

CIS 385

Lab Chapter 3 Stacks

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by: David Abraham

Problem Statement: Building Stacks using arrays while observing how the algorithm behaves based on various inputs such as custom instances. Furthermore building a Drop Out Stack based on the operations implemented in the initial ArrayStack.

1. Several elements pushed() to a domain then popped():

```
Problems @ Javadoc Declaration Console History
<terminated> GenericTest (1) [Java Application] /Library/Java/JavaVirtualMachines/jdk1.8.0_144.jdk/Contents/Home/bin/java (Sep 25, 2017, 2:05:46 PM)
TOP -> Retina Display
      Tim
      iPad
      iMac
      Macbook
      iPod
BOT -> iPhone
```

2. Abstract classes created with correct objects pushed:

```
Problems @ Javadoc Declaration Console History
<terminated> GenericTest (1) [Java Application] /Library/Java/JavaVirtualMachines/jdk1.8.0_144.jdk/Contents/Home/bin/java (Sep 25, 2017, 2:05:46 PM)

TOP -> cis385.ch3.Madrid@677327b6
BOT -> cis385.ch3.Madrid@14ae5a5

TOP -> cis385.ch3.Barcelona@7f31245a
BOT -> cis385.ch3.Barcelona@6d6f6e28
```

Error message given when wrong objects pushed to abstract class:

```
Problems @ Javadoc Declaration Console History
<terminated> GenericTest (1) [Java Application] /Library/Java/JavaVirtualMachines/jdk1.8.0_144.jdk/Contents/Home/bin/java (Sep 18, 2017, 12:52:11 PM)
Exception in thread "main" java.lang.Error: Unresolved compilation problem:
  The method push(Madrid) in the type ArrayStack<Madrid> is not applicable for the arguments (Barcelona)

  at cis385.ch3.GenericTest.main(GenericTest.java:32)
```

3. Several elements pushed into Drop Out Stack

```
Problems @ Javadoc Declaration Console History
<terminated> GenericTest (1) [Java Application] /Library/Java/JavaVirtualMachines/jdk1.8.0_144.jdk/Contents/Home/bin/java (Sep 25, 2017, 2:10:39 PM)
TOP -> Boateng
      Thiago
      Ribery
      Robben
      Neueur
```

ArrayStack Junit Test Transcript:

```
<?xml version="1.0" encoding="UTF-8"?><testrun name="ArrayStackTest"
project="LCH03_Stacks_Abraham" tests="5" started="5" failures="0" errors="0" ignored="0">
  <testsuite name="cis385.ch3.ArrayStackTest" time="0.001">
    <testcase name="popTest" classname="cis385.ch3.ArrayStackTest" time="0.0"/>
    <testcase name="isEmptyTest" classname="cis385.ch3.ArrayStackTest" time="0.0"/>
    <testcase name="peekTest" classname="cis385.ch3.ArrayStackTest" time="0.0"/>
    <testcase name="extendCapacityTest" classname="cis385.ch3.ArrayStackTest" time="0.0"/>
    <testcase name="pushTest" classname="cis385.ch3.ArrayStackTest" time="0.0"/>
  </testsuite>
</testrun>
```

DropOutStack Junit Test Transcript:

```
<?xml version="1.0" encoding="UTF-8"?><testrun name="DropOutStackTest"
project="LCH03_Stacks_Abraham" tests="5" started="5" failures="0" errors="0" ignored="0">
  <testsuite name="cis385.ch3.DropOutStackTest" time="0.0">
    <testcase name="dropOutTest" classname="cis385.ch3.DropOutStackTest" time="0.0"/>
    <testcase name="popTest" classname="cis385.ch3.DropOutStackTest" time="0.0"/>
    <testcase name="isEmptyTest" classname="cis385.ch3.DropOutStackTest" time="0.0"/>
    <testcase name="peekTest" classname="cis385.ch3.DropOutStackTest" time="0.0"/>
    <testcase name="sizeTest" classname="cis385.ch3.DropOutStackTest" time="0.0"/>
  </testsuite>
</testrun>
```

Code snippets for push and pop in Drop Out Stack:

push():

```
public void push(T element) {
    top = top % stack.length;
    stack[top] = element;
    top++;
    if (count != stack.length)
        count++;
}
```

pop():

```
public T pop() throws EmptyCollectionException {
    if (isEmpty())
        throw new EmptyCollectionException("Stack");

    top = (top + stack.length - 1) % stack.length;
    T result = stack[top];
    stack[top] = null;
    count--;
    return result;
}
```

Collaboration:

I worked with Noah Martin during the first aspects of the lab, namely, setting up the workspace by downloading files from Canvas and setting them up for work in Eclipse.