

COP 3502 9/24/21

① Trying to organize group links but it's challenging.

② Moscow Sept 30 - Oct 6

Programming Team WF 2020

Fri - Quiz (9/30) 10/1

Mon - Fiona will teach

Wed - ? (Sean, Travis, Sarah)

QUIZ

SUB

SUB

③ Stacks

9:30

Abstract Data Type

- How it's stored isn't fully specified

- Must adhere to certain behaviors.



books



cafeteria plates

push item onto top

pop item from top

Last
= "First In, First Out"

(FIFO)

L

function call stack is a stack!

Goal is to push, pop in $O(1)$ time.

Two Different Stack Implementations

- (1) Linked List (Insert Front, Delete Front)
- (2) Array

- 1) push(7)
- 2) push(3)
- 3) x = pop()
- 4) push(9)
- 5) y = pop()
- 6) z = pop()

~~3, 9~~
7

x [3] y [9] z [7]



Stack Function

size
empty
full

~~front~~ top
returns what is
at the ~~front~~ top
of
the
stack but doesn't
pop it!

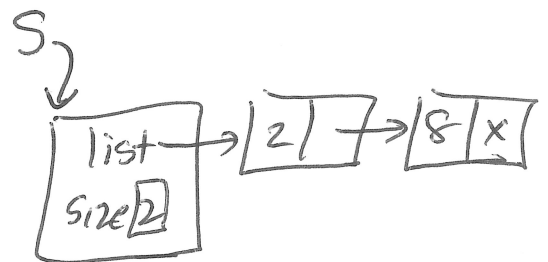
Data Struct

node* from before

```
typedef struct stack {
```

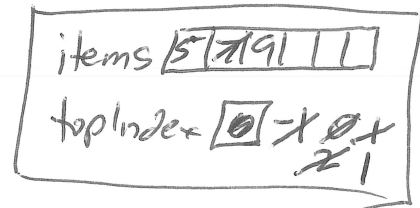
```
    node* list;  
    int size;
```

```
} stack;
```



Array Implementation

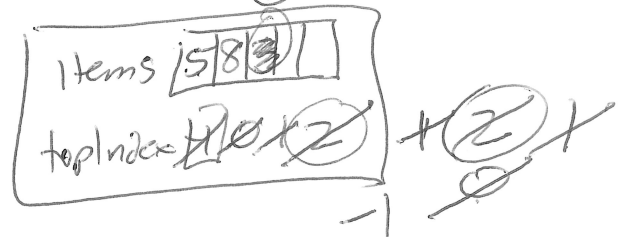
```
typedef struct stackArray {
    int items[MAX];
    int topIndex;
} StackArray;
```



① push add item to index top+1
increment top.

② pop save the value at index top.
decrement top.

Start top at -1 (current top of stack)



push(5)
push(8)
push(3)
x = pop() x [3]
push(7)
y = pop() y [7]
z = pop() z [8]
w = pop() w [5]

