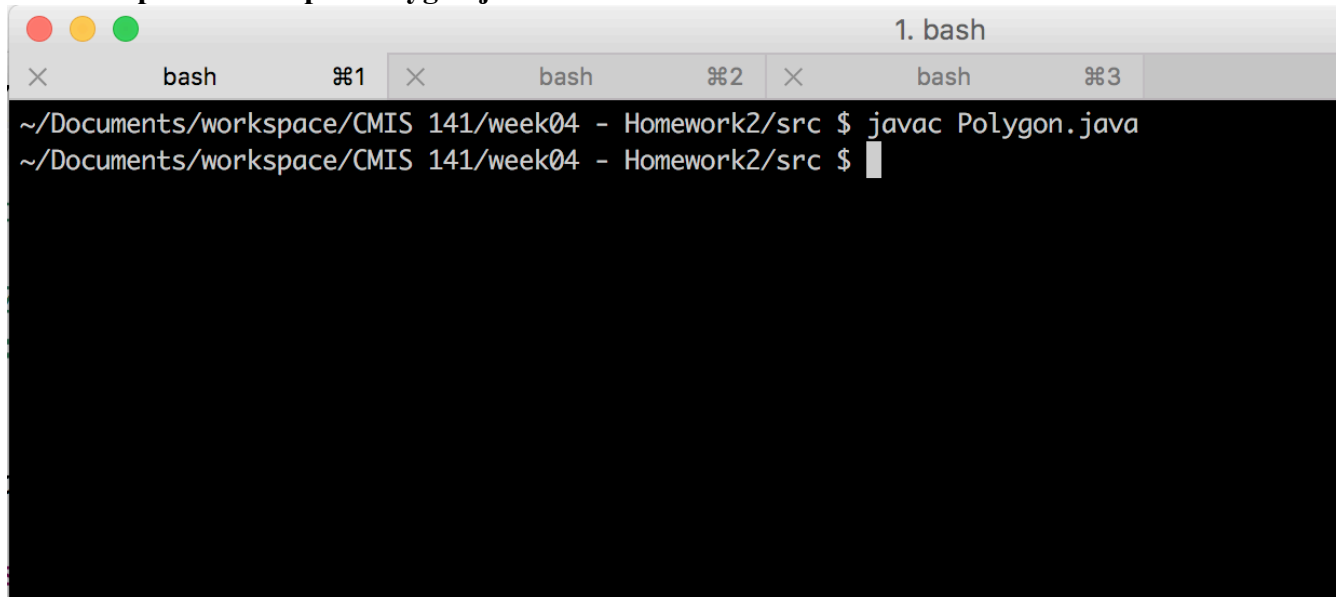


## Nicole Donnelly Homework 2

### Screen capture - Compile Polygon.java



The screenshot shows a terminal window with three tabs labeled 'bash', 'bash', and 'bash'. The first tab is active. The terminal text shows the command 'javac Polygon.java' being executed in the directory '~/Documents/workspace/CMIS 141/week04 - Homework2/src'. The command prompt is '\$'.

```
~/Documents/workspace/CMIS 141/week04 - Homework2/src $ javac Polygon.java
~/Documents/workspace/CMIS 141/week04 - Homework2/src $
```

### Output from TestPolygon.java Screenshot from Eclipse (next page)

TestPolygon.java instantiates 5 polygons, adds them to a Polygon list, then iterates through each one demonstrating the 6 methods in the class for each Polygon.

java.util.ArrayList and java.util.List are used to create the Polygon list as follows:

```
List<Polygon> polygonList = new ArrayList<Polygon>();
```

Polygons are instantiated then added to the list as follows:

```
Polygon p1 = new Polygon(3, 2.0, 1.0, 1.0);
polygonList.add(p1);
```

A for loop contains print statements that show the output for each method. Each polygon is accessed in the for loop with the following statement that calls each polygon created in the list above:

```
for (Polygon currentPoly : polygonList)
```

Input values in the test cases and in the “DemonstratePolygon” section below illustrate the class using a range of values and validating the data passed to the constructor.

