

CS108 Assignment 4: Phonebook Application (storing data in arrays).
DUE DATE: THURSDAY 14 OCTOBER 2004

Learning Objective

Learn how to use methods with parameters to pass data between methods, creating arrays of variables, storing data in arrays, traversing arrays with for loops, and using Strings variables.

Problem Statement

This assignment continues to build the phone book application you've been working on in earlier assignments. You will implement a simple data structure using arrays to store the names and phone numbers.

Create a *PhoneBookDataStore* class. The requirements for this class are given below:

- Create 2 String arrays for storing names and numbers, respectively.
- Create class member variables for the capacity of the storage and the number of entries in use.
- Use the constructor to initialize the arrays to a size specified by a parameter.
- On this class, create and implement the following 4 methods:
 - o *storeNumber()* should take two parameters, the name and the phone number to store; it will not return any value. It will iterate through the arrays, find the next open space, and store the name and number.
 - o *retrieveNumber()* should take one parameter, the name, and return one parameter, the number. It will iterate through the array until it matches the name, and then return the number.
 - o *replaceNumber()* should take two parameters, the name and the phone number to store; it will not return any value. It will iterate through the array until it matches the name, and then replace the number.
 - o *getAllNamesAndNumbers()* does not take any parameters. It will return a list of all of the names and numbers stored in the arrays.
- Use the *PhoneBookDataStore.main()* method to test the data structure. Create an instance that stores 5 numbers. Try to store 6 numbers and pay attention to the results.

Finally, create an instance of *PhoneBookDataStore* as a member of your *PhoneBook* class, and implement the user interface (e.g. prompting) to (a) collect names and phone numbers from the user and store them in the data store and (b) print out a list of names and numbers.

Deliverables

- The java code file(s) (*.java).
- An executive summary of no more than 1 page, which will serve to introduce the data structure you have created and how it gets used by the *PhoneBook*, and address the following questions:
 - o What are the limitations of using the arrays to store the numbers?
 - o In what order are the numbers stored in your data structure?
 - o What were the main difficulties in using the arrays to store data? What problems did you encounter, why did they occur, and how did you fix them? (explain what you learned)

QUESTIONS: EMAIL ME: azs@aaronstevens.net.