

The background is a dark navy blue. In the corners, there are abstract, overlapping geometric shapes in various colors: cyan, lime green, magenta, orange, and red. These shapes are layered and angled, creating a sense of depth and movement.

# Stacks in Java

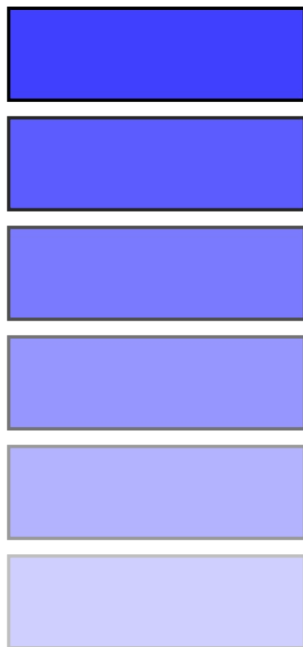
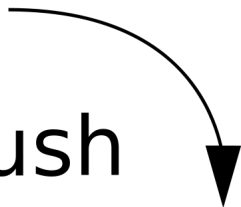
Leap@CMU 2017

# What is a stack?

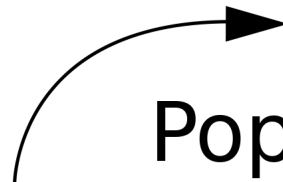
- Like an ArrayList
- Except data storage and retrieval is more nuanced
- LIFO: Last In First Out



Push



Pop



# Applications of Stacks

## Arithmetic

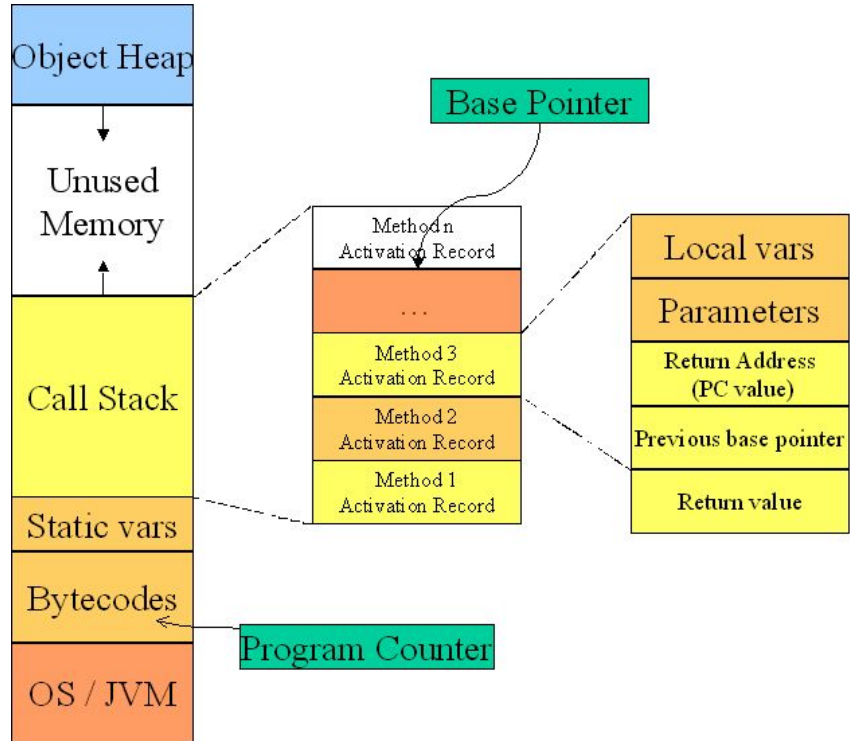
- › Infix
- › Postfix
- › Prefix

## Recursive algorithms

- › Maze-solving algorithms
- › Radix sort

## Memory Management

- › =>



# In Java

Use the Stack object provided to you in `java.util.Stack`;

```
Stack<Integer> lifo = new Stack<>();
```

```
lifo.push(Element e); //adds elements to the  
stack
```

```
lifo.pop(); //removes last elements from stack
```

Consult the API for more detailed method descriptions.

Infix	Postfix	Prefix	Notes
$A * B + C / D$	$AB * CD / +$	$+ * AB / CD$	multiply A and B, divide C by D, add the results
$A * (B + C) / D$	$ABC + * D /$	$/ * A + BCD$	add B and C, multiply by A, divide by D
$A * (B + C / D)$	$ABCD / + *$	$* A + B / CD$	divide C by D, add B, multiply by A

# Project requirements

Make an algorithm to evaluate:

- > Infix
- > Postfix
- > Prefix

Convert:

- > Infix to postfix
- > Infix to prefix

Check this website out for more info:

<https://goo.gl/bQe5TU>