Green University of Bangladesh
Department of Computer Science and Engineering(CSE)
Faculty of Sciences and Engineering
Semester: (Summer, Year:2022), B.Sc. in CSE (Day)

Course Title: Data Structure Lab

Course Code: CSE 106 Section: DB

Lab Project Name: Phonebook System

Student Details

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Submission Date : 10.09.22
Course Teacher's Name : Farhana Akter Sunny

[For Teachers use only: Don't Write Anything inside this box]

Project Proposal Status

Marks: ………………………… Signature: …………………..
Comments: .... Date: ....

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CHAPTER 1

Introduction

1.1 Introduction:

C is a structured, high level machine independent language. C is converted to a lower language which was understood by the compiler.It allows the software developers to develop programs without worrying about the hardware plat forms where there will be implemented. The c language comes from the ALGOL which gives the concept structured programing to the computer science community. It was introduced early in 1960's.

After,MARTIN RICHARDS DEVELOPED a language known as BCPL in 1967 for this in 1970's ken Thompson created a language from BCPL and he called as "B" both BCPL and B are types less system programming languages.After finding ALGOL BCPL,and B then from this c is evoled from that at BELL LABORATORIES in 1972 by "DENIS RITCHE". C Language use many concepts from these and added the concept of data type because it was developed along with a UNIX operating system. UNIX us nothing but a most popular network operating system is used today and the heart of the internet data super highway.

1.2 Design Goals/Objectives

- To develop a “Phonebook contact” application using c programming.
- This program is very useful now a days to store complete information under single contact number.
- This program also has options to deletion and modification of the entered contact number.