Polygon.java DemonstratePolygon.java TestPolygon.java

```
11 public static void main(String[] args) {  
12  
13     // construct 5 test polvaons
```

Problems Javadoc Declaration Console Git Staging

<terminated> TestPolygon [Java Application] /Library/Java/JavaVirtualMachines/jdk1.8.0\_91.jdk/Contents/Home/bin/ja

```
toString(): (numSides=3, sideLength=2.0, xCoord=1.0, yCoord=1.0)  
getNumSides(): 3  
getSideLength(): 2.0  
getXCoord(): 1.0  
getYCoord(): 1.0  
getPerimeter(): 6.0
```

```
toString(): (numSides=4, sideLength=5.0, xCoord=0.0, yCoord=0.0)  
getNumSides(): 4  
getSideLength(): 5.0  
getXCoord(): 0.0  
getYCoord(): 0.0  
getPerimeter(): 20.0
```

```
toString(): (numSides=4, sideLength=3.0, xCoord=0.0789, yCoord=-1.0)  
getNumSides(): 4  
getSideLength(): 3.0  
getXCoord(): 0.0789  
getYCoord(): -1.0  
getPerimeter(): 12.0
```

```
toString(): (numSides=10, sideLength=7.9, xCoord=0.0, yCoord=0.0)  
getNumSides(): 10  
getSideLength(): 7.9  
getXCoord(): 0.0  
getYCoord(): 0.0  
getPerimeter(): 79.0
```

```
toString(): (numSides=5, sideLength=8.2, xCoord=-2.07687, yCoord=1.06798)  
getNumSides(): 5  
getSideLength(): 8.2  
getXCoord(): -2.07687  
getYCoord(): 1.06798  
getPerimeter(): 41.0
```

