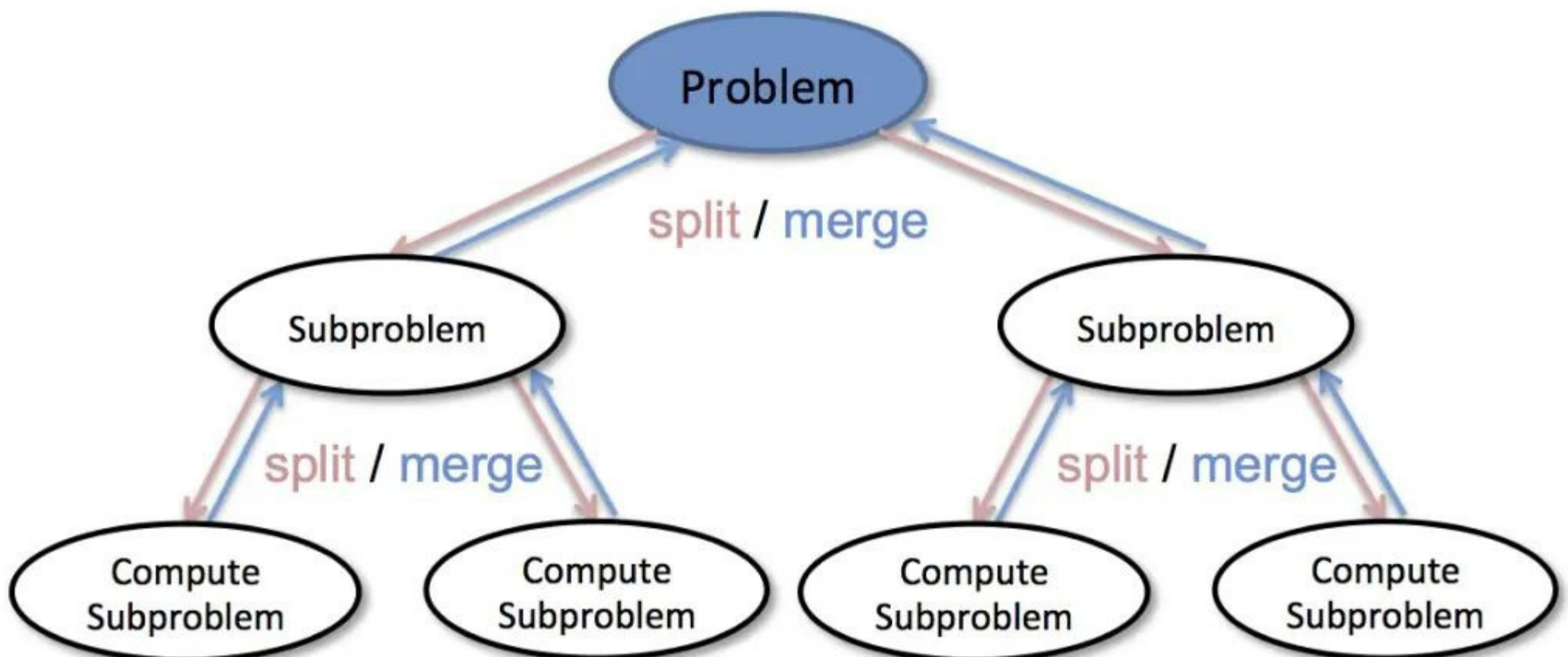
a function calls  
itself within its  
own code

# Divide and Conquer

**Divide** – Original Problem is Divided into Sub Problems

**Conquer** – Solve each sub-problem one at a time, recursively

**Combine** – Put the solutions to the sub-problems together to get the solution to the whole problem



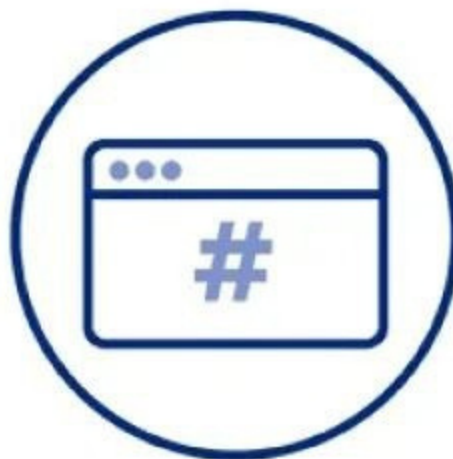
# Hashing Algorithms

Hashing is a technique or process that uses a hash function to map keys and values into a hash table