Chapter 2

Implementation of the project

1.1 Flow Charts

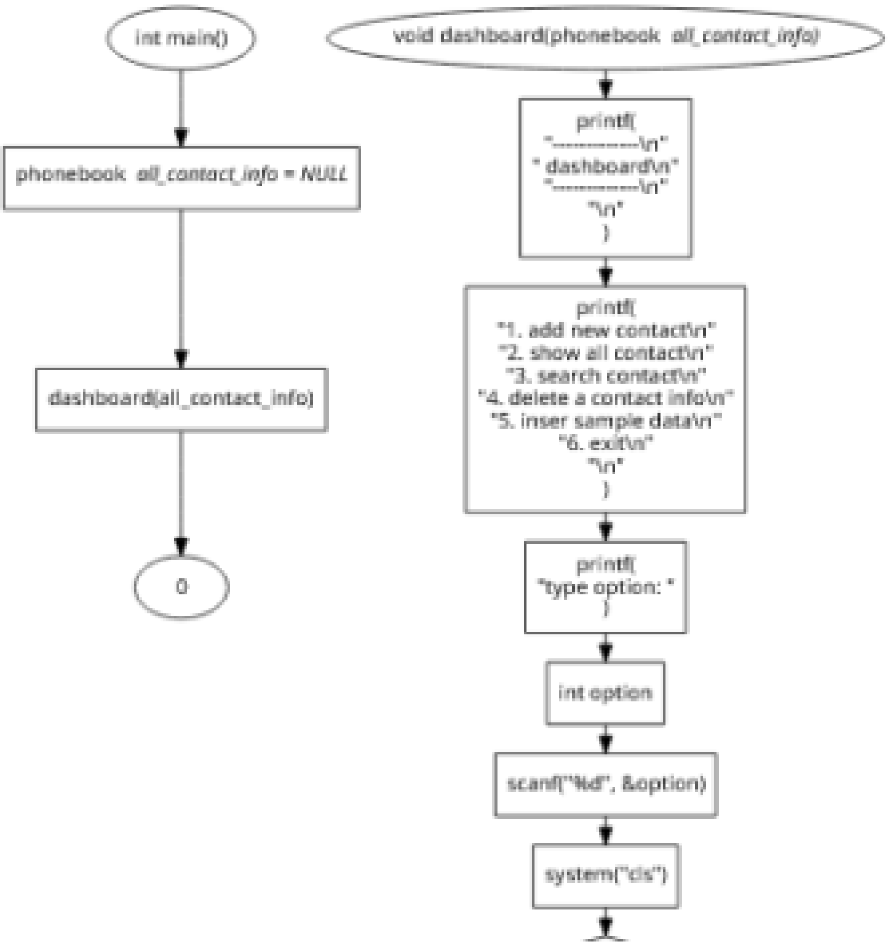


Figure 1: Flow Chart of Main Menu

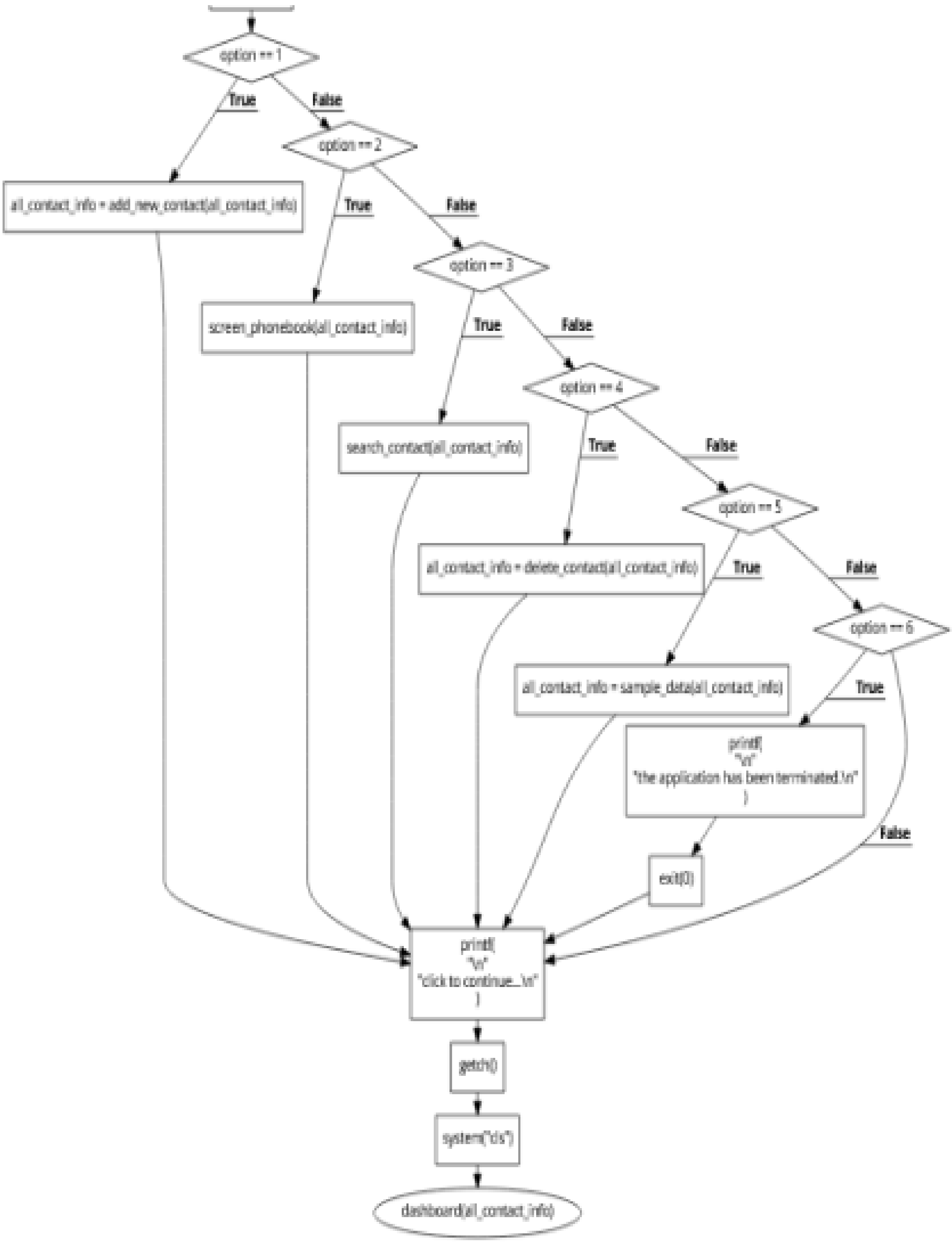

option == 1
True
False
all_contact_info = add_new_contact(all_contact_info)
option == 2
True
False
screen_phonebook(all_contact_info)
option == 3
True
False
search_contact(all_contact_info)
option == 4
True
False
all_contact_info = delete_contact(all_contact_info)
option == 5
True
False
all_contact_info = sample_data(all_contact_info)
option == 6
True
False
printf("\n" "the application has been terminated.\n")
exit(0)
printf("\n" "click to continue...\n")
getch()
system("cls")
dashboard(all_contact_info)

Figure 2: Flow Chart of different activities involved in different function of the project

2. Implementation

C Source Code

```
/*
Name: Md. Shaon Howlader
ID: 213902064
Email: shahriarhossenshaon4@gmail.com
Project title: Phonebook System
*/

#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <conio.h>

typedef struct contact_info{
char name[20];
char location[20];
char email[20];
char phone[20];
} contact_info;

typedef struct phonebook{
contact_info * single_contact_info;
struct phonebook * next_contact_info;
} phonebook;


phonebook * sample_data(phonebook * all_contact_info);
void dashboard();

contact_info * blank_contact_info();
phonebook * blank_phonebook();

void screen_phonebook(phonebook * all_contact_info);

contact_info * insert_contact_info(char * name, char * location, char *
email, char * phone);
phonebook * insert_phonebook(phonebook * all_contact_info, contact_info *
new_contact_info);

void search_phonebook_by_name(phonebook * all_contact_info, char * name);
void search_phonebook_by_location(phonebook * all_contact_info, char *
location);
```

```c
void search_phonebook_by_email(phonebook * all_contact_info, char * email);

phonebook * delete_phonebook_by_name(phonebook * all_contact_info, char * name);
phonebook * delete_phonebook_by_location(phonebook * all_contact_info, char * location);
phonebook * delete_phonebook_by_email(phonebook * all_contact_info, char * email);

phonebook * add_new_contact(phonebook * all_contact_info);
void search_contact(phonebook * all_contact_info);
phonebook * delete_contact(phonebook * all_contact_info);


int main(){
    phonebook * all_contact_info = NULL;
    dashboard(all_contact_info);

    return 0;
}

void dashboard(phonebook * all_contact_info){
    printf(
        "-------------\n"
        "  dashboard\n"
        "-------------\n"
        "\n"
    );

    printf(
        "1. add new contact\n"
        "2. show all contact\n"
        "3. search contact\n"
        "4. delete a contact info\n"
        "5. inser sample data\n"
        "6. exit\n"
        "\n"
    );

    printf(
        "type option: "
    );

    int option;
    scanf("%d", &option);

    system("cls");

    if(option == 1){
        all_contact_info = add_new_contact(all_contact_info);
    }else if(option == 2){
        screen_phonebook(all_contact_info);
    }else if(option == 3){
        search_contact(all_contact_info);
    }else if(option == 4){
        all_contact_info = delete_contact(all_contact_info);
    }else if(option == 5){
        all_contact_info = sample_data(all_contact_info);
    }else if(option == 6){
        printf(
            "\n"
            "the application has been terminated.\n"
        );
        exit(0);
    }

    printf(
        "\n"
        "click to continue...\n"
    );
    getch();
    system("cls");

    dashboard(all_contact_info);
}

phonebook * delete_contact(phonebook * all_contact_info){
    printf(
        "-------------\n"
        " delete contact\n"
        "-------------\n"
        "\n"
    );

    printf(
        "1. delete by name\n"
        "2. delete by email\n"
        "\n"
    );
    printf(
        "type option: "
    );

    int option;
    scanf("%d", &option);

    if(option == 1){
        char name[20];
        getchar();
        printf("type your name: ");
        gets(name);
        all_contact_info =
delete_phonebook_by_name(all_contact_info, name);
    }else if(option == 2){
        char email[20];
        getchar();
        printf("type your email: ");
        gets(email);
        all_contact_info =
delete_phonebook_by_email(all_contact_info, email);
    }
    return all_contact_info;
}

void search_contact(phonebook * all_contact_info){
    printf(
        "-------------\n"
        "  search contact\n"
        "-------------\n"
        "\n"
    );

    printf(
        "1. search by name\n"
        "2. search by email\n"
        "\n"
    );

    printf(
        "type option: "
    );

    int option;
```

```c
    scanf("%d", &option);



    if(option == 1){
        char name[20];
        getchar();
        printf("type your name: ");
        gets(name);
        search_phonebook_by_name(all_contact_info, name);
    }else if(option == 2){
        char email[20];
        getchar();
        printf("type your email: ");
        gets(email);
        search_phonebook_by_email(all_contact_info, email);
    }
}

phonebook * add_new_contact(phonebook * all_contact_info){
    printf(
        "-------------\n"
        " add new contact\n"
        "-------------\n"
        "\n"
    );

    char name[20];
    char location[20];
    char email[20];
    char phone[20];

    printf(
        "name: "
    );
    getchar();
    gets(name);


    printf(
        "location: "
    );
    gets(location);

    printf(
        "email: "
    );
    gets(email);
```

```
printf(
"phone number: "
);
gets(phone);

contact_info * new_contact_info = insert_contact_info(name, location,
email, phone);
all_contact_info = insert_phonebook(all_contact_info,
new_contact_info);
return all_contact_info;
}

phonebook * delete_phonebook_by_location(phonebook * all_contact_info,
char * location){
phonebook * each_contact_info = blank_phonebook();
each_contact_info = all_contact_info;

phonebook * blank = blank_phonebook();
phonebook * temp1 = blank_phonebook();
if(strcmp(each_contact_info -> single_contact_info -> location, location)
== 0){
blank = each_contact_info -> next_contact_info;
free(each_contact_info);
all_contact_info = blank;
}else{
while(each_contact_info -> next_contact_info != NULL){
if(strcmp(each_contact_info -> next_contact_info ->
single_contact_info -> location, location) == 0){
each_contact_info -> next_contact_info =
each_contact_info -> next_contact_info -> next_contact_info; break;
}
each_contact_info = each_contact_info ->
next_contact_info;
}
}
return all_contact_info;
}

phonebook * delete_phonebook_by_name(phonebook * all_contact_info, char *
name){
phonebook * each_contact_info = blank_phonebook();
each_contact_info = all_contact_info;

phonebook * blank = blank_phonebook();
phonebook * temp1 = blank_phonebook();
```

```
if(strcmp(each_contact_info -> single_contact_info -> name, name)



== 0){
            blank = each_contact_info -> next_contact_info;
            free(each_contact_info);
            all_contact_info = blank;
      }else{
            while(each_contact_info -> next_contact_info != NULL){
                  if(strcmp(each_contact_info -> next_contact_info ->
single_contact_info -> name, name) == 0){
                        each_contact_info -> next_contact_info =
each_contact_info -> next_contact_info -> next_contact_info;
                           break;
                  }
                  each_contact_info = each_contact_info ->
next_contact_info;
            }
      }
      return all_contact_info;
}

phonebook * delete_phonebook_by_email(phonebook * all_contact_info, char
* email){
      phonebook * each_contact_info = blank_phonebook();
      each_contact_info = all_contact_info;

      phonebook * blank = blank_phonebook();
      phonebook * temp1 = blank_phonebook();
      if(strcmp(each_contact_info -> single_contact_info -> email,
email) == 0){
            blank = each_contact_info -> next_contact_info;
            free(each_contact_info);
            all_contact_info = blank;
      }else{
            while(each_contact_info -> next_contact_info != NULL){
                  if(strcmp(each_contact_info -> next_contact_info ->
single_contact_info -> email, email) == 0){
                        each_contact_info -> next_contact_info =
each_contact_info -> next_contact_info -> next_contact_info;
                           break;
                  }
                  each_contact_info = each_contact_info ->
next_contact_info;
            }
      }
      return all_contact_info;
}
```

