0	ate	
P	age	No.

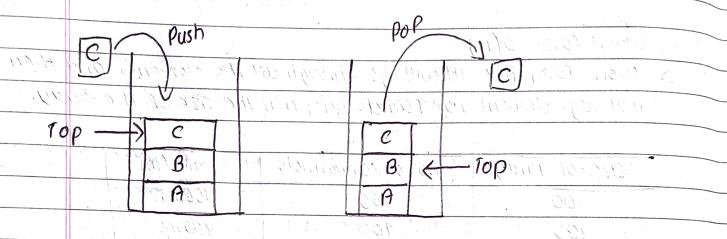
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•		
Starl	0-14	and the second
Stack	vara	Struckive

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- Stack is a linear Data structure that Pollows a partiewar orange in which the operations are performed.

Me order may be a LIFO (last In First Out) or FILO (First in Last Out)

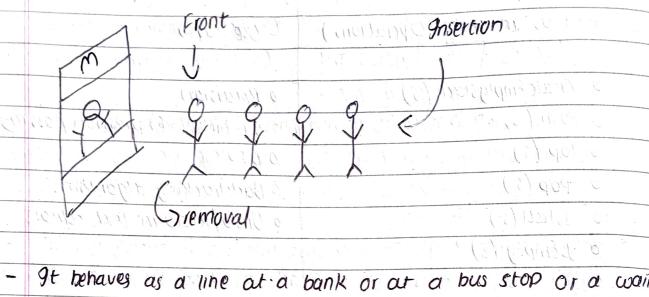


- 9t behaves like a stack of places, where the cast place added is the first one to be removed. Think of it as this way.
 - o Pushing an element onto the stack is like adding a new place on top
 - o Popping an element removes the place from the stack
- Stack is also known as a push down list.

inne ins !!

- In an empty stack: top=-1

		1
_	Stack as an ADT: (Operations)	- Use cases
	o Create Empty Stack (5)	o Recarsion
	o Push (S,x)	o Arithmetic Expression paising
	o rop (s)	ODFS
	o Pop (5)	o Backtracking algorithms
	o Isfall(s)	o Undo Redo in text editors
	o gsempty (s)	
. "	16 19 423 July 18 18 18 18 18 18	to to an on, who and the
J	Internally it is an array & it extensi	ods veetor elass
_	Time Complexity: O(1) (for, Access, Search, Insertion Deletion) [Best Case]	
·-\	Time Complexity: O(1) (Por, Insertion and Deletion) Files (Com)	
	Time Complexity: O(1) (Por, Inseltion and Deletion) [Worst Case]	
1.4	Average Time Complexity:	
		Same as worst case
_	Space Complexity: O(n)	
	. 1	e e daga siin ang fisphalis
_	Stack is a class in JAVA	
	in the same of the in	1 0 1 0 8 6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	Odecle Data Structure	The state of the s
	· Salan Sala	The state of the s
-	avend is a dinear deva sinueture	that Pollows a particular order
	in which the operations are p	
-	The order it shollows is FIFE	
	enterestation of the contraction	
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- 9t behaves as a line at a bank or at a bus stop or a waiting list of students are real like examples of a queue,
 - o Adding a person at the end of the line vis you known as
 - as dequeul.

		- Spare (outrading) 318895 -
_	Queue as an AOT: (operations)	- Use cases
		- Mark is a class to JAVA
0	make Empty (q)	o Cpu scheduling
0	Enqueue (q, x)	09/0 BUPPPIS / OS
0	Dequeue (q)	o Joh Scheduling
0	\$ Fall (9)!	
Ø	Is empty (a) some so	o Message Queues) Networing
0	Traveise (q)!	OBFSCOROR TO PORCE SAN
O	peek (q):	o Task Scheewing
		o Elevator Systems
		o Printer Queue

Store



_	Internally it is a linear area	ay & it is an interface in JAVA		
_	Time complexity: O(1) (Poi, Access, Securch, Insertion, Deletion) (Best Case			
	Time complexity: O(N) (Por: Access, search), O(1) (For: Ansertion, Deletion			
	space complexity . O(N)			
	Deque Data smuturo			
	THE STORAGE THE COURSE			
`. <u> </u>	A deque is a linear double shouture that allows insertion and			
÷	delexion from the front and the rear ends			
	Unlike a regular queue or stack, which restrictions (restrict)			
≓ r	operations to one end			
*				
-	gnsert First V	S gnsert lart		
-		Delete last		
-	Delete First of	Delde am		
,				
-	Supported operations	- use lases		
=	3614			
	o push-front (n)	o Browser history navigation		
	o pun-back (17)	o Task scheduling systems		
-	o pop-front(x)	o Sliding window algorithms		
	o pop-back (n)	o Palindrome cheeking		
	o peek-hont(x)			
	o peck-back (2)	In an empty Queue Top =-1		
	o is_empty(x)			
	o sile()			

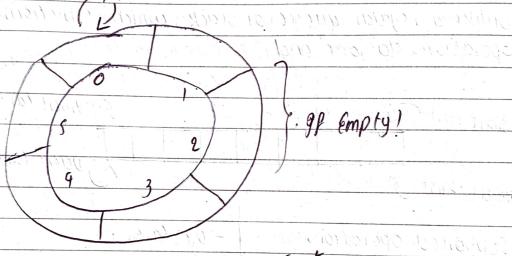
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- Space complexity: O(N) h & results have the publication
- Time complexity: O(1) [Best & worst cove] O(N)
- Deque is a more Herible verson of a queece way no

Circular queue

- Circular Queue is a dinear data structule that connects the end of the queue back to the pront to make use of perficient space.

Front Lend



Gnd 3 6 After Some Operations

Gnd Frond End

- Operations: (similar to normal Queue)
- Time complexity: O(1)
- Space Complexity: O(N)
- How it works:
 - o rear = (rear +1) + size -> Circular increment
 - o front = (front +1) + size => Circular inciement
 o (rear +1) + size == front (if fall)

 - o O Pront = = -1 (if empty)
- Eppicient space usage