

Project 0: ASEAN Phonebook



Objectives

This project aims to:

- Illustrate problem definitions and requirements in preparation for implementation phase.
- Develop the habit of documenting programming solutions for easier communication and solving.
- Implement singly linked lists or array lists in each problem.
- Utilize tests to verify the validity of algorithms created.
- Collaborate with groupmates in performing programming projects using GitHub.



Overview

ASEAN Phonebook is a popular project that will introduce students to the world of object-oriented programming and further understand concepts of data structures and importance of an efficient and correct algorithm. In this project, you are tasked with completing the ASEAN Phonebook by utilizing methods already written for you by your instructors and make use of them in solving the problem at hand.

Southeast Asia has 11 countries, with people from each individual country meeting up one way or another, creating memories and/or friendships however they see of it. Typically, people would call each other but the problem lies on the country code to be inputted before dialing that said person. To do so, here is the list of ASEAN countries and their respective country codes.

| ASEAN Country | Country Code |
|------------------------------------|--------------|
| Federation of Malaysia | 60 |
| Republic of Indonesia | 62 |
| Republic of the Philippines | 63 |
| Republic of Singapore | 65 |
| Kingdom of Thailand | 66 |
| Socialist Republic of Vietnam | 84 |
| Republic of the Union of Myanmar | 95 |
| Democratic Republic of Timor Leste | 670 |
| Brunei Darussalam | 673 |
| Kingdom of Cambodia | 855 |
| Lao People's Democratic Republic | 856 |



Project File Download

Firstly, download the Project0.zip file and extract the contents. The contents will differ based on the data structure you were assigned into.

Required Functionalities

MAIN MENU

A menu should be present in every part of the program. Make sure to utilize the MENUS variable and showMenu() function to show the menu. Note that you will no longer need to change the contents of showMenu() function and MENUS variable as their logic are already coded for your convenience.

```
<-----Menu----->
[1] Store to ASEAN Phonebook
[2] Edit entry in ASEAN Phonebook
[3] Delete entry from ASEAN Phonebook
[4] View/Search ASEAN Phonebook
[5] Exit
```

If an invalid option is inputted, then this menu (or any other menu) should keep on popping up.

STORE TO ASEAN PHONEBOOK

To popularize our phonebook, we must be able to input contacts into it. The output bellow illustrates what should happen during storing:

```
Enter student number: 2004-56
Enter surname: Jomaya
Enter first name: Neil John
Enter occupation: IT Professional
Enter gender: (M for male, F for female): M
Enter country code: 63
Enter area code: 21
Enter number: 997112
Contact successfully added...
Do you want to add a new one (Y / N)?
```

After entering the necessary fields, a small output of contact being successfully added should be outputted. Furthermore, the user should be prompted if they want to add a new other contact again or not. Should they choose to do so, then the user should be prompted again. Note that no two contacts should share the same contact number and student number.

EDIT ENTRY IN ASEAN PHONEBOOK

When editing an entry, the user should be prompted to enter the student number of the contact to edit. If no contact exists, then the user should exit this entry. Otherwise, the following should be outputted:

```
Here is the existing information about 2004-56.
Jomaya, Neil John, with student number 2004-56, is a/an IT Professional. His
phone number is 63-21-997112.
```

Which of the following do you wish to change?

<-----Menu----->

[1] Student Number [2] Surname [3] Gender
[4] Occupation [5] Country Code [6] Area Code
[7] Phone Number [8] None – Go back to main menu

Enter choice: 1

Enter new student number: 2024-0056

Note that when the detail of the contact is changed, then it should be displayed again together with the ***edit menu***. This menu should keep on being shown until the user chooses to go back to the main menu.

DELETE ENTRY FROM ASEAN PHONEBOOK

The user should be prompted to enter the student number of the contact to be deleted. If it doesn't exist, then it should output an error that the target contact's student number does not exist.

Enter student number: 2024-0056

Are you sure you want to delete this contact [Y/N]? Y

Contact 2024-0056 has been successfully deleted.

Once the contact has been deleted, make sure that the size of your phonebook reduces, and the contacts present changes, without compromising the arrangement.

VIEW/SEARCH ASEAN PHONEBOOK

The user can choose to open the “search menu”, displaying the following:

[1] Search by country
[2] Search by surname
[3] View All
[4] Go back to main menu

SEARCH BY COUNTRY

The user can choose to view contacts by countries. Since there are 11 countries in total, the user can choose which ones to view. It starts with the user being prompted to enter which countries to show one by one. Note that the user may choose to select the same country (though nothing will change).

From which country:

[1] Burma [2] Cambodia [3] Thailand [4] Vietnam [5] Malaysia
[6] Philippines [7] Indonesia [8] Timor Leste [9] Laos
[10] Brunei [11] Singapore [12] All [0] No More

Enter choice 1: 6

Enter choice 2: 7

Enter choice 3: 0

Here are the students from Philippines and Indonesia:

Bautista, Charles Hanz, with student number 2006-0001, is a/an teacher. His phone number is 62-12-122334

Jomaya, Neil, with student number 2018-0012, is a/an IT professional. His phone number is 63-15-9110996

Rizal, Jose, with student number 1890-0555, is a/an writer. His phone number is 62-11-2223334

After printing all contacts, the person must return to the “search menu”.

SEARCH BY SURNAME

The user can search by surname (case sensitive). If no contact exists, then the user must be notified that such contact doesn't exist with that given surname. Otherwise, it must output all contacts matching that surname.

Enter surname: Bautista

Bautista, Charles Hanz, with student number 2006-0001, is a/an teacher. His phone number is 62-12-122334.

After printing, the user should return to the “search menu”.

VIEW ALL

View all simply works the *similarly* as selecting [12] All in **Search by Country** menu.



Bonus Points

When viewing contacts through **View All** menu, include a feature in which the user is also prompted whether to display all contacts in a particular order (last name by default). This can be obtained by completing the following functions: `compare()`, `get()`, and `__sort()`.

Full bonus marks will be obtained by achieving the following:

- Complete and correct output of `compare()`, `get()`, and `__sort()`.
- Time complexity of at most $O(n^2)$ without compromising the arrangement of the original array in the `ContactList` class.
- No copying of phonebooks through the `list.copy()` function.
- Order selection when printing contacts includes, but not limited to, Country Codes (different from search by country), and Occupation.
- If two contacts share the same value, then compare by last name, then first name.

Max of 10 bonus points can be earned and will be distributed to every member who has participated in the making of the class methods and features above.

You may accomplish this by utilizing the following built-in function:

- `getattr()`