Section 5: Stacks

Stack

- ADT
- **LIFO** – Last In, First Out
- Ideal backing data structure is a **Linked List**

https://docs.oracle.com/en/java/javase/11/docs/api/java.base/java/util/Stack.html

Operations

- **push** – adds an item to the top of the stack
- **pop** – removes the top item on the stack
- **peek** – gets the top item on the stack without popping it
- **empty** – tests if the stack is empty
- **search** – returns the 1-based position where an object is on this stack

Time Complexity

- **O(1)** for push, pop and peek, when using a **Linked List**
- If you use an array, then push is **O(n)**, because the array may have to be resized
- If you know the maximum number of items, that will ever be on the stack, an array can be a good choice
- If memory is tight, an array might be a good choice
- **Linked List** is ideal