## Test Case Table

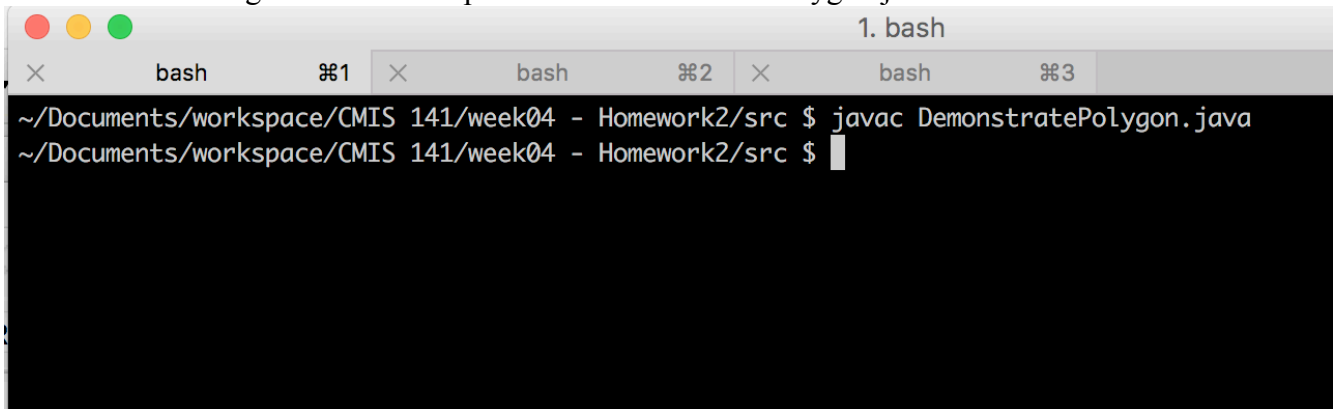
Input	Expected Output	Actual Output	Pass?
Polygon p1 = <b>new</b> Polygon(3, 2.0, 1.0, 1.0);	toString(): (numSides=3, sideLength=2.0, xCoord=1.0, yCoord=1.0) getNumSides(): 3 getSideLength(): 2.0 getXCoord(): 1.0 getYCoord(): 1.0 getPerimeter(): 6.0	toString(): (numSides=3, sideLength=2.0, xCoord=1.0, yCoord=1.0) getNumSides(): 3 getSideLength(): 2.0 getXCoord(): 1.0 getYCoord(): 1.0 getPerimeter(): 6.0	Yes
Polygon p2 = <b>new</b> Polygon();	toString(): (numSides=4, sideLength=5.0, xCoord=0.0, yCoord=0.0) getNumSides(): 4 getSideLength(): 5.0 getXCoord(): 0.0 getYCoord(): 0.0 getPerimeter(): 20.0	toString(): (numSides=4, sideLength=5.0, xCoord=0.0, yCoord=0.0) getNumSides(): 4 getSideLength(): 5.0 getXCoord(): 0.0 getYCoord(): 0.0 getPerimeter(): 20.0	Yes
Polygon p3 = <b>new</b> Polygon(4, 3.0, 0.0789, -1.0);	toString(): (numSides=4, sideLength=3.0, xCoord=0.0789, yCoord=-1.0) getNumSides(): 4 getSideLength(): 3.0 getXCoord(): 0.0789 getYCoord(): -1.0 getPerimeter(): 12.0	toString(): (numSides=4, sideLength=3.0, xCoord=0.0789, yCoord=-1.0) getNumSides(): 4 getSideLength(): 3.0 getXCoord(): 0.0789 getYCoord(): -1.0 getPerimeter(): 12.0	Yes
Polygon p4 = <b>new</b> Polygon(10, 7.9, 0.0, 0.0);	toString(): (numSides=10, sideLength=7.9, xCoord=0.0, yCoord=0.0) getNumSides(): 10 getSideLength(): 7.9 getXCoord(): 0.0 getYCoord(): 0.0 getPerimeter(): 79.0	toString(): (numSides=10, sideLength=7.9, xCoord=0.0, yCoord=0.0) getNumSides(): 10 getSideLength(): 7.9 getXCoord(): 0.0 getYCoord(): 0.0 getPerimeter(): 79.0	Yes
Polygon p5 = <b>new</b> Polygon(5, 8.2, -2.07687, 1.06798);	toString(): (numSides=5, sideLength=8.2, xCoord=-2.07687, yCoord=1.06798) getNumSides(): 5 getSideLength(): 8.2 getXCoord(): -2.07687 getYCoord(): 1.06798 getPerimeter(): 41.0	toString(): (numSides=5, sideLength=8.2, xCoord=- 2.07687, yCoord=1.06798) getNumSides(): 5 getSideLength(): 8.2 getXCoord(): -2.07687 getYCoord(): 1.06798 getPerimeter(): 41.0	Yes

## DemoPolygon.java

I wrote code that reads in user input to instantiate a polygon and demonstrates the six methods for the

class. The screenshots below also shows the input validation I added to the constructor using `java.lang.IllegalArgumentException`.

Screenshot showing successful compilation of `DemonstratePolygon.java`



```
1. bash
× bash %1 × bash %2 × bash %3
~/Documents/workspace/CMIS 141/week04 - Homework2/src $ javac DemonstratePolygon.java
~/Documents/workspace/CMIS 141/week04 - Homework2/src $
```

Screenshot showing `IllegalArgumentException` when `numSides < 3`



```
~/Documents/workspace/CMIS 141/week04 - Homework2/src $ java DemonstratePolygon
Demonstrating the Polygon class with the default values.

toString(): (numSides=4, sideLength=5.0, xCoord=0.0, yCoord=0.0)
getNumSides(): 4
getSideLength(): 5.0
getXCoord(): 0.0
getYCoord(): 0.0
getPerimeter(): 20.0

Enter the requested values to create a polygon.
Number of Sides (>=3): 0
Length of Sides (>0): 5
X Coordinate value: 234.43
Y Coordinate value: -12321.2321
Exception in thread "main" java.lang.IllegalArgumentException: A polygon must have 3 or more sides.
    at Polygon.<init>(Polygon.java:27)
    at DemonstratePolygon.main(DemonstratePolygon.java:52)
~/Documents/workspace/CMIS 141/week04 - Homework2/src $
```

