DS- First Week

1. Data Structures (DS)
    - Linear vs Non-linear DS
    - Types of DS
    - Hierarchical DS
    - Jagged Array vs 2D Array
    - Sparse Array
    - Linked List (LL)
        - Applications of Linked List
        - Singly Linked List
        - Circular Linked List
        - Doubly Linked List
        - Circular Doubly Linked List
        - Linked List Implementation
        - Sorted Single Linked List
        - Reverse a Linked List
        - Remove Duplicates from a Linked List
        - Detect Cycle/Loop in Singly Linked List
        - Get Middle Element in a Linked List
2. Algorithms
    - Binary Search
        - Find Index of Target Element Using Binary Search
        - Binary Search Using Recursion
    - Divide and Conquer Technique
    - Recursion
        - Print Fibonacci Series Under 100 Using Recursion
        - Advantages and Disadvantages of Recursion
        - Drawbacks of Recursion and Binary Search
3. Complexity Analysis
    - Time Complexity
    - Space Complexity
    - Asymptotic Analysis
        - Big-O Notation
    - Complexity Analysis
4. Memory Allocation
    - Memory Allocation
    - Types of Memory Allocation
        - Static vs Dynamic Memory Allocation
        - Contiguous and Non-Contiguous Memory Allocation

- Memory Leaks
- Garbage Collection and Its Working
- When Garbage Collector Fails

5. Miscellaneous
    - Mutable and Immutable Strings
    - Array Index Out of Bounds Exception
    - Difference Between an Array and a Linked List
    - Remove Duplicates from Array of Strings in O(n)
    - Search Two Different Elements in Array and Return Sum of Indexes if Present, Else Return -1