



ASSIGNMENT– 4

*[Submit your complete work **within the due date and time** as indicated in the CLEW]*

Objectiv: Inner Class and ArrayList.

Write a program that uses an **ArrayList** of parameter type **Contact** to store a database of contacts.

1. Write a Java **interface** called **Sortable** that will declare a public method **sort()**, so that, any class that uses an **arrayList** as instant variable and that implements the interface **Sortable** must have the ability sort the **arrayList** in alphabetically **ascending** order.
2. Write a class **Contact** with the following members:
 - a. Instance variable **name** of type **Name**, to record the name of the contact, where **Name** is defined as a **innerclass** within the class **Contact**. (You can copy the class **Name** that you have defined earlier. Declare it as with default access (no access modifier)).
 - b. Instance variable **phone** of type **String**, to record the phone number
 - c. Instance variable **email** of type **String**, to record the email address
 - d. Constructor with three arguments for name, phone and email
 - e. Constructor with two arguments for name and phone only
 - f. Constructor with one argument for name only
 - g. Appropriate accessor and mutator methods for all the fields
 - h. Method **lessThan(Contact otherContact)** that returns **true** if the **name** of **this Contact** is less than the **name** of the **otherContact**, and **false** otherwise. (First compare the last name and then (if required) compare the first name. No need to compare middle name).
 - i. Method **toString()** to return a string containing the field values in appropriate format
3. Write a class **ContactList** that implements **Sortable** with the following members:
 - a. Instance variable **contactList**, an **ArrayList** of type **Contact**
 - b. Constructor with no argument that instantiat the field **contactList**
 - c. Method **addContact()** to add new contacts to **contactList**. After adding each contact the method should ask the user if s/he wants to add more contacts or not, and add as many contacts as the user wishes. For each new contact, the user must provide the full name (first name, [middle name], last name) of the contact. Phone number and email address are optional.
 - d. Method **searchContact()** to search for a specific conatact and display it. The searches should find any contact where any instance variable contains a target search string. For example, if "**elmore**" is the search target, then all the

- contacts where the first name, middle name, last name, phone number, or email address contains "elmore" should be displayed.
- e. Method ***editContact()*** to search and edit any contact information.
 - f. Method ***deleteContact()*** to search and delete any contact.
 - g. Method ***displayContacts()*** to display all contacts.
 - h. Override the method ***sort()*** to sort the ***contactList*** (using any sorting algorithm)
4. Use the class ***TestContactList*** (provided to test your classes). The output of your program should match the sample output shown below.

Sample operations:

Enter the number of your choice:

- 1. *Add a contact:*
- 2. *Search for a contact:*
- 3. *Edit a contact:*
- 4. *Delete a contact:*
- 5. *Display all contacts:*
- 6. *Sort the contact list:*
- 0. *Quit*

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Enter full name:

Thomas Ford

Enter phone number:

123456

Enter email address:

henry@server.domain

Add another contact? [Y/N]:

Y

Enter full name:

William Hann

Enter phone number:

234567

Enter email address:

bill@somewhere.domain

Add another contact? [Y/N]:

Y

Enter full name:

Abdur Rahman

Enter phone number:

567123

Enter email address:

Add another contact? [Y/N]:

Y

Enter full name:

Amar Patel

Enter phone number:

Enter email address:

patel@erd.myland

Add another contact? [Y/N]:

n

Enter the number of your choice:

1. Add a contact:
2. Search for a contact:
3. Edit a contact:
4. Delete a contact:
5. Display all contacts:
6. Sort the contact list:
0. Quit

6

The list is sorted!

Enter the number of your choice:

1. Add a contact:
2. Search for a contact:
3. Edit a contact:
4. Delete a contact:
5. Display all contacts:
6. Sort the contact list:
0. Quit

5

Display all contacts? [Y/N]:

Y

Name: Ford, Thomas

Phone: 123456

Email: henry@server.domain

Name: Hann, William

Phone: 234567

Email: bill@somewhere.domain

Name: Rahman, Abdur

Phone: 567123

Email:

Name: Patel, Amar

Phone:

Email: patel@erd.myland

Enter the number of your choice:

1. Add a contact:
2. Search for a contact:
3. Edit a contact:
4. Delete a contact:
5. Display all contacts:
6. Sort the contact list:
0. Quit

0

Bye...