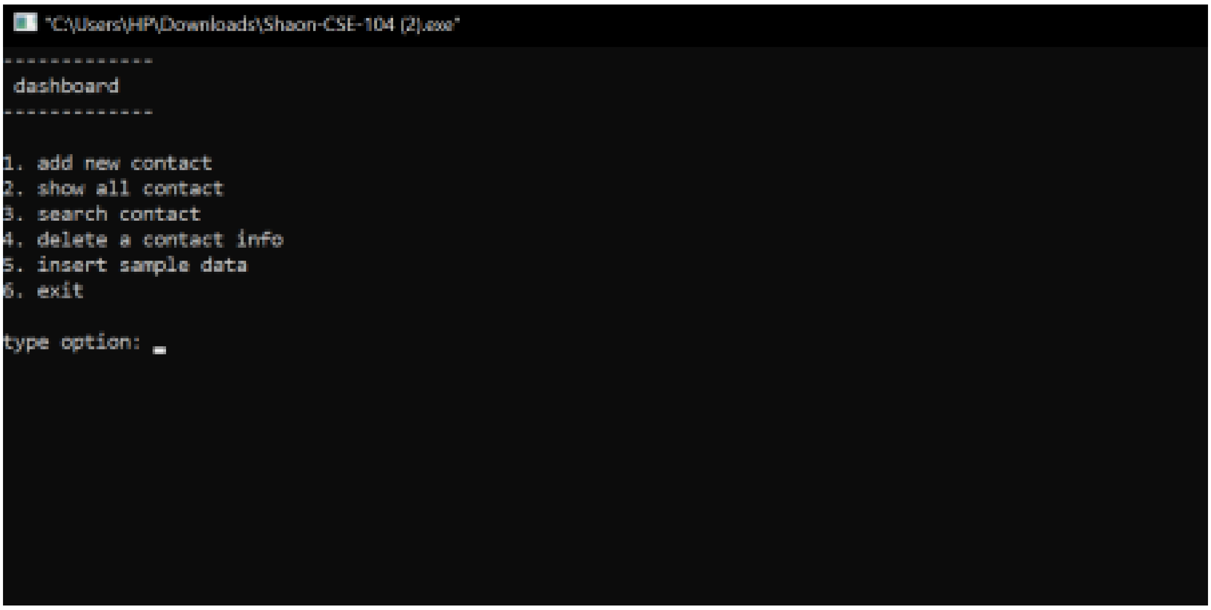
```
void search_phonebook_by_email(phonebook * all_contact_info, char *
email){
      phonebook * each_contact_info = blank_phonebook();
      each_contact_info = all_contact_info;

      printf(

"----------------------------------------------------------------------
- -------\n"
            "name\t\tlocation\t\temail\t\t\tphone\n"

"----------------------------------------------------------------------
- -------\n"
            "\n"
      );

      while(each_contact_info != NULL){
            if(strcmp(each_contact_info -> single_contact_info -> email,
email) == 0){
                  printf(
                        "%.6s\t\t"
                        "%.8s\t\t\t"
                        "%.14s\t\t"
                        "%.12s\n",
                        each_contact_info -> single_contact_info -> name,
                        each_contact_info -> single_contact_info ->
location,
                        each_contact_info -> single_contact_info ->
email,
                        each_contact_info -> single_contact_info -> phone
                  );
            }
            each_contact_info = each_contact_info -> next_contact_info;
      }
}

void search_phonebook_by_location(phonebook * all_contact_info, char *
location){
      phonebook * each_contact_info = blank_phonebook();
      each_contact_info = all_contact_info;

      printf(

"----------------------------------------------------------------------
```

```
- -------\n"
            "name\t\tlocation\t\temail\t\t\tphone\n"
"-----------------------------------------------------------------------
--------\n"
            "\n"
      );

      while(each_contact_info != NULL){
            if(strcmp(each_contact_info -> single_contact_info ->
location, location) == 0){
                  printf(
                        "%.6s\t\t"
                        "%.8s\t\t\t"
                        "%.14s\t\t"
                        "%.12s\n",
                        each_contact_info -> single_contact_info -> name,
                        each_contact_info -> single_contact_info ->
location,
                        each_contact_info -> single_contact_info ->
email,
                        each_contact_info -> single_contact_info -> phone
                  );
            }
            each_contact_info = each_contact_info -> next_contact_info;
      }
}

void search_phonebook_by_name(phonebook * all_contact_info, char *
name){
      phonebook * each_contact_info = blank_phonebook();
      each_contact_info = all_contact_info;

      printf(

"----------------------------------------------------------------------
- -------\n"
            "name\t\tlocation\t\temail\t\t\tphone\n"

"----------------------------------------------------------------------
- -------\n"
            "\n"
      );

      while(each_contact_info != NULL){
            if(strcmp(each_contact_info -> single_contact_info -> name,
name) == 0){
```

```
            printf("%.6s\t\t"
                "%.8s\t\t\t"
                "%.14s\t\t"
                "%.12s\n",
                each_contact_info -> single_contact_info -> name,
                each_contact_info -> single_contact_info ->
location,
                each_contact_info -> single_contact_info ->
email,
                each_contact_info -> single_contact_info -> phone
            );
        }
        each_contact_info = each_contact_info -> next_contact_info;
    }
}

void screen_phonebook(phonebook * all_contact_info){
    phonebook * each_contact_info = blank_phonebook();
    each_contact_info = all_contact_info;

    printf(

"----------------------------------------------------------------------
- -------\n"
        "name\t\tlocation\t\temail\t\t\tphone\n"

"----------------------------------------------------------------------
- -------\n"
        "\n"
    );

    while(each_contact_info != NULL){
        printf(
            "%.6s\t\t"
            "%.8s\t\t\t"
            "%.14s\t\t"
            "%.12s\n",
            each_contact_info -> single_contact_info -> name,
            each_contact_info -> single_contact_info -> location,
            each_contact_info -> single_contact_info -> email,
            each_contact_info -> single_contact_info -> phone
        );
        each_contact_info = each_contact_info -> next_contact_info;
    }
}
```

```
phonebook * insert_phonebook(phonebook * all_contact_info, contact_info *
new_contact_info){
phonebook * new_contact = blank_phonebook();
new_contact -> single_contact_info = new_contact_info;

phonebook * temp = blank_phonebook();
temp = all_contact_info;

if(temp == NULL){
all_contact_info = new_contact;
}else{
while(temp -> next_contact_info != NULL){
temp = temp -> next_contact_info;
}
temp -> next_contact_info = new_contact;
}


return all_contact_info;
}

contact_info * insert_contact_info(char * name, char * location, char *
email, char * phone){
contact_info * single_contact = blank_contact_info();
strcpy(single_contact -> name, name);
strcpy(single_contact -> location, location);
strcpy(single_contact -> email, email);
strcpy(single_contact -> phone, phone);

return single_contact;
}

contact_info * blank_contact_info(){
contact_info * blank = (contact_info *)
malloc(sizeof(contact_info));
return blank;
}

phonebook * blank_phonebook(){
phonebook * blank = (phonebook *) malloc(sizeof(phonebook)); blank ->
next_contact_info = NULL;
return blank;
}

phonebook * sample_data(phonebook * all_contact_info){
contact_info * new_contact_info1 = insert_contact_info("name1",
"locati1", "mail1@mail.com", "123123123");
	contact_info * new_contact_info2 = insert_contact_info("name2",
"locati2", "mail2@mail.com", "123123123");
	contact_info * new_contact_info3 = insert_contact_info("name3",
"locati3", "mail3@mail.com", "123123123");
	contact_info * new_contact_info4 = insert_contact_info("name4",
"locati4", "mail4@mail.com", "123123123");

	all_contact_info = insert_phonebook(all_contact_info,
new_contact_info1);
	all_contact_info = insert_phonebook(all_contact_info,
new_contact_info2);
	all_contact_info = insert_phonebook(all_contact_info,
new_contact_info3);
	all_contact_info = insert_phonebook(all_contact_info,
new_contact_info4);

	return all_contact_info;
}
```