## Screenshots showing IllegalArgumentException when sideLength <=0

```
× bash %1 × bash %2 × bash %3
~/Documents/workspace/CMIS 141/week04 - Homework2/src $ java DemonstratePolygon
Demonstrating the Polygon class with the default values.

toString(): (numSides=4, sideLength=5.0, xCoord=0.0, yCoord=0.0)
getNumSides(): 4
getSideLength(): 5.0
getXCoord(): 0.0
getYCoord(): 0.0
getPerimeter(): 20.0

Enter the requested values to create a polygon.
Number of Sides (>=3): 6
Length of Sides (>0): 0
X Coordinate value: 3443.33
Y Coordinate value: -2
Exception in thread "main" java.lang.IllegalArgumentException: Side length must be greater than 0.
    at Polygon.<init>(Polygon.java:33)
    at DemonstratePolygon.main(DemonstratePolygon.java:52)
~/Documents/workspace/CMIS 141/week04 - Homework2/src $
```

```
× bash %1 × bash %2 × bash %3
~/Documents/workspace/CMIS 141/week04 - Homework2/src $ java DemonstratePolygon
Demonstrating the Polygon class with the default values.

toString(): (numSides=4, sideLength=5.0, xCoord=0.0, yCoord=0.0)
getNumSides(): 4
getSideLength(): 5.0
getXCoord(): 0.0
getYCoord(): 0.0
getPerimeter(): 20.0

Enter the requested values to create a polygon.
Number of Sides (>=3): 234324
Length of Sides (>0): -12312
X Coordinate value: 2343
Y Coordinate value: 23423
Exception in thread "main" java.lang.IllegalArgumentException: Side length must be greater than 0.
    at Polygon.<init>(Polygon.java:33)
    at DemonstratePolygon.main(DemonstratePolygon.java:52)
~/Documents/workspace/CMIS 141/week04 - Homework2/src $
```

## Screenshot of standard operation of DemonstratePolygon.java

```
× bash 1 × bash 2 × bash 3
~/Documents/workspace/CMIS 141/week04 - Homework2/src $ java DemonstratePolygon
Demonstrating the Polygon class with the default values.

toString(): (numSides=4, sideLength=5.0, xCoord=0.0, yCoord=0.0)
getNumSides(): 4
getSideLength(): 5.0
getXCoord(): 0.0
getYCoord(): 0.0
getPerimeter(): 20.0

Enter the requested values to create a polygon.
Number of Sides (>=3): 2432324
Length of Sides (>0): 66747
X Coordinate value: 0
Y Coordinate value: -234

toString(): (numSides=2432324, sideLength=66747.0, xCoord=0.0, yCoord=-234.0)
getNumSides(): 2432324
getSideLength(): 66747.0
getXCoord(): 0.0
getYCoord(): -234.0
getPerimeter(): 1.62350330028E11

Enter 1 to test another polygon or 0 to quit: 1
Enter the requested values to create a polygon.
Number of Sides (>=3): 234
Length of Sides (>0): 23424
X Coordinate value: 0
Y Coordinate value: 0

toString(): (numSides=234, sideLength=23424.0, xCoord=0.0, yCoord=0.0)
getNumSides(): 234
getSideLength(): 23424.0
getXCoord(): 0.0
getYCoord(): 0.0
getPerimeter(): 5481216.0

Enter 1 to test another polygon or 0 to quit: 0
~/Documents/workspace/CMIS 141/week04 - Homework2/src $
```