Stack

Stack data structure facilitates Last In First Out (LIFO) relation for the data access. There are two implementation techniques:

- Array based implementation
- Linked List based implementation

It is similar to list except that insert/delete operations are allowed only at the beginning of the list (top of the stack). The table belows shows complexities of different operations for array based Stack implementation.

Operation	Description	Complexity
$push$	Insert at the top	$O(1)$
pop	Remove the top item	$O(1)$
top	Return the top item, without altering Stack	$O(1)$
top_pop	Return and remove the top element	$O(1)$
is_empty	Return True if Stack is empty, else False	$O(1)$
$make\_empty$	Empty the Stack	$O(1)$

For Linked List implementation, $make\_empty$ operation takes $\Theta(N)$ time