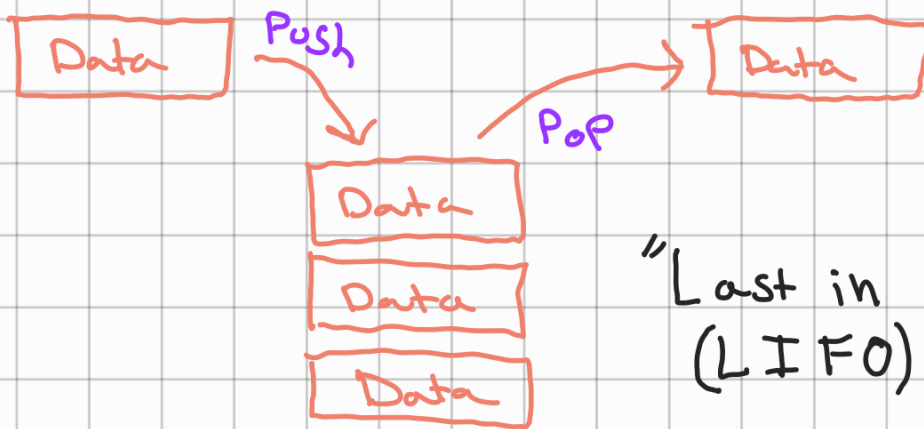


# Stack

## Stack

- A one-ended linear data structure which models a real world stack by having two Primary operations: **Push** and **Pop**



Push puts an item on the top of the stack while Pop removes the item on the top of the stack

- Stacks are used in:
  - Undo mechanisms in text editors
  - Compiler syntax checking for matching brackets and braces
  - Model a pile of books or plates
  - behind the scenes to support recursion
  - Can be used to do Depth first search (DFS) on a graph

Complexity  
(assuming stack is implemented w/ Linked List)

|           |        |
|-----------|--------|
| Pushing   | $O(1)$ |
| Popping   | $O(1)$ |
| Peeking   | $O(1)$ |
| Searching | $O(n)$ |
| Size      | $O(1)$ |

## Stack Implementations

Example using a Singly Linked List

