



#25
DAY

C++ COMPLETE BOOTCAMP

INSPIRE CLUB, MANIT BHOPAL

D
BRINGS

C++

Complete
Bootcamp



Learn How To Apply Problem Solving Skills

Hello CPPBuddies

Day No. 25

Welcome
To
C++ COMPLETE BOOTCAMP
Your Guide To A Solid Foundation in C++
Let us begin

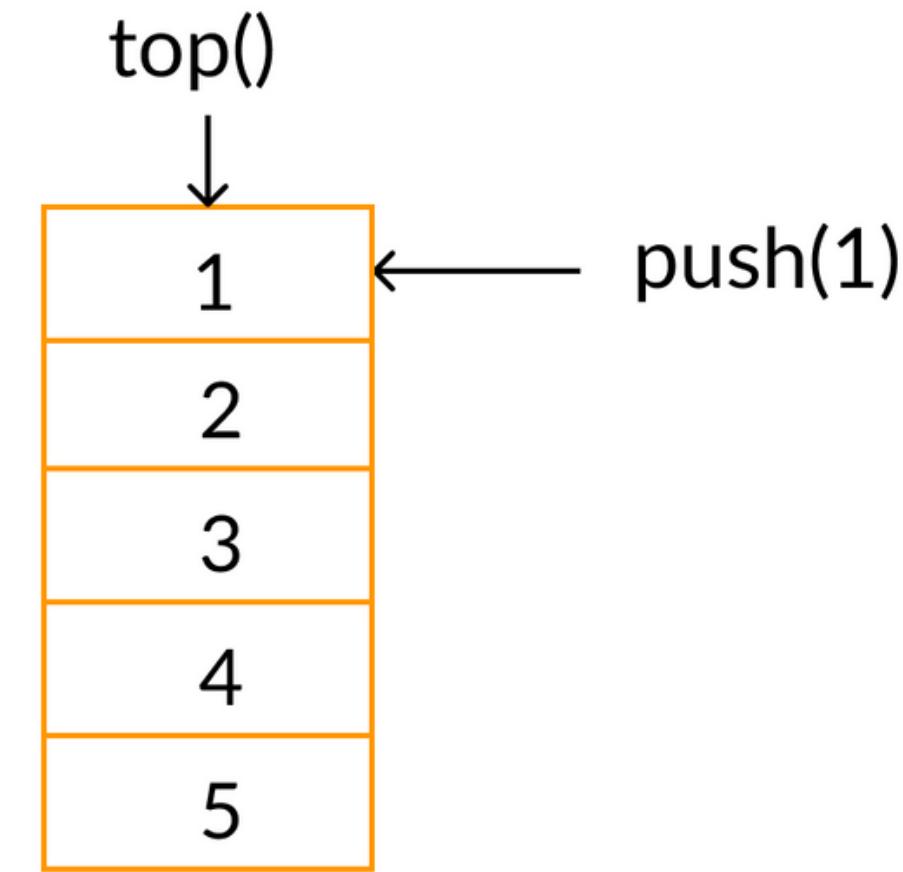
Stack

Design A Stack Class

Stack is a linear data structure which follows a particular order in which the operations are performed



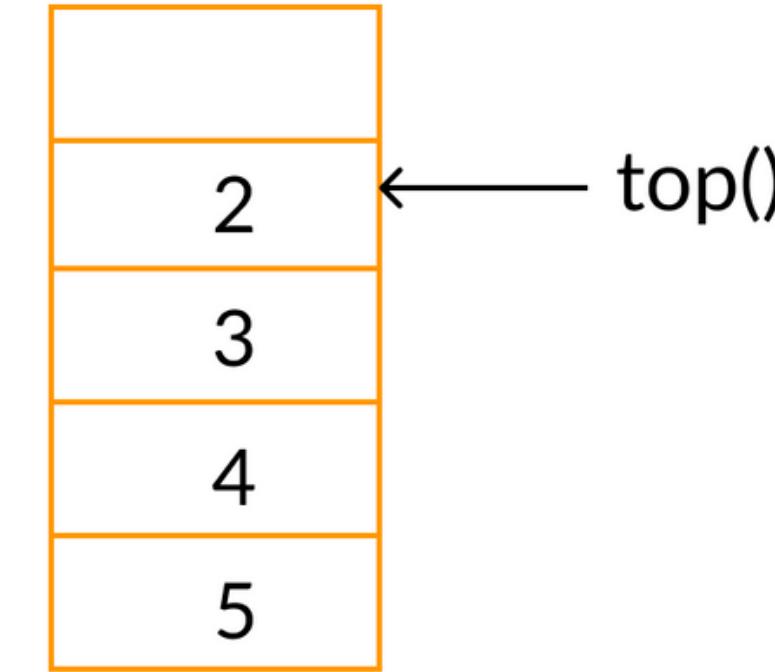
top()