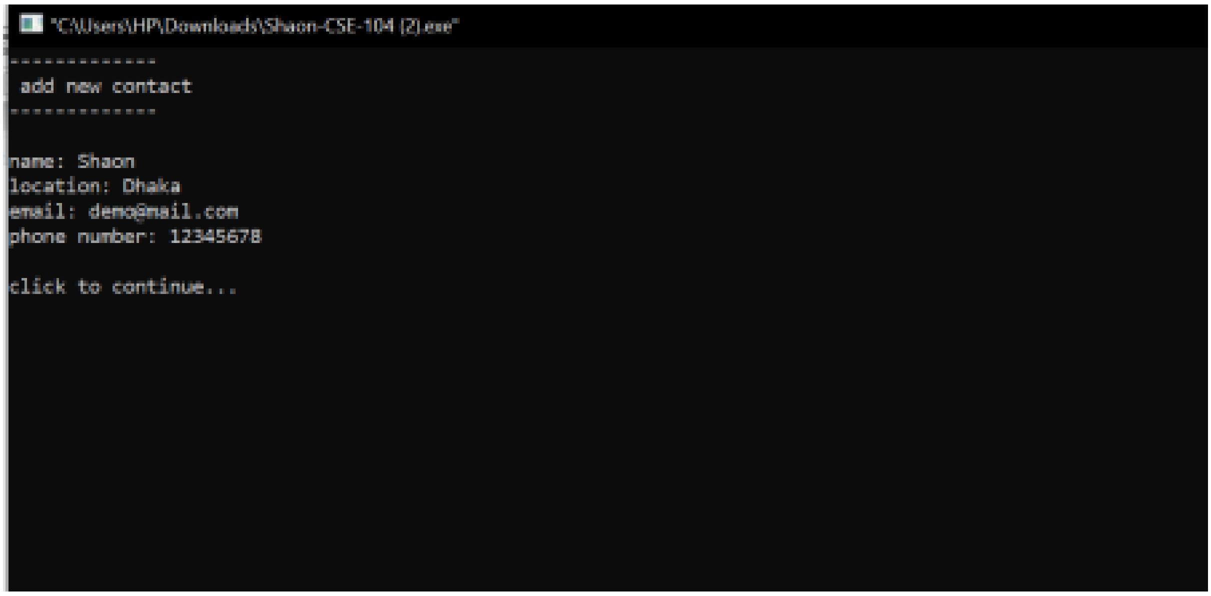
Screenshots



```
"C:\Users\HP\Downloads\Shaon-CSE-104 (2).exe"
-------------
 dashboard
-------------

1. add new contact
2. show all contact
3. search contact
4. delete a contact info
5. insert sample data
6. exit

type option: _
```

