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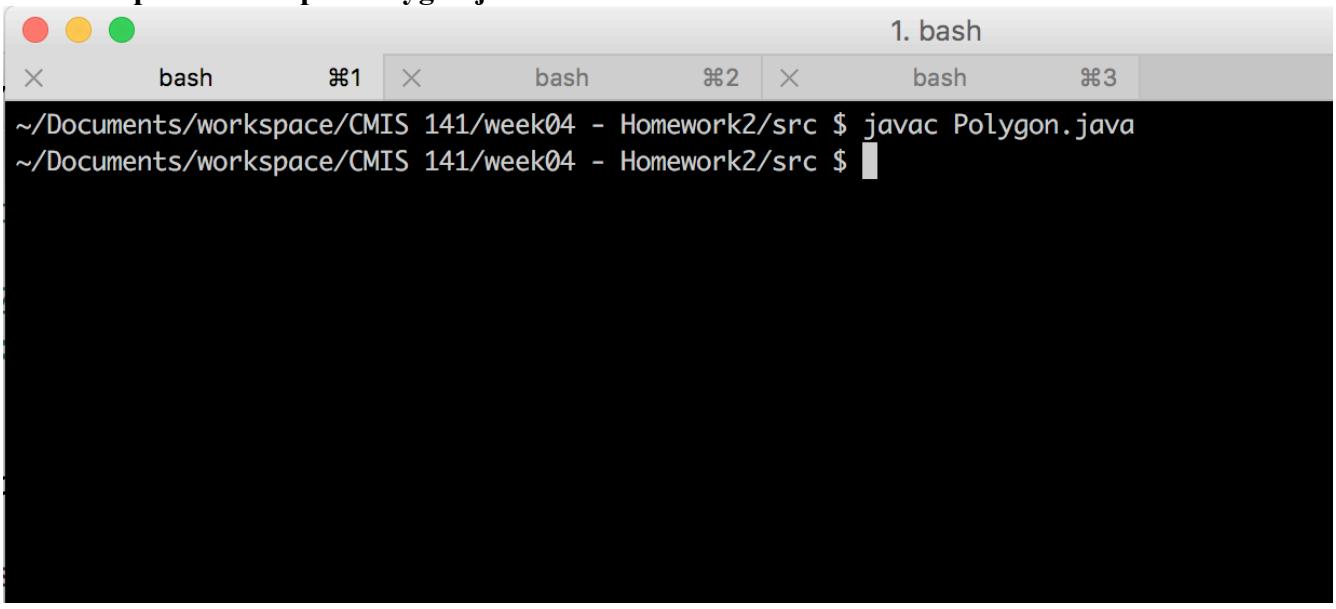
Homework 2