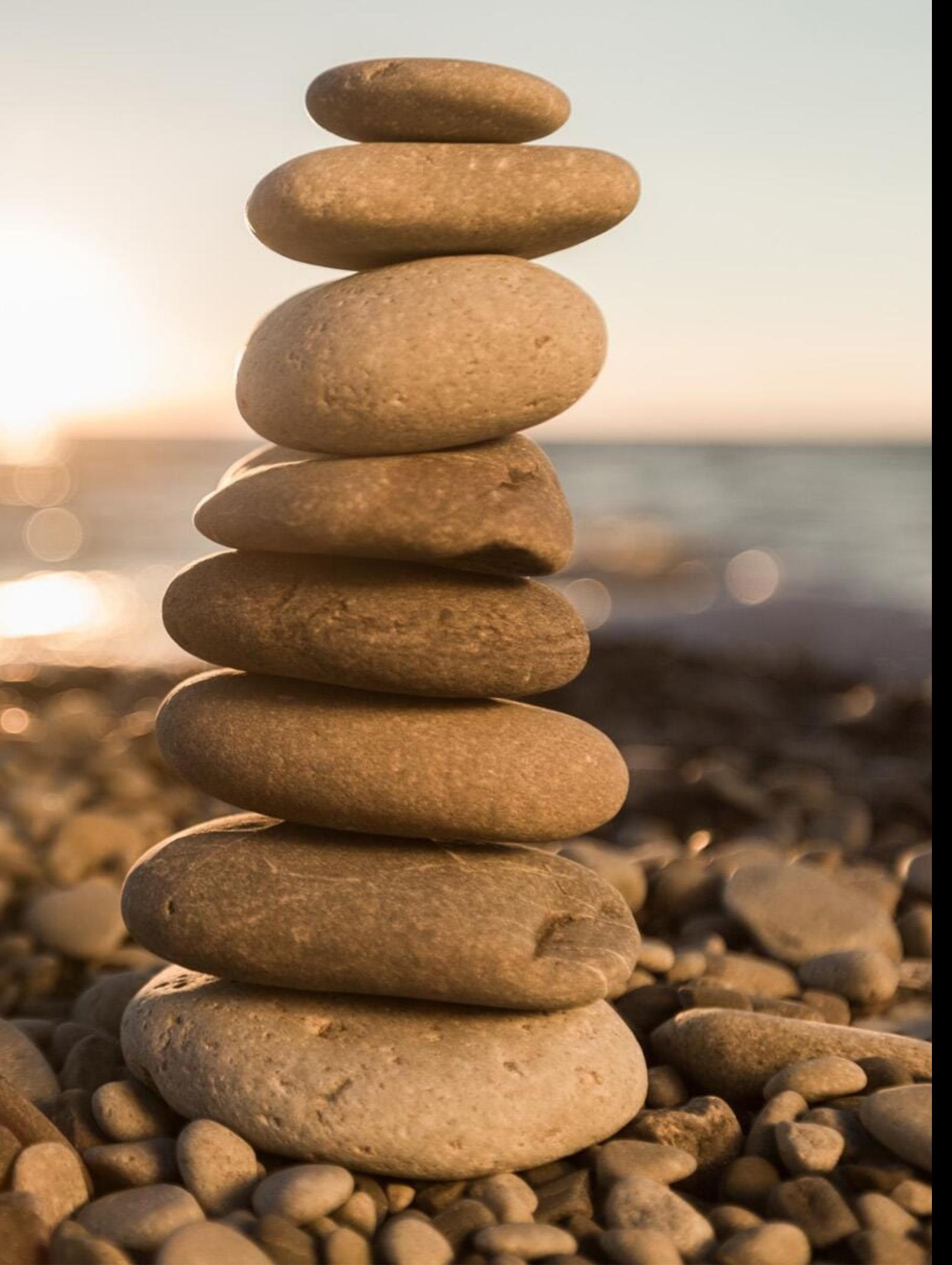
top()

push(1)

pop()

