Linear Data Structures

Introduction to Linear Data Structures

Linear data structures organize elements sequentially, allowing traversal in a specific order.

Examples include arrays, stacks, queues, and linked lists.

Arrays

Arrays store elements in contiguous memory locations, enabling fast access via indexing.

However, they have fixed sizes, requiring resizing operations for expansion.

Stacks and Queues

Stacks follow the LIFO principle, ideal for undo operations and expression evaluation.

Queues follow FIFO logic, commonly used in scheduling and buffering mechanisms.

Linked Lists

Linked lists consist of nodes connected by pointers, allowing dynamic memory allocation.

They are flexible but require sequential traversal for element access.