Screen capture - Compile Polygon.java



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>();
```

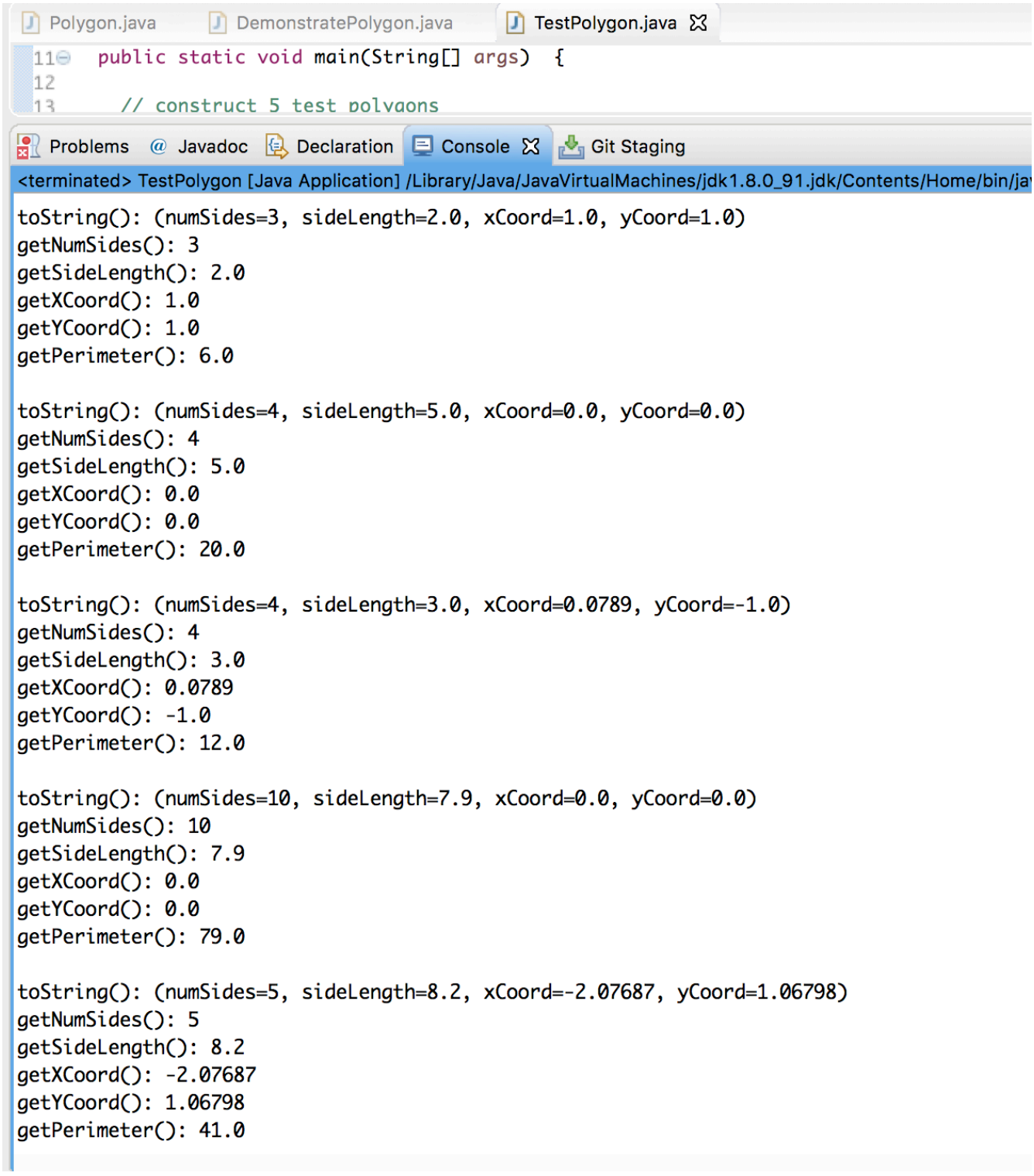
Polygons are instantiated then added to the list as follows:

```
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 polygons
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

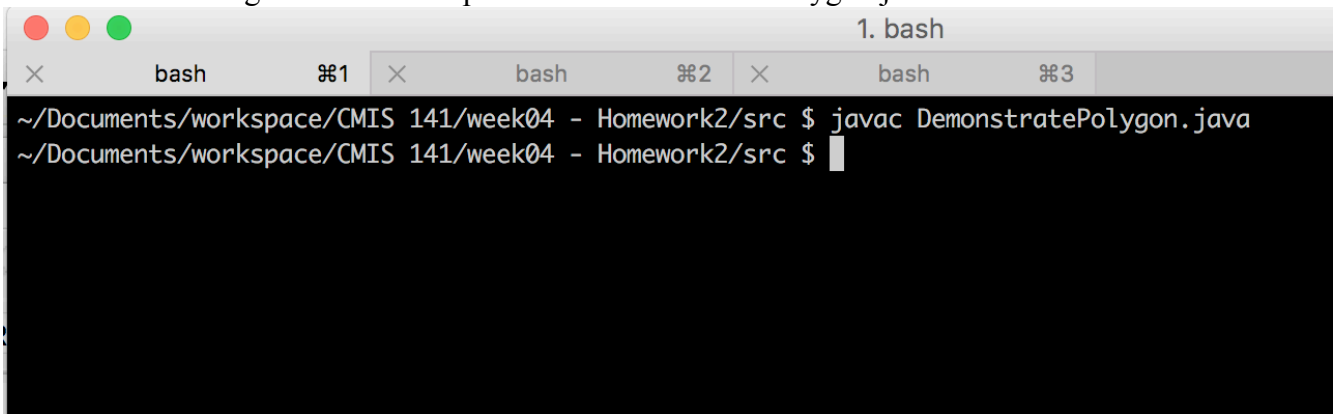
Input	Expected Output	Actual Output	Pass?
Polygon p1 = new Polygon(3, 2.0, 1.0, 1.0);	toString(): (numSides=3, sideLength=2.0, xCoord=1.0, yCoord=1.0) getNumSides(): 3 getSideLength(): 2.0 getXCoord(): 1.0 getYCoord(): 1.0 getPerimeter(): 6.0	toString(): (numSides=3, sideLength=2.0, xCoord=1.0, yCoord=1.0) getNumSides(): 3 getSideLength(): 2.0 getXCoord(): 1.0 getYCoord(): 1.0 getPerimeter(): 6.0	Yes
Polygon p2 = new 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 = new 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 = new 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 = new 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