Figure 3: Main Menu interface

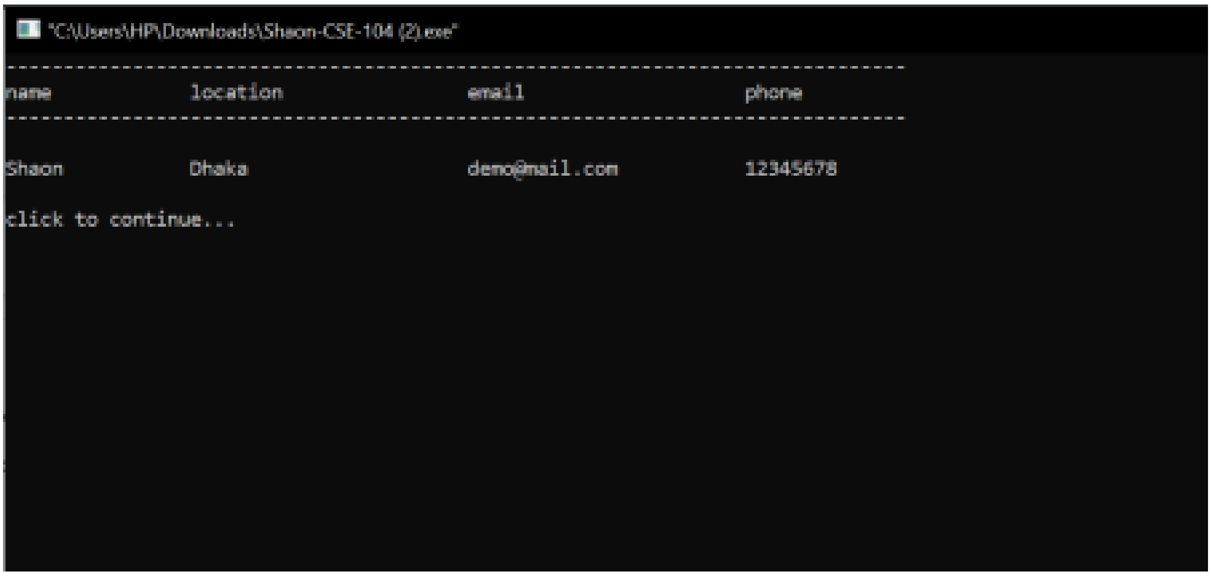
When the is executed ,the user will be directed to the main menu interface. The program is introduced with a few lines of texts. Then Six selections are made for the user as the user can choose to add new contact,show all contact,search contact,delete a contact info,insert sample data or exit the program.



```
"C:\Users\HP\Downloads\Shaon-CSE-104 (2).exe"
-------------
 add new contact
-------------

name: Shaon
location: Dhaka
email: demo@mail.com
phone number: 12345678

click to continue...
```

Figure 4: add new contact entered (main manu)

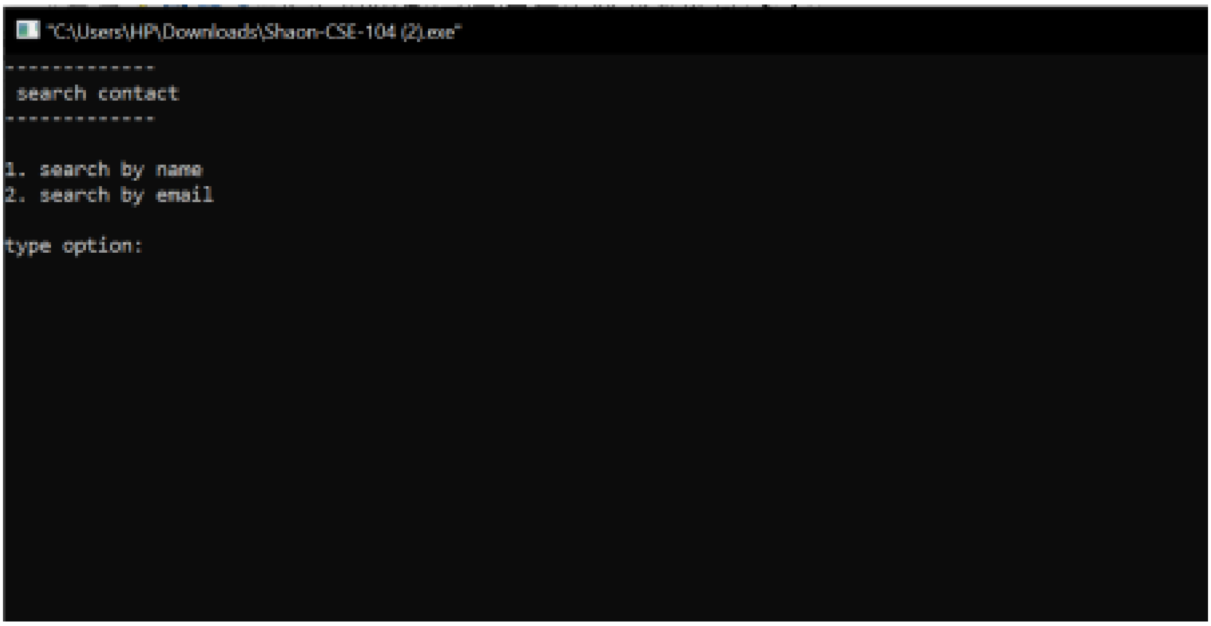
The program is asking the user to enter name,location,email, and phone number to add new contact for the user.



```
"C:\Users\HP\Downloads\Shaon-CSE-104 (2).exe"
------------------------------------------------------------------------------
name            location                email                   phone
------------------------------------------------------------------------------

Shaon           Dhaka                   demo@mail.com           12345678

click to continue...
```

