# Stacks

**Dan Bunker**

http://www.linkedin.com/in/bunkerdan

# What Is a Stack?

Big O ?

Push ← O(1)

Pop → O(1)

Search ← O(n)

Access ↑ O(n)

# Setup



https://spring.io/tools

https://www.jetbrains.com/idea/

https://netbeans.org/

# Demo

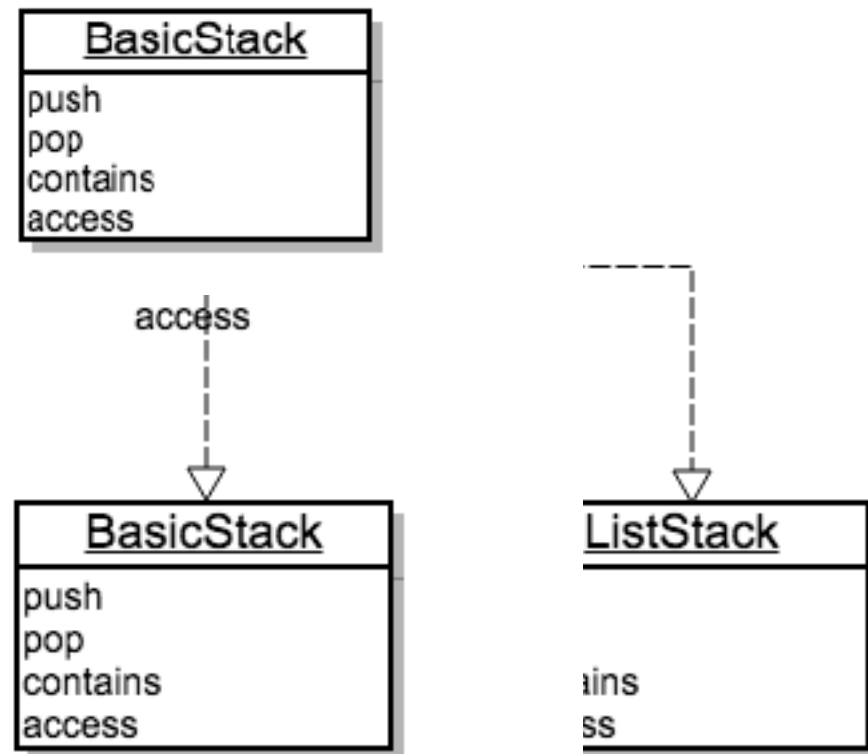**Create stack class**

**Underlying stack structure**

# Demo

**Create insert/delete methods (push/pop)**

**Create contains/access methods (search)**

# Card Stack Testing

# Where to Go from Here

**BasicStack**

push
pop
contains
access

*access*

**BasicStack**

push
pop
contains
access

**ListStack**

ains
ss

Stack stack = new BasicStack();
stack.push("Hello");
Object item = stack.pop();

## Homework

- Create a Stack interface
- Make the BasicStack implement it
- Change the card test code to use the Stack interface
- Create a new ListStack using ArrayList as the underlying structure
- Change the card test code to use the ListStack

# Core Java Stacks

## Stack<E>

- https://docs.oracle.com/javase/8/docs/api/java/util/Stack.html

- Uses Vector as the underlying stack structure

## Deque<E>

- https://docs.oracle.com/javase/8/docs/api/java/util/Deque.html

- Various implementations like ArrayDeque

# Summary

What is a stack?

Built stack class and underlying structure

Insert and delete with push and pop

Contains and access methods

Improving the basic stack

Java Stack and Deque