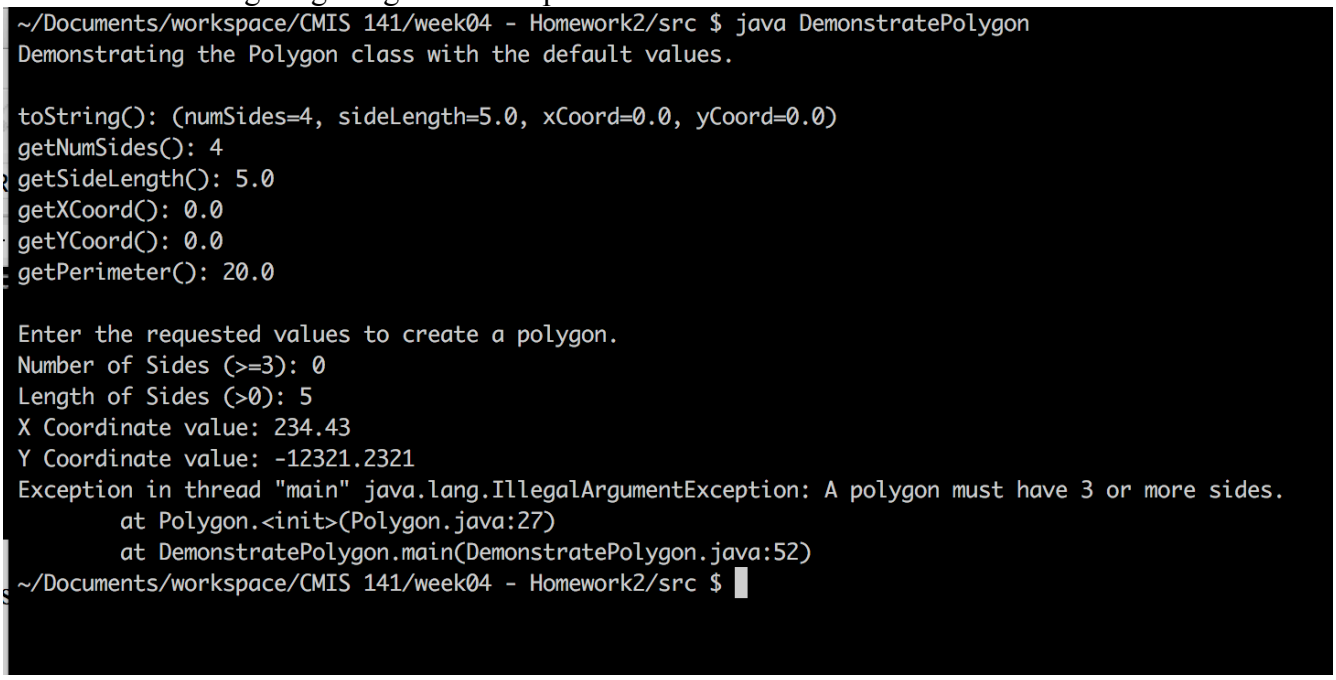
I wrote code that reads in user input to instantiate a polygon and demonstrates the six methods for the

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

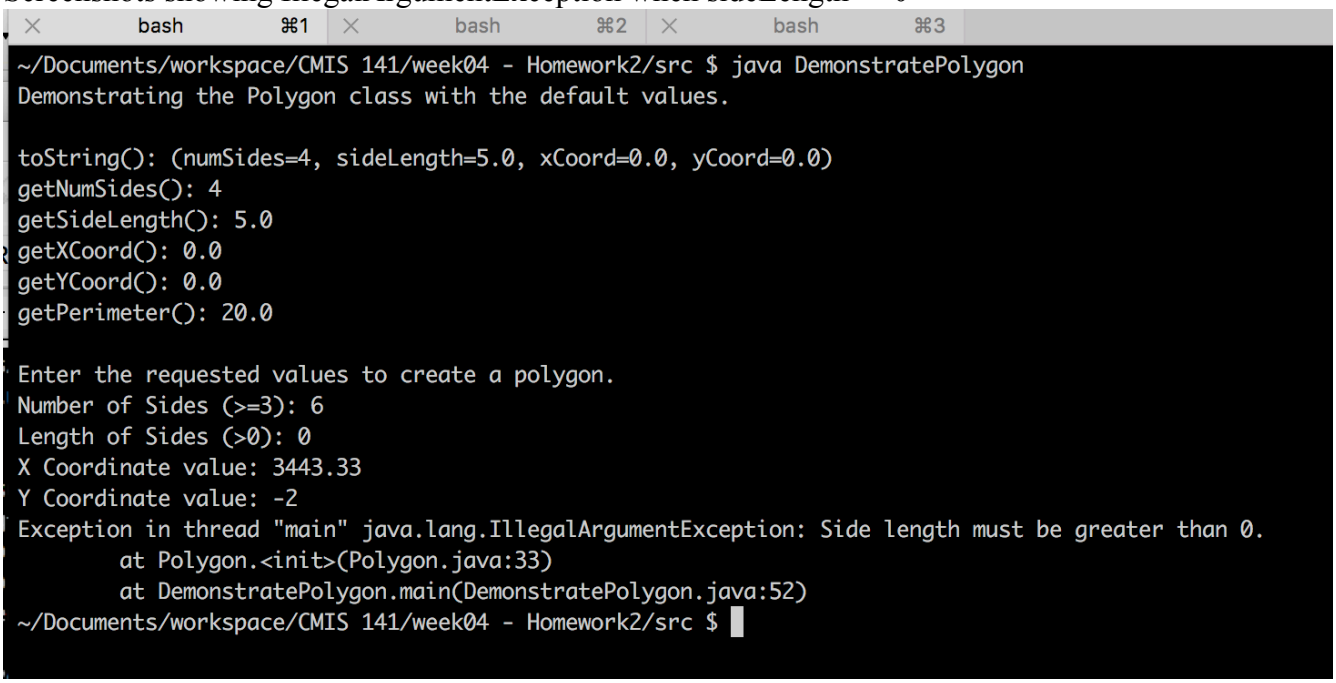
Screenshot showing successful compilation of DemonstratePolygon.java

