Chris Piech Section #9

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Solution to Section #9

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**1. ContActivistServer**

**ContActivistServer**

**import acm.program.\*;**

**import java.util.\*;**

**import java.io.\*;**

**/\*\***

**\* This server reads in data about all members of congress,**

**\* and can respond to "getCongressEmailsForState" and**

**\* "getCongressPhonesForState" requests. Both request types**

**\* should include a "stateCode" parameter. Both send back a string**

**\* containing a list of all that state's congress members, and their**

**\* requested information (phone or email). Note that not all members**

**\* are guaranteed to have an email address.**

**\*/**

**public class ContActivistServer extends ConsoleProgram**

**implements SimpleServerListener {**

**/\* The internet port to listen to requests on \*/**

**private static final int PORT = 8000;**

**/\* The server object. All you need to do is start it \*/**

**private SimpleServer server = new SimpleServer(this, PORT);**

**/\* The name of the congress member data file \*/**

**private static final String DATA\_FILENAME = "congress.txt";**

**/\* A map from state code to its list of congress members \*/**

**private HashMap<String, ArrayList<CongressMember>> congressMap;**

**public void run() {**

**congressMap = readCongressFile(DATA\_FILENAME);**

**println("Starting server on port " + PORT);**

**server.start();**

**}**

**/\* Reads in the provided data file of congress members, and**

**\* returns a map from state code to a list of its congress**

**\* members.**

**\*/**

**private HashMap<String, ArrayList<CongressMember>> readCongressFile(**

**String filename) {**

**try {**

**Scanner scanner = new Scanner(new File(filename));**

**HashMap<String, ArrayList<CongressMember>> congress**

**= new HashMap<String, ArrayList<CongressMember>>();**

**// Read in 5 lines at a time (for each member)**

**while (scanner.hasNextLine()) {**

**String name = scanner.nextLine();**

**String stateCode = scanner.nextLine();**

**String phone = scanner.nextLine();**

**String email = scanner.nextLine();**

**if (email.length() == 0) {**

**email = null;**

**}**

**// Add a new person to our map**

**CongressMember member =**

**new CongressMember(name, phone, email);**

**if (congress.containsKey(stateCode)) {**

**congress.get(stateCode).add(member);**

**} else {**

**ArrayList<CongressMember> personList =**

**new ArrayList<CongressMember>();**

**personList.add(member);**

**congress.put(stateCode, personList);**

**}**

**// For the blank line separating each member**

**scanner.nextLine();**

**}**

**scanner.close();**

**return congress;**

**} catch (IOException e) {**

**println("Error reading data file: " + e);**

**return null;**

**}**

**}**

**/\* Responds to incoming requests that we receive \*/**

**@Override**

**public String requestMade(Request request) {**

**String cmd = request.getCommand();**

**println(request.toString());**

**if (cmd.equals("getCongressPhonesForState")) {**

**String stateCode = request.getParam("stateCode");**

**if (!congressMap.containsKey(stateCode)) {**

**return "Error: unknown state " + stateCode;**

**}**

**// Build up the response string of all member information**

**String response = "";**

**ArrayList<CongressMember> members = congressMap.get(stateCode);**

**for (CongressMember member : members) {**

**response += member.getPhoneDescription() + "\n";**

**}**

**return response;**

**} else if (cmd.equals("getCongressEmailsForState")) {**

**String stateCode = request.getParam("stateCode");**

**if (!congressMap.containsKey(stateCode)) {**

**return "Error: unknown state " + stateCode;**

**}**

**// Build up the response string of all member information**

**String response = "";**

**ArrayList<CongressMember> members = congressMap.get(stateCode);**

**for (CongressMember member : members) {**

**response += member.getEmailDescription() + "\n";**

**}**

**return response;**

**}**

**return "Error: Unknown command " + cmd + ".";**

**}**

**}**

**CongressMember**

**/\*\***

**\* This class represents a single representative or senator**

**\* in Congress, and contains information about them including:**

**\* name, phone number, and optionally an email address.**

**\*/**

**public class CongressMember {**

**private String name;**

**private String phone;**

**private String email;**

**public CongressMember(String name, String phone, String email) {**

**this.name = name;**

**this.phone = phone;**

**this.email = email;**

**}**

**/\*\***

**\* Returns a string description of this person, which**

**\* includes their name and phone number.**

**\*/**

**public String getPhoneDescription() {**

**return name + ": " + phone;**

**}**

**/\*\***

**\* Returns a string description of this person, which**

**\* includes their name, and email if there is one, or**

**\* "NO EMAIL" otherwise.**

**\*/**

**public String getEmailDescription() {**

**if (email != null) {**

**return name + ": " + email;**

**} else {**

**return name + ": NO EMAIL";**

**}**

**}**

**}**

**2. ContActivistClient**

**import acm.program.\*;**

**import java.io.\*;**

**/\*\***

**\* This program prompts the user for a state code, asks**

**\* whether they would like emails or phone numbers, and**

**\* communicates with the ContActivistServer to print out**

**\* a list of all congress members for that state and the**

**\* requested information about these congress members.**

**\*/**

**public class ContActivistClient extends ConsoleProgram {**

**/\*\* The address of the server that should be contacted when sending**

**\* any Requests. \*/**

**private static final String HOST = "http://localhost:8000/";**

**public void run() {**

**println("Welcome to ContActivist!");**

**while (true) {**

**String stateCode = readLine("State code [EMPTY TO EXIT]: ");**

**if (stateCode.length() == 0) {**

**break;**

**}**

**boolean isEmail = readBoolean("Email or phone? ", "email",**

**"phone");**

**sendRequest(stateCode, isEmail);**

**}**

**}**

**/\* Sends a request to get the given congress member information**

**\* for the given state and with email or phone information.**

**\* Prints out the results to the console, or an error message if**

**\* an error occurs.**

**\*/**

**private void sendRequest(String stateCode, boolean isEmail) {**

**Request request;**

**if (isEmail) {**

**request = new Request("getCongressEmailsForState");**

**} else {**

**request = new Request("getCongressPhonesForState");**

**}**

**request.addParam("stateCode", stateCode);**

**try {**

**String response = SimpleClient.makeRequest(HOST, request);**

**println(stateCode + " CONGRESSMEMBERS:");**

**println(response);**

**} catch (IOException ex) {**

**println("An error occurred: " + ex);**

**}**

**}**

**}**