

## Stack

→ Linear Data Structure

Implement data in the form of  
LIFO Format

~~the~~ LIFO → stand for last In first out

To implement stacks we have  
different strategies.

- ① Using a linked list
- ② Using a array
- ③ Using a Queue (Deque)

In some other languages like

① Java

② C++

there is a specific Data structure defined  
for stack. But in Javascript we  
have to implement stack by our own  
using { Array, linked list or Queue (Deque) }

Stack Operations that we can perform onto a Stack D.S.

- ① Push ()  $\rightarrow$  push a new element
- ② pop ()  $\rightarrow$  pop out the top element (remove)
- ③ top ()  $\rightarrow$  access the topmost element using top () ~~by~~ but it'll not remove the top element.

\* How to Read the Data from Stack

So if you want to read the data you can pop() out the top element one by one and store it somewhere else like, Array, linked list etc.

So, that how you can read the data from the stacks.

If you use Array to prepare Stack then it will have Continuous Memory allocation

and If you use Linked List then it will have Discontinuous Memory Allocation.



## Implementation of Stack Using Array, in JScript

```
class Stack {
```

```
    // private properties.
```

```
    #arr;
```

```
    constructor () {
```

```
        this.#arr = [ ];
```

```
    }
```

```
    push(element) {
```

```
        this.#arr.push(element);
```

```
    }
```

```
    pop() {
```

```
        this.#arr.pop();
```

```
    }
```

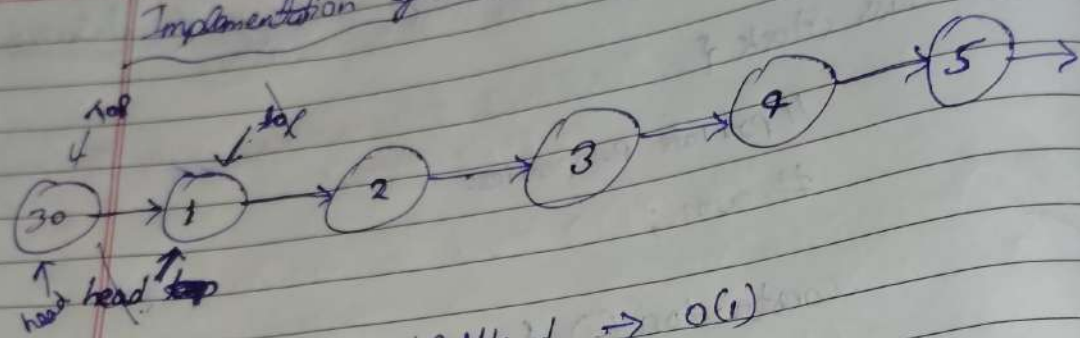
```
    top() {
```

```
        return this.#arr[this.#arr.length-1];
```

```
    }
```

```
}
```

# Implementation of Stack using Linked List in Javascript



push  $\rightarrow$  add At Head  $\rightarrow O(1)$

pop  $\rightarrow$  Remove At Head  $\rightarrow O(1)$

if you do  $\rightarrow s.push(30)$

## Code Implementation of Stack using Linked List

```
class Stack() {
    #ll; // private Linked List
    constructor() {
        this.#ll = new MyLinkedList();
    }
    push(element) {
        this.#ll.addAtHead(element);
    }
    pop() {
        this.#ll.deleteAtHead();
    }
    top() {
        return this.#ll.head.data;
    }
}
```

## Questions On Linked List at LeetCode

- ① → 2390. Removing Stars From a String
- ② 735. Asteroid Collision