What is Stack?

A stack is a linear data structure that follows LIFO (Last In, First Out) principle.

Why we use Stack?

Stack helps in managing data in a specific order where latest item must be accessed first.

Real life examples

- Undo / Redo

- Browser Back / Forward

- Calculator & Compiler (Expressions)

- Function Calls (Recursion, Call Stack)

- Balanced Parentheses / Syntax Highlighting

- Backtracking (Maze, Games, Chess)

- Memory Management

- String Reversal / Text Operations

Stack Implementation?

- Stack is a logical data structure.

- But computers don't understand "rules" directly.

- We need Array or Linked List to implement the stack in memory.

- Array-based Stack: uses continuous memory blocks, easy & fast but fixed size.

- Linked List-based Stack: uses dynamic memory allocation, flexible size, but slightly slower.

- In both cases, stack operations (push, pop, peek) follow LIFO principle.