Figure 5:the contact add successfully.

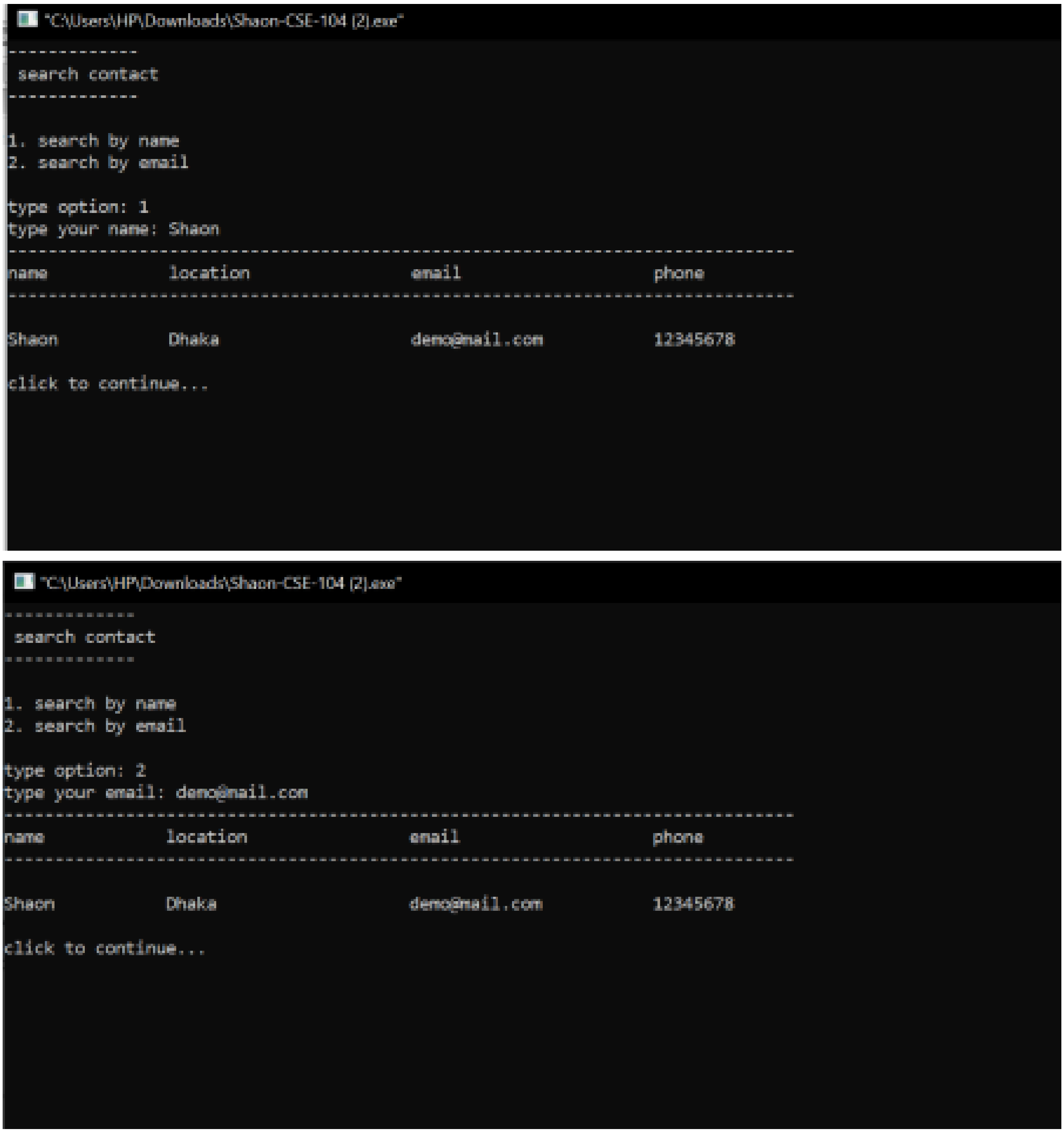
As shown the interface the contact number is add successfully, after the user entered the show all contacts.



```
"C:\Users\HP\Downloads\Shaon-CSE-104 (2).exe"
-------------
 search contact
-------------

1. search by name
2. search by email

type option:
```

Figure 6: search a contact by name or email.

The program is asking the user to enter name or email, to search contact for the user.


"C:\Users\HP\Downloads\Shaon-CSE-104 (2).exe"

