

Georgia State University

Department of Computer Science

CSC 2720

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Fall 2017

Programming Assignment #4

Due October 16th, 2017. no later than 11:00 p.m.

Objectives:

To gain experience with input/output in Java along with Linked List.

Documentation:

1. Explain the purpose of the program as detail as possible - **8%**.
2. Develop a solution for the problem and mention algorithms to be used -**12%**
3. List data structures to be used in solution. - **5%**.
4. Give a description of how to use the program and expected input/output - **5%**
5. Explain the purpose of each class you develop in the program. - **5%**.

Programming:

1. For each method, give the pre and post conditions and invariant, if any - **10%**
2. Program execution **according to the requirements given** **50%**
3. Naming of program as required **5%**

Description of Program

You are to write a program name **phonedir** that maintains a list of records containing names and phone numbers. The program will prompt the user for a command, execute the command, then prompt the user for another command. The commands must be chosen from the following possibilities:

- a Show all records
- d Delete the current record
- f Change the first name in the current record
- l Change the last name in the current record
- n Add a new record
- p Change the phone number in the current record
- q Quit
- s Select a record from the record list to become the current record

The following example illustrates the behavior of each command (user input is in **bold**)

c:\phonedir [enter]

A Program to keep a Phone Directory:

- a Show all records
- d Delete the current record
- f Change the first name in the current record
- l Change the last name in the current record
- n Add a new record
- p Change the phone number in the current record
- q Quit
- s Select a record from the record list to become the current record

Enter a command from the list above (q to quit): **f**

No current record

- a Show all records

- d Delete the current record
- f Change the first name in the current record
- l Change the last name in the current record
- n Add a new record
- p Change the phone number in the current record
- q Quit
- s Select a record from the record list to become the current record

Enter a command from the list above (q to quit): **n**

Enter first name: **Barry**

Enter last name: **Drake**

Enter phone number: **770-591-8071**

Current record is: Barry Drake 770-591-8071

- a Show all records
- d Delete the current record
- f Change the first name in the current record
- l Change the last name in the current record
- n Add a new record
- p Change the phone number in the current record
- q Quit
- s Select a record from the record list to become the current record

Enter a command from the list above (q to quit): **n**

Enter first name: **Ada**

Enter last name: **Caswell**

Enter phone number: **770-251-3456**

Current record is: Ada Caswell 770-251-3456

MENU DISPLAYED AGAIN

Enter a command from the list above (q to quit): **a**

First Name	Last Name	Phone Number
-----	-----	-----
Ada	Caswell	770-251-3456
Barry	Drake	770-591-8071

MENU DISPLAYED AGAIN

Enter a command from the list above (q to quit): **n**

Enter first name: **Elwood**

Enter last name: **Havens**

Enter phone number: **404-345-8897**

<>Current record is: Elwood Havens 404-345-8897

MENU DISPLAYED AGAIN

Enter a command from the list above (q to quit): a

First Name	Last Name	Phone Number
-----	-----	-----

Ada	Caswell	770-251-3456
Barry	Drake	770-591-8071
Elwood	Havens	404-345-8897

MENU DISPLAYED AGAIN<>

Enter a command from the list above (q to quit): **f**

Enter new first name: **Jake**

Current record is: Jake Havens 404-345-8897

MENU DISPLAYED AGAIN

Enter a command from the list above (q to quit): **S**

Enter first name: **Carl**

Enter last name: **Patton**

No matching record found.

MENU DISPLAYED AGAIN

Enter a command from the list above (q to quit): **s**

Enter first name: **Barry**

Enter last name: **Drake**

<> Current record is: Barry Drake 770-591-8071

MENU DISPLAYED AGAIN

Enter a command from the list above (q to quit): **d**

Deleted: Barry Drake 770-591-8071

MENU DISPLAYED AGAIN

Enter a command from the list above (q to quit): **a**

First Name	Last Name	Phone Number
-----	-----	-----
Ada	Caswell	770-251-3456
Elwood	Havens	404-345-8897

MENU DISPLAYED AGAIN

Enter a command from the list above (q to quit): **z**

Illegal command

Enter a command from the list above (q to quit): **q**

The output of your program must match the format illustrated in this example.

Here are some other additional requirements for this program:

- You may assume that phone number contains no spaces.
- After a deletion, there is no record currently selected
- Each record (first name, last name and phone number) must be stored as an object. These objects must be stored in a Linked List.
- The list must be kept sorted at all times – based on last name. Sorting is to be achieved when an insertion or modification is done. **NO SORTING ROUTINE IS ALLOWED. ALWAYS INSERT A NEW RECORD OR EDITED RECORD INTO ITS' CORRECT PLACE IN THE LIST.** Note: Changing the last name will require resorting.
- Use as many generic algorithm as you can.

What to turn in

1. All of the .java and the .class/jar files at the D2L(iCollege) website in the Dropbox folder for A4 no later than 11:00 p.m on the respective due date.
3. Make sure that your name is written clearly both on the print out and of course your program.