Due:
Activity (in-lab): Monday, October 1, 2012 by the end of lab

Goals:

By the end of this activity you should be able to do the following:

- Understand the basics of the ternery *conditional operator*
- Understand the basics of the *for loop* and the *do-while loop*

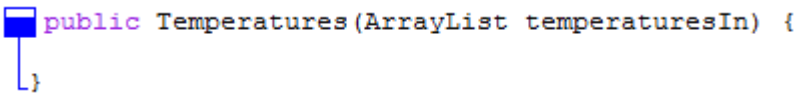
Description:

In this activity you will create two classes. Temperatures will hold a set of integer values representing daily temperatures. TemperatureInfo will allow users to interact with the Temperatures class.

Directions:

Part 1: Temperatures: Method Stubs

- Create a class called Temperatures, which will hold a set of integer values representing daily temperatures.
- Add method stubs for the following methods**.**
  - The constructor takes an ArrayList of integer values



  - getLowTemp: takes no parameters; returns an integer value
  - getHighTemp: takes no parameters; returns an integer value
  - lowerMinimum: takes an int parameter; returns an integer value
  - higherMaximum: takes an int parameter; returns an integer value
  - toString: no parameters; returns a String

Part 2: Temperatures: instance variable, Constructor, getLowValue

- Add an instance variable with the name *temperatures* to your class that is of type ArrayList with generic type integer.
- In your constructor, set *temperatures* equal to *temperaturesIn*.
- In getLowValue, first return 0 if the ArrayList is empty:

```
if(temperatures.isEmpty()) {
   return 0;
}
```

- Now iterate through the entire list and find the lowest temperature:

```
for (int i = _____; i < __________; i++) {
   if (temperatures.get(i) < low) {
      low = temperatures.get(i);
   }
}
```

- Finally, return the lowest temperature:

```
return low;
```

Part 3: getHighValue

- In getHighValue, again return 0 if there are no temperatures in the ArrayList:

```
if(temperatures.isEmpty()) {
   return 0;
}
```

- This time, use a for-each loop to iterate through the list of temperatures to find the highest value.

```
int high = temperatures.get(0);
for (Integer currentTemp : temperatures) {
   if (_____________ > high) {
      high = _____________;
   }
}

return high;
```

- Add code to the toString method to return a string containing the low and high temperatures (hint: make a method call to getLowValue and getHighValue):

```
public String toString() {
   return "Low: " + _____________()
      + "\r\nHigh: " + _____________();
}
```

Part 4: lowerMinimum & higherMaximum

- The lowerMinimum method takes an int value and returns the parameter if it is lower than the value returned by getLowerValue. Otherwise, it returns the return of getLowerValue.

```
public int lowerMinimum(int lowIn) {
   return lowIn < getLowValue() ? lowIn : getLowValue();
}
```

- The higherMaximum method takes an int value and returns the parameter if it is greater than than the value returned by getHigherValue. Otherwise, it returns the return of getHigherValue.

```
public int higherMaximum(int highIn) {
   return _______ ? _____________;
}
```

- Test your methods in the interactions pane:

```
import java.util.ArrayList;
ArrayList tempList = new ArrayList();
tempList.add(34);
tempList.add(52);
tempList.add(36);
tempList.add(65);
```

```
Temperatures temps = new Temperatures(tempList\);
temps.getLowValue()
34
temps.getHighValue()
65
temps.lowerMinimum(33)
33
temps.lowerMinimum(35)
34
temps.higherMaximum(64)
65
temps.higherMaximum(67)
67
```

Part 5: TemperatureInfo

- Create a class called TemperatureInfo with a main method. Declare and instantiate an ArrayList with generic type Integer called tempList. Declare and instantiate a Scanner object called userInput that reads from System.in.
- Create the following do-while loop that will add numbers to the list until the user enters a -1 input. Also create a Temperatures object with the ArrayList as input and print the temperatures object:

```
int tempInput = -1;
do {
   System.out.print("Enter a postive temperature (-1 to stop): ");
   tempInput = userInput.nextInt();
   if (tempInput > -1) {
      _________.add(tempInput);
   }
} while (tempInput > -1);

Temperatures temps = new Temperatures(____________);
System.out.println(_____________);
```

Run your program as below to test its output:

```
 ----jGRASP exec: java Temperatures

Enter a postive temperature (-1 to stop): 45
Enter a postive temperature (-1 to stop): 44
Enter a postive temperature (-1 to stop): 12
Enter a postive temperature (-1 to stop): 33
Enter a postive temperature (-1 to stop): 24
Enter a postive temperature (-1 to stop): -1
Low: 12
High: 45

 ----jGRASP: operation complete.
```