

CSCI 2540 Assignment 9

100 points

Due date: Thursday, April 20 by 11:59pm

Write a program that provides a way for you to store and retrieve telephone numbers. You will use a binary search tree for this assignment.

Design a user interface that provides the following operations:

- Add a contact: Adds a person's name and phone number to the phone book.
- Delete a contact: Deletes a given person's name and phone number from the phone book, given only the name.
- Search phone number: Locates a person's phone number, given only the person's name.
- Update phone number: Change a person's phone number, given the person's name and new phone number.
- Display the phone book in sorted order: Display the phone book in sorted order (sorted by name).
- Save and Exit: Exits the application, after first saving the phone book to the given text file.

Each time after the result is displayed, ask user to Press Enter to Continue, and the menu will be displayed again for the user to continue.

You can proceed as follows:

- Design and implement the class **Person**, which represents the name and phone number of a person. You will store instances of this class in the phone book. The **Person** class needs to extend **KeyedItem<String>** class (**KeyedItem** class is posted on Canvas).
- Design and implement the class **PhoneBook**, which represents the phone book. The class should contain a **binary search tree** as a data field. This tree contains the people in the book. You can use the code for binary search tree we discussed in class (also posted on Canvas).
- Add methods that use a text file to save and store the tree.
- Design and implement the class **PhoneBookManager**, which includes the main method. It provides the program's menu and take actions when user selects an option. The user should be allowed to perform multiple operations until they choose to exit.

The program should read data from a text file when it begins and save data into the file when the user quits the program. Please use **assg9_phoneBook.txt** as the input file name.

The input file will have the following format: One person per line, with name and phone number separated by a TAB. (A sample input file is posted on Canvas)

When you submit your zip file, please make sure to include the textbook code you have used for this assignment in your zip file, otherwise your program will not run.

Submission instructions:

To submit your programs, you need to submit your programs electronically on Canvas.

Please **use a named package for each of your assignment**. For example, for assignment 9, create a new package and **name your package as assg9_yourPirateId** (use lower case for your pirate id), such as assg9_smithj19. You also need to include a statement such as “package assg9_smithj19;” at the beginning of each of your .java file. **Please follow this naming convention exactly for all future assignments. You will be deducted points for not doing so.**

When you submit your files to Canvas, please submit a zip file with your package folder inside the zip file. The package folder should include only .java files (make sure you include .java files, not .class files). The name of the folder should match with your package name. You do not need to submit the input text file.