**Computer Science 111**

Computer Science with Java I Fall, 2016

Lab Report – Week 6 - Array assignment

Abraham Schultz- CSI 111 900 - Fall 2016

**Assignment Analysis and Design**

The problem that this assignment presented was to create a program that could look up state capitals. Additionally, the program had to tell the user that they entered an invalid state if an incorrect name is entered. The input required from the user was that of a target state, of which the capital should be returned. The program uses a scanner object and a while loop to read text file capitals.txt from a USB. This file contains a list of all states and corresponding capitals. The while loop also sorts the strings contained in the file in too two separate arrays. The main method calls on a method *findState* to find the capital which corresponds to the state entered by the user. To display the output and to get the input from the user I used the *JOptionPane* object class to create a graphic interface.

Below is a copy of my original pseudocode that I used as a guide to start developing the program. As I reviewed the example code that was within the weeks module I changed my final code to more closely match what given.

/\*statelookup.java

\*Console I/O dialog for looking up state capitals

\*for CSCI 111

\*last edited october 17th 1:40pm

@author Abraham Schultz

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//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

// main method()

// declare array for state names

// declare array for state capitals

//read file for state names and add to array

// read file for capitals and add to array

// ask user for state names

//call method to search array for state/ print if there is no state with name

//call method to find capital for state and print

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

//method for searching array for mathcing state and printing message

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*



/\*statelookup.java

\*Console I/O dialog for looking up state capitals

\*for CSCI 111

\*last edited october 17th 5:04pm

@author Abraham Schultz

\*/

package arrayassignment;

import java.io.File;

import java.util.Scanner;

import javax.swing.JOptionPane;

public class ArrayAssignment {

/\*\*

\* @param args the command line arguments

\* @throws java.lang.Exception

\*/

public static void main(String[] args) throws Exception {// main method()

String[] states = new String[50];// declare array for state names

String[] capitals = new String[50];// declare array for state capitals

String targetState;// variable to hold String value of target State

int i = 0;//counter for loop intialized at 0

// Create a File class object x and give it the name of the file to read

File x = new File("F:\\CSI11\\capitals.txt");

// Create a Scanner named y to read the input stream from the file x

Scanner y = new Scanner(x);

// loop that sorts states and capitals in to correct arrays

while (y.hasNext()) {// Read a line of text from the file

states[i] = y.nextLine();

capitals[i] = y.nextLine();

i++;

}

y.close();// Close the input data stream and associated file

// ask user for a state name

targetState = JOptionPane.showInputDialog(null, "Please enter the name of"

+ " a state: ", "State Name", JOptionPane.QUESTION\_MESSAGE);

System.out.println("reading from the data file...\n");

findsate(targetState, states, capitals);

//call method to search array for state/ print if there is no state with name

}

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

//method for searching array for mathcing state and printing message

public static void findsate(String targetState, String[] state, String[] capital) throws Exception {

boolean found = false; // true if the target state is found in the array

int n;// loop counter

for (n = 0; (!found) && (n < state.length); n++) {// for loop, for false and under 50

if (targetState.matches(state[n])) {

// if target state matches current array item then found = true

JOptionPane.showMessageDialog(null, targetState + "'s state capital is " + capital[n]);

found = true; //print found message and set found to true

}// end if

}

// after the loop – if state entered not(found) print not found message

if (!found) {

JOptionPane.showMessageDialog(null, targetState + " is not a state in"

+ " The Unites States of America.\n", "invalid entry", JOptionPane.ERROR\_MESSAGE);

}

}

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

}

**Assignment Testing**

The first thing I tested was that I correctly got the text file uploaded. I did this by simply pointing at the text file and then running my program. When I encountered no errors I knew my program saw the file. My next test was to make sure that I was sorting the Strings in to the correct arrays. I did this by System.out.printing the same index number for each array and checking that they matched. I did this with a few index numbers to make sure my states and capitals matched. In testing this program I had to make significant use of the NetBeans debugging features. In particular the jump to next line command in conjunction with line breaks. This helped when trying to get my Boolean statement to evaluate correctly in my *findState* method.

**Assignment Evaluation**

I learned from this project how to use as input outside text files. Then how to also search through those files for specific things using loops. What I struggled with most was getting my string sorting loop to work correctly and my string searching loop to function. The hardest thing for me to do was getting my program to tell the user that they didn’t enter a real state when they entered a state name wrong. I kept having my Boolean statement return the wrong value. The easiest part of this assignment was just having the program open the text file, that seemed straight forward. I possibly could have made the code more modular by dividing the sorting loop in too its own method, but I decided against that. I don’t have further suggestions for improving the project.