Name: _____

Date: _____

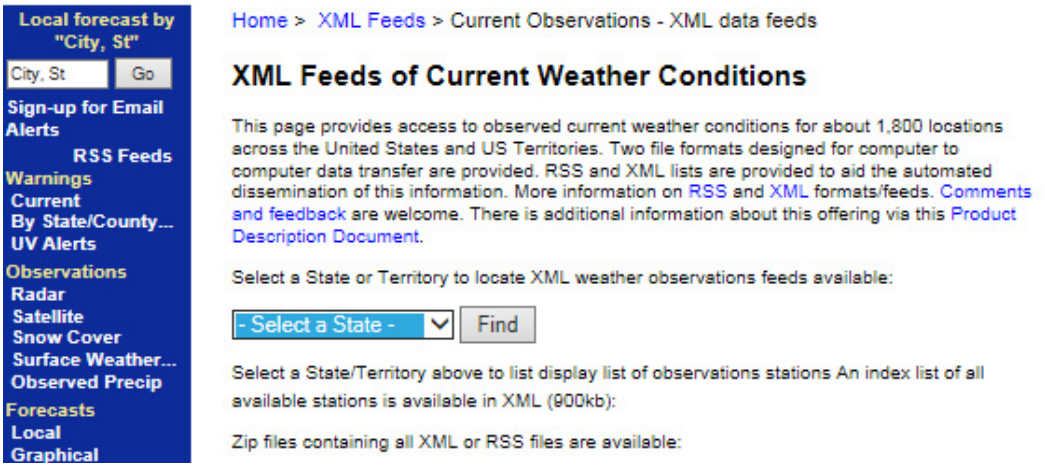
ACTIVITY 3

Putting It All Together

Existing code in the form of libraries is incredibly useful and a powerful aspect of object-oriented programming. Beyond the standard Java library, users around the world have created and published libraries to perform countless tasks. One such library, which you will be using in this activity and the one that follows, is the Sinbad library. This library allows you to create a Java program that can connect to a data source, read in data, and then process this data. The goal of this activity is to provide practice working with the Sinbad library. Before beginning, ensure that you have set up your IDE appropriately based on instructions from your teacher.

1. Run the main method in the `Welcome01` class and provide the location and temperature that are printed.

2. Go to the following link, **https://w1.weather.gov/xml/current_obs/**, and find the four-character code for an additional location. To find the code, you first must select the state or territory from the drop-down box shown here.



From the resulting list, choose a four-character code and modify the main method in `Welcome01` to pull information from this location instead. Provide the four-character code here. _____

Then write what is displayed when running your main method with this new code.

Share your results with a partner.

Once you have verified that the Sinbad library is installed correctly, you will work through the "Fetching Objects" tutorial found at **https://github.com/berry-cs/sinbad/blob/master/tutorials/java/welcome02-obj.md**.

3. Using the location from the previous question, modify `Welcome02_Object.java` that you completed in the tutorial to create a third `Observation` object for your identified location, and then write the code to determine the coldest location between all three `Observation` objects.

Next, you will work through the "Arrays and Lists of Objects" tutorial found at **https://github.com/berry-cs/sinbad/blob/master/tutorials/java/welcome03-objs.md**.

4. How many weather station objects are in your state? _____

5. What is another way you could filter weather stations?

6. Modify `WeatherStation.java` and `Welcome03_List` to filter based on latitude, showing the weather station that is furthest south. Do not remove existing code that sorts weather stations based on state. What is the southernmost weather station you found?

Tips

In order to manage large amounts of data or complex relationships in data, it is helpful to group the data together in such a way using a single variable that refers to a location capable of storing multiple items rather than a single item. If the variable name holds multiple items, more information (an index) is needed to know which specific value is being accessed.

The iterative statement can be used to access every element starting at the beginning and moving to the last element. It has a specific structure and can be used to take the place of repetitive code, reducing the amount of code written and also the potential for errors. When elements are inserted or deleted from an `ArrayList`, the loop counter needs to be adjusted in order to prevent skipping an element or trying to access elements that no longer exist.

This structure can be modified to traverse the elements in different ways such as from the end moving to the beginning or skipping certain elements.

In addition to parameters and local variables declared in a method, a method always has access to any instance variables that are declared within the enclosing class. These instance variables are often required to complete the

goal of the method. If any of the available variables are objects (reference data), then those objects may have their own methods, variables, and constants that would be accessible within the given method as well.

Check Your Understanding

With a partner, answer and discuss the following questions.

7. What is an additional question that can be answered about weather stations or observations based on the code that you wrote?

8. How much additional code would it take to answer this question?