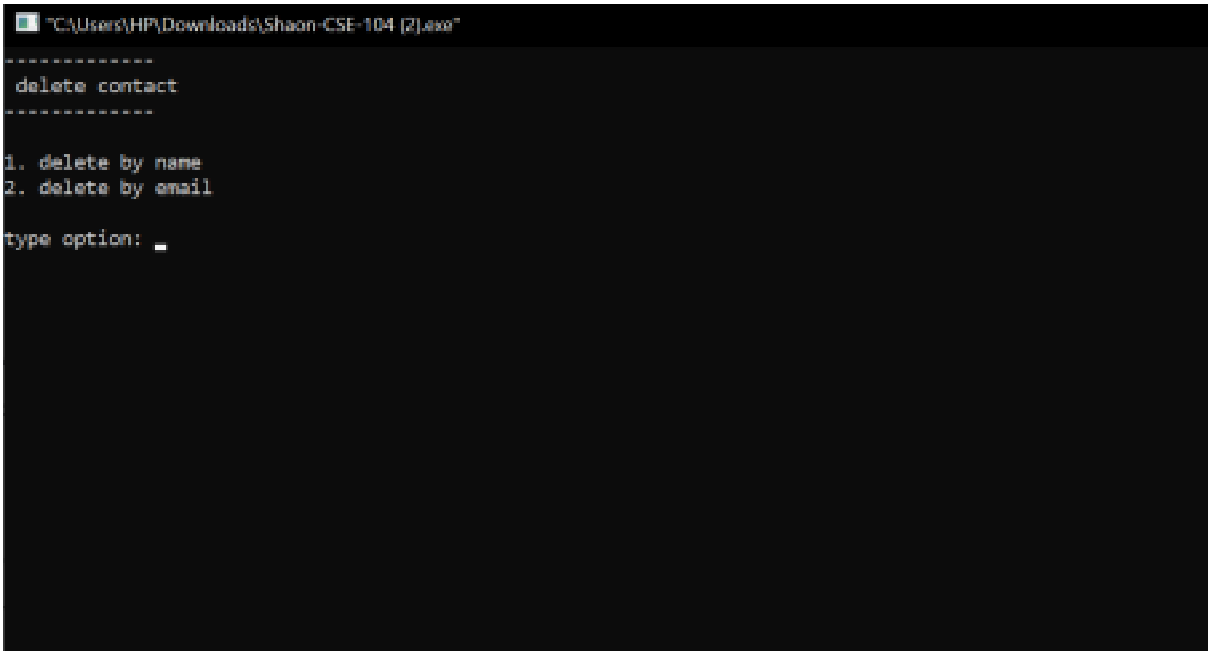
```
-------------
 search contact
-------------

1. search by name
2. search by email

type option: 1
type your name: Shaon
------------------------------------------------------------------------------
name            location                email                   phone
------------------------------------------------------------------------------

Shaon           Dhaka                   demo@mail.com           12345678

click to continue...
```

"C:\Users\HP\Downloads\Shaon-CSE-104 (2).exe"

```
-------------
 search contact
-------------

1. search by name
2. search by email

type option: 2
type your email: demo@mail.com
------------------------------------------------------------------------------
name            location                email                   phone
------------------------------------------------------------------------------

Shaon           Dhaka                   demo@mail.com           12345678

click to continue...
```

Figure 7: the search contact work done successfully.

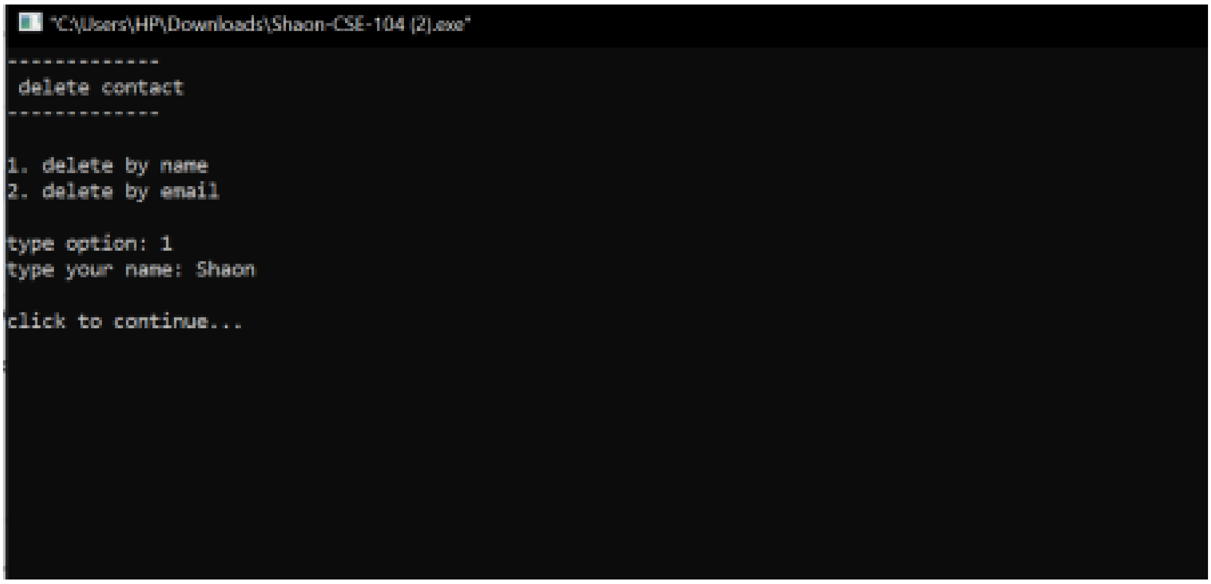
As shown the interface the search contact work was done successfully by name and email.



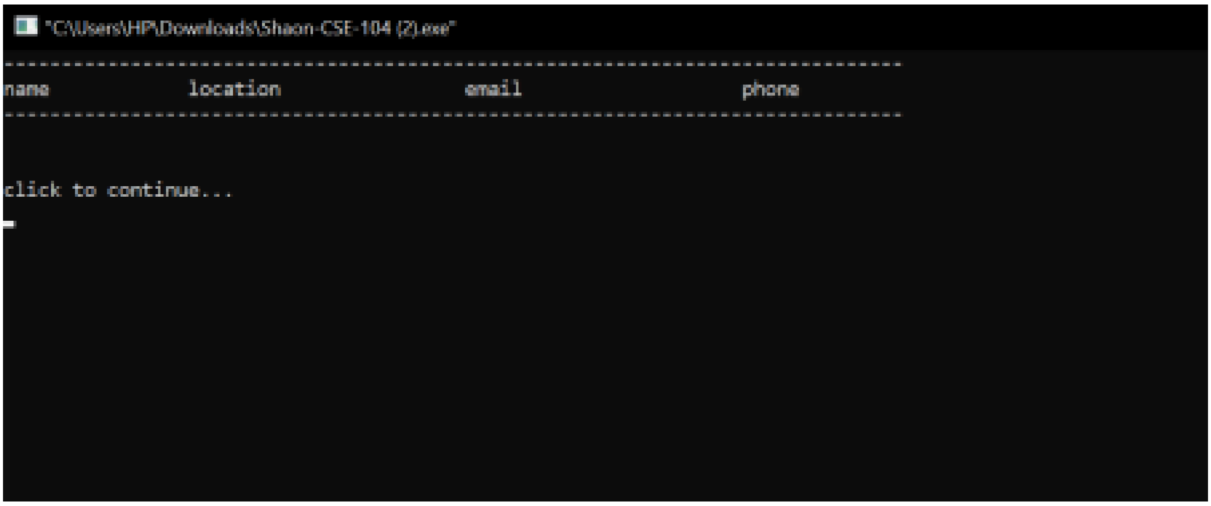
```
"C:\Users\HP\Downloads\Shaon-CSE-104 (2).exe"
-------------
 delete contact
-------------

1. delete by name
2. delete by email

type option: _
```

Figure 8: delete a contact by name or email.

