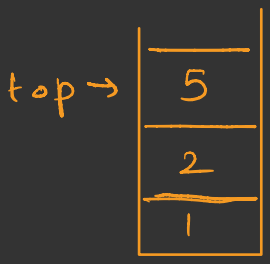
STACK

↳ Linear Data Structure

↳ LIFO (Last In First Out)



eg 1) Function / Call stack

2) Undo / Redo

3) Forward / Back in a browser

Functions of Stack

1. Push → add at top
2. Pop → remove top
3. Peek → returns top
4. size → return Size of stack
5. IsEmpty → returns s==0;

ArrayList

addFirst O(n)

addLast O(1)

removeFirst O(n)

removeLast O(1)

```
class Stack {
  ArrayList<Integer> list;

  void push(int val) {
    list.addLast(val);
  }

  int pop() {
    return list.removeLast();
  }

  int peek() {
    return list.get(list.size()-1);
  }
}
```

list

Linked List

add First O(1)

add Last O(n)

if tail O(1)

remove First O(1)

remove Last O(n)

Array


```
Class Stack {
    int arr[];
    int top;    // -1

p   void push(int val) {
        arr[++top] = val;
    }

p   int pop() {
        return arr[top--];
    }
}
```

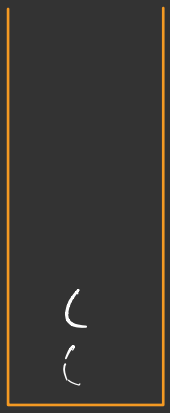
push(3)
push(5)
push(9)
pop()
peek()


```
size()
return top+1;
```

Ques Duplicate brackets

((a + b) + c) // false

(((a + b)) + c) // true



Ques Balanced Bracket

{ a + (b + c) + [(d + e) + {}] } // true

{ ( ] }

{ (})

} {

[{] {

false