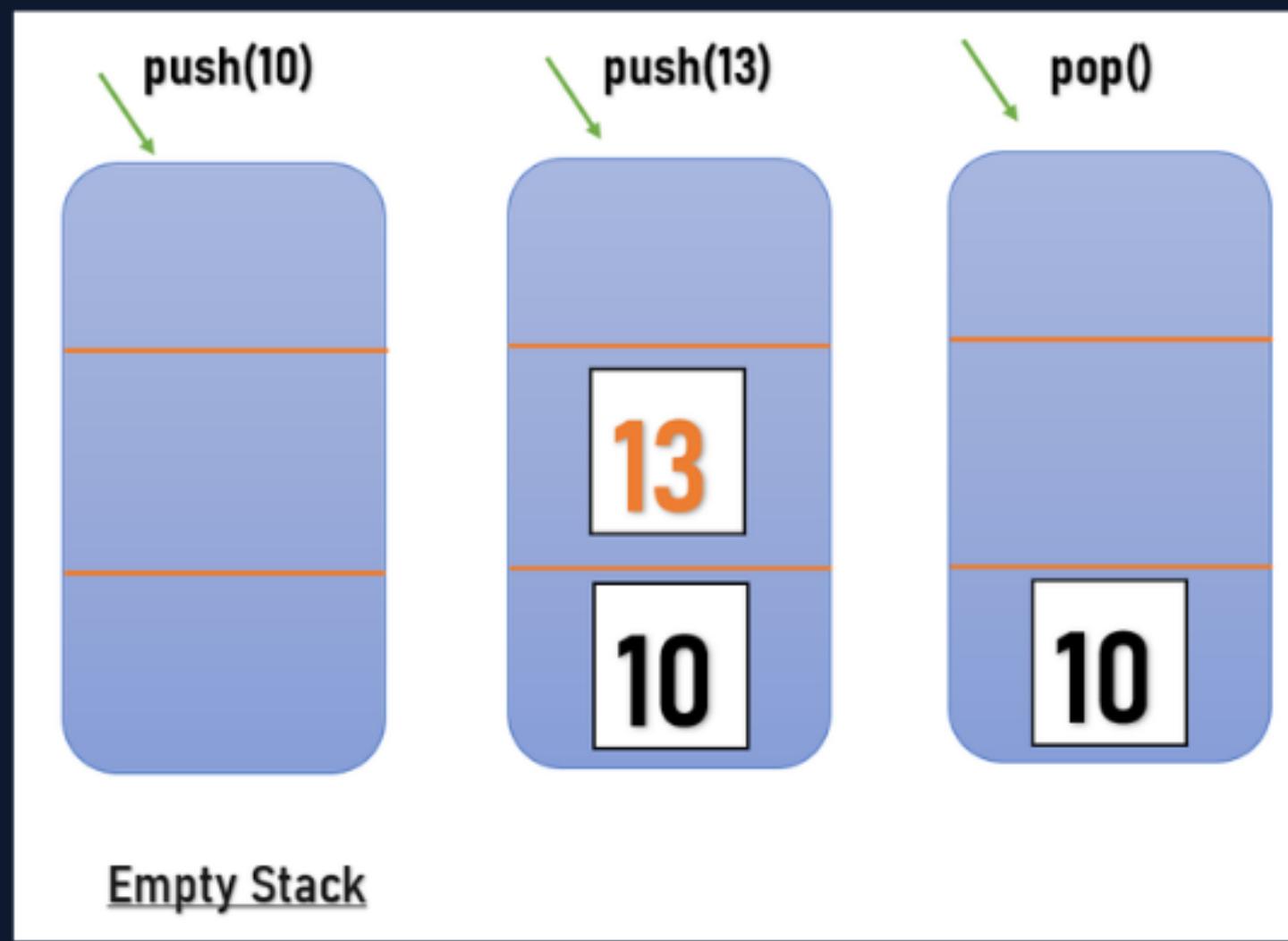


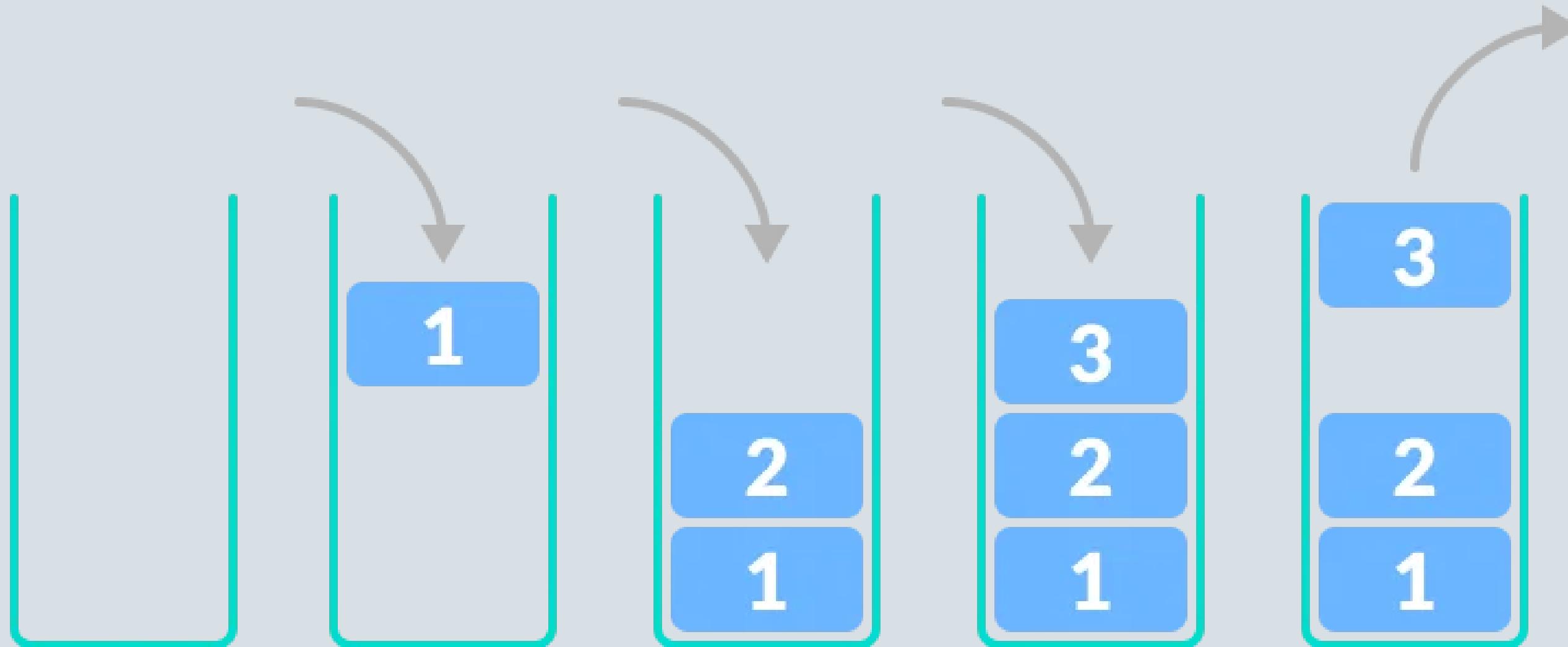
top()



Stacks

- Stack is a linear data structure which follows a particular order for the insertion and manipulation of data.
- Stack uses Last-In-First-Out (LIFO) phenomena to input the elements into the stack.





**empty
stack**

push

push

push

pop



DEMO

Design Stack

Recursion

What is Recursion?

The process in which a function calls itself **directly** or **indirectly** is called **recursion** and the corresponding function is called as **recursive function**.

Using recursive algorithm, certain problems can be solved quite easily.

```
void recurse() {  
    ...  
    recurse();  
    ...  
}
```

recursive
call

```
int main() {  
    ...  
    recurse();  
    ...  
}
```

function
call

A Mathematical Interpretation

of recursion

Let us consider a problem that a programmer have to determine the **sum of first n natural numbers**, there are several ways of doing that but the simplest approach is simply add the numbers starting from 1 to n

Approach(1) - Simply adding one by one

$$f(n) = 1 + 2 + 3 + \dots + n$$

approach(2) - Recursive adding

$$f(n) = 1 \quad n=1$$

$$f(n) = n + f(n-1) \quad n>1$$

Demo Example

Write a program to find the
factorial of a number

Let us now **practice**

a few more problems

Count Digits

Write a program to count the
number of digits of a **number**

23574 => 5

135792 => 6



THANK YOU



keep calm,
wear mask,
and
study hard



whoami

AKASH MAJI
[TCS DIGITAL]
Your Mentor