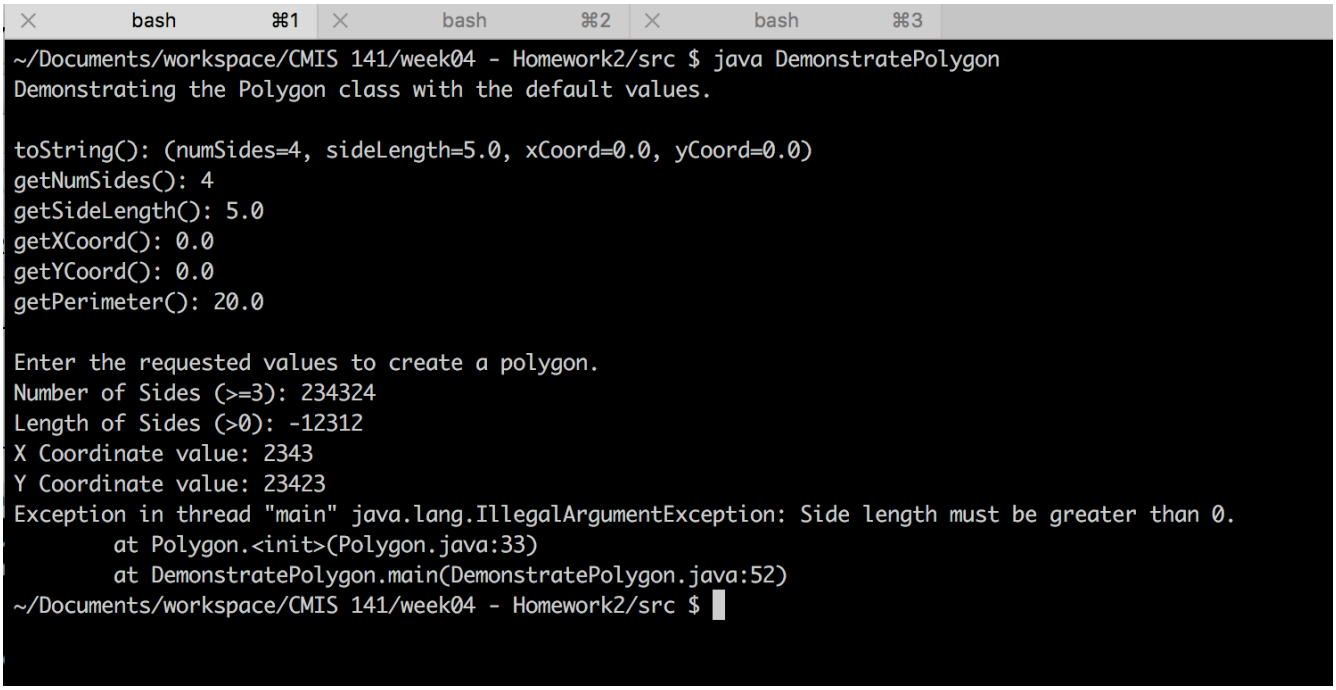


Screenshot showing IllegalArgumentException when numSides < 3



Screenshots showing IllegalArgumentException when sideLength <=0





Screenshot of standard operation of DemonstratePolygon.java