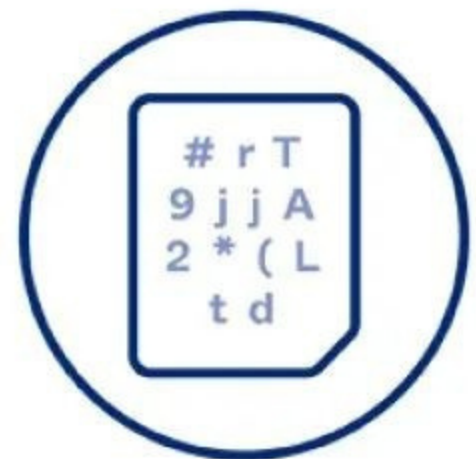
## How Hashing Algorithms Work



Plain text string



Hashing algorithm



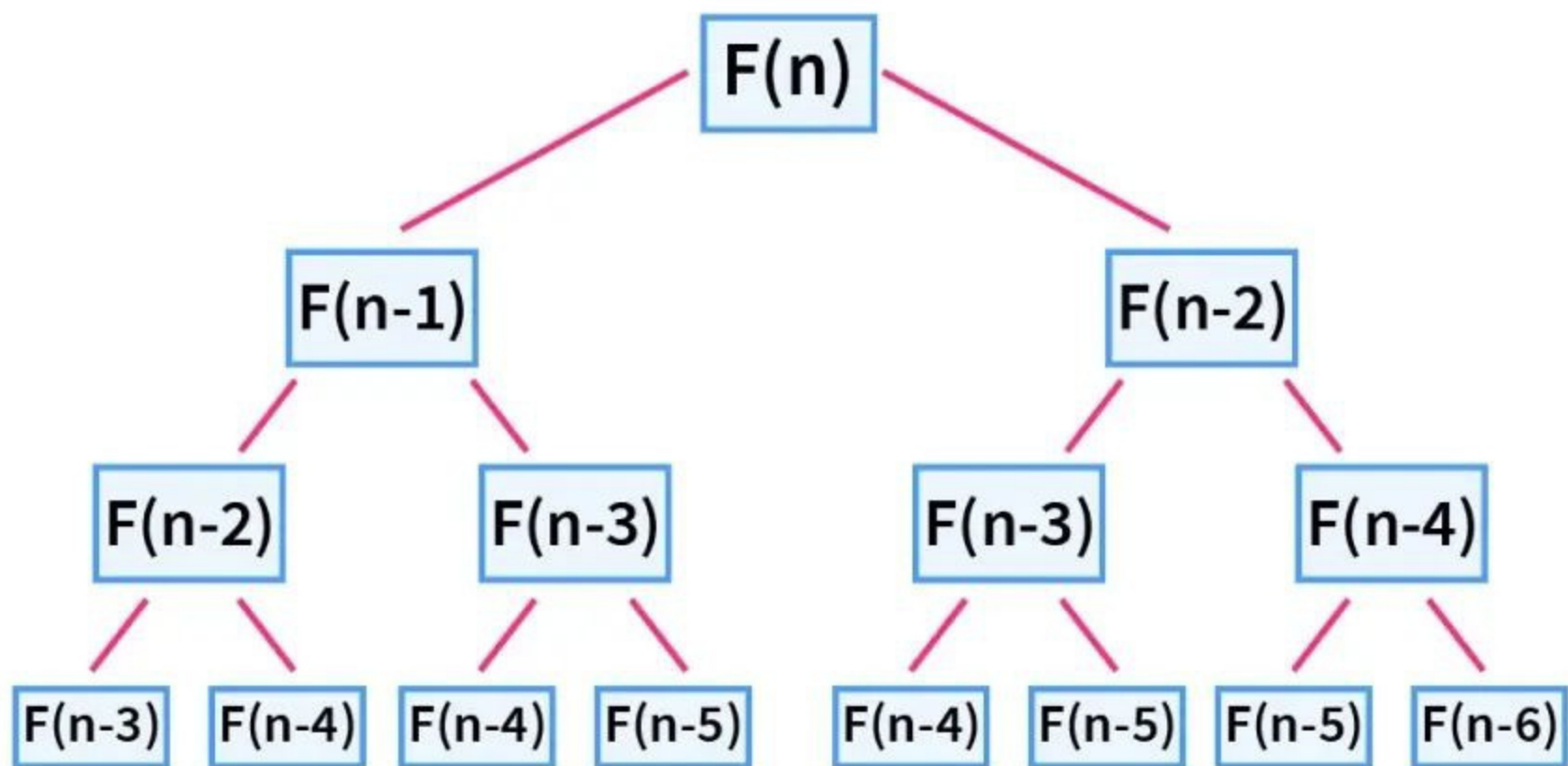
Hashed text



# Dynamic Programming

Dynamic programming is nothing but recursion with memoization

calculating and storing values that can be later accessed to solve subproblems that occur again



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