The program is asking the user to enter name or email, to delete a contact for the user.



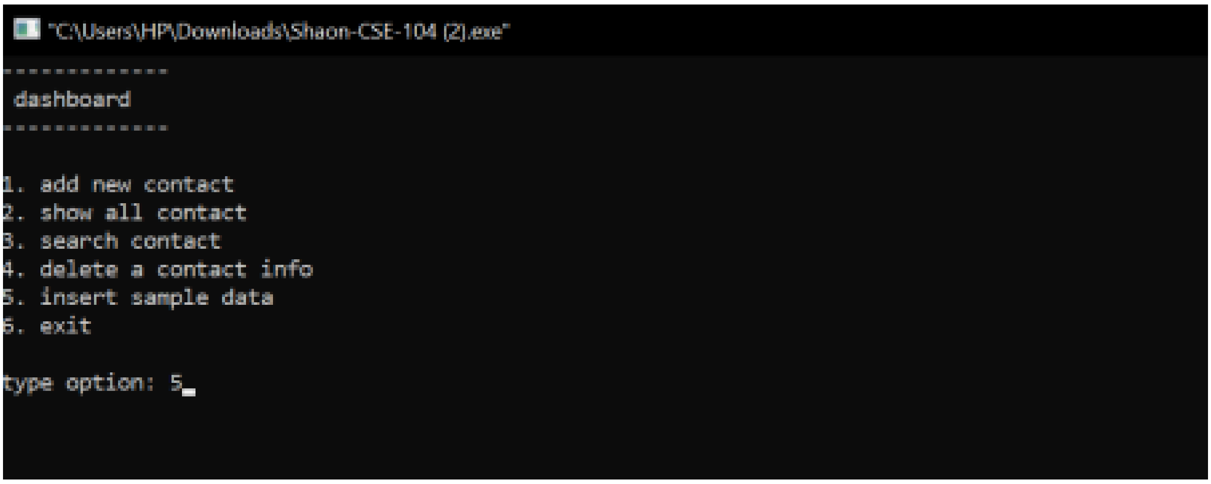
```
-------------
 delete contact
-------------

1. delete by name
2. delete by email

type option: 1
type your name: Shaon

click to continue...
```



```
----------------------------------------------------------------------------
name            location                email                   phone
----------------------------------------------------------------------------


click to continue...
```

Figure 9: The contact is deleted successfully.

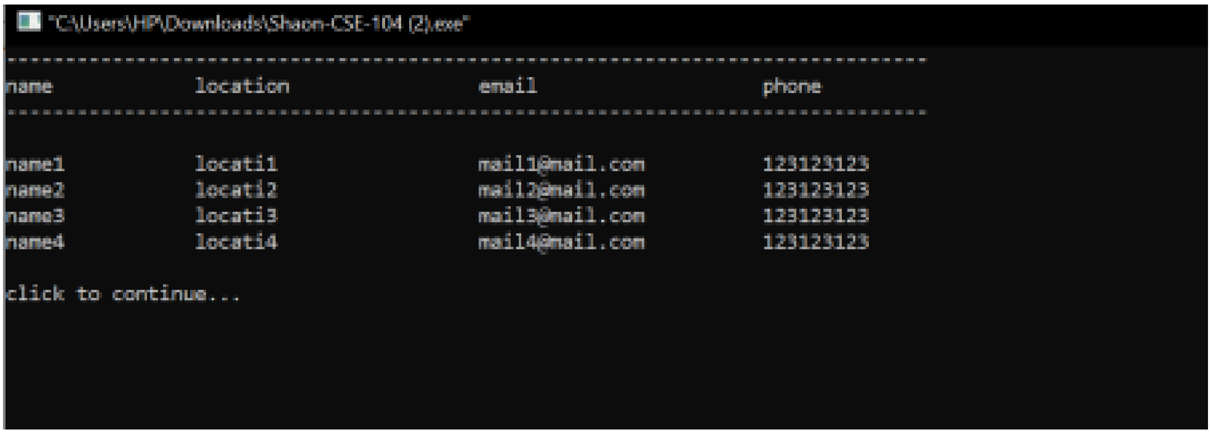
As shown the interface the contact number is deleted successfully, after the user entered the show all contacts.



```
"C:\Users\HP\Downloads\Shaon-CSE-104 (2).exe"
-------------
 dashboard
-------------

1. add new contact
2. show all contact
3. search contact
4. delete a contact info
5. insert sample data
6. exit

type option: 5_
```

Figure 10 : Insert sample data.

Here I insert some sample data.



```
"C:\Users\HP\Downloads\Shaon-CSE-104 (2).exe"
-------------------------------------------------------------------------------
name            location                  email                    phone
-------------------------------------------------------------------------------

name1           locati1                   mail1@mail.com           123123123
name2           locati2                   mail2@mail.com           123123123
name3           locati3                   mail3@mail.com           123123123
name4           locati4                   mail4@mail.com           123123123

click to continue...
```

Fig 11 : Insert Sample data Output.

As shown the interface the insert sample data output , after the user entered the show all contacts.

Chapter 3

Conclusion

Learning Outcomes

The Program makes the user simpler to connect to his contact. The contact personal information is stored under a single number this would benefit the user to easily search and locate his required contact. This program deals with six operations add new contact,show all contact,search contact,delete a contact info,insert sample data and exit according the user’s choice.

Future Scopes

- Contact exchange solutions for easy and quick access to sharing business contacts.
- Real-time messaging and chat options, facilitating productive interactions.

THANKS