Final Project

Elsherif Mahmoud

ECEN 210

Overview

- App Walkthrough
- Code structure
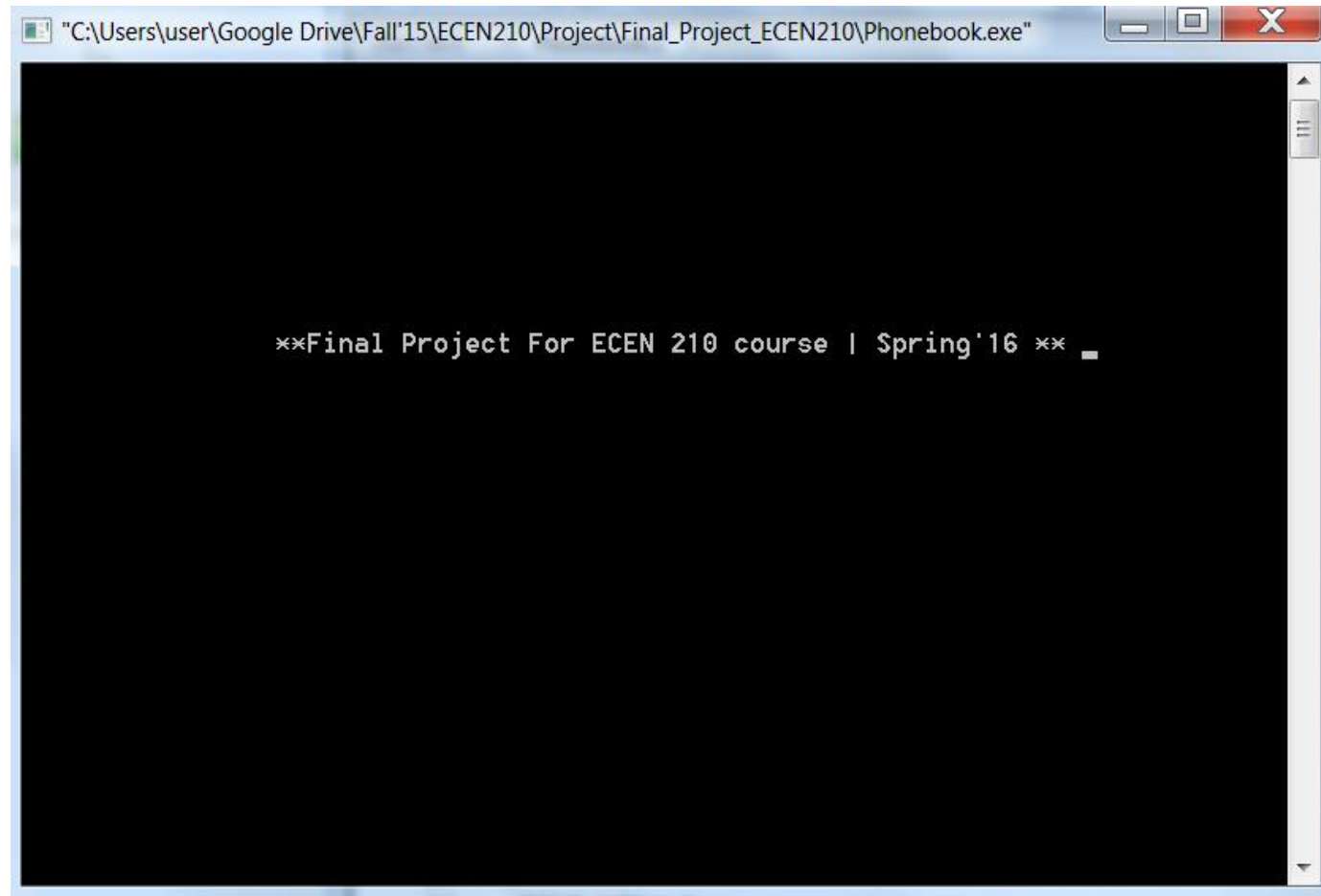
**Final Project For ECEN 210 course | Spring'16 **

```
******* P H O N E   B O O K *******


About Me                (0)
Add New Contact         (1)
Search For a Contact    (2)
List All Contacts       (3)
Delete All Contacts     (4)
Save Changes            (5)
Close The Application    (6)

So, What do you feel like doing? >> _
```

```
********* A D D  a  C O N T A C T *********

        >>>>>> Your Memory Usage is 0% <<<<<<


First Name: Elsherif
Last Name: Mahmoud
Email: Elsherif@qatar.tamu.edu
Are you sure you want to Add Contacts? y/n
>>y


        $$$$$$$$$$ Contact Successfully Added $$$$$$$$$

Press any key to continue . . .
```

```
******* S E A R C H   F O R   C O N T A C T *******



Please type the name of the contact

First Name: Ahmed
Last Name: Ali


********** No Matches Found **********

Press any key to continue . . .
```

```
******* S E A R C H   F O R   C O N T A C T *******



Please type the name of the contact

First Name: Elsherif
Last Name: Mahmoud

 (1)
 Elsherif Mahmoud's email is: Elsherif@qatar.tamu.edu


 (2)
 Elsherif Mahmoud's email is: q.sheref@ymail.com

*********** 2 Matches Found ***********


**Enter 0 to go back**
Your contact of interest is #
```

```
****** S E A R C H   F O R   C O N T A C T ******



Please type the name of the contact

First Name: Elsherif
Last Name: Mahmoud


 (1)
 Elsherif Mahmoud's email is: Elsherif@qatar.tamu.edu


 (2)
 Elsherif Mahmoud's email is: q.sheref@ymail.com

*********** 2 Matches Found ***********


**Enter 0 to go back**
Your contact of interest is #2

 *[ Elsherif Mahmoud's email is: q.sheref@ymail.com ]*


 *Homepage(H)   *Copy(C)   *Delete(D)   *Select another(S)
>>c

***Email copied Successfully***

**Enter 0 to go back**
Your contact of interest is #
```

q.sheref@ymail.com

```
******* S E A R C H   F O R   C O N T A C T *******



Please type the name of the contact

First Name: Elsherif
Last Name: Mahmoud

 (1)
 Elsherif Mahmoud's email is: Elsherif@qatar.tamu.edu


 (2)
 Elsherif Mahmoud's email is: q.sheref@ymail.com

*********** 2 Matches Found ***********


**Enter 0 to go back**
Your contact of interest is #2

 *[ Elsherif Mahmoud's email is: q.sheref@ymail.com ]*


 *Homepage(H)   *Copy(C)   *Delete(D)   *Select another(S)
>>d
Are you sure you want to delete this contact? y/n
>>y

 $$$$Contact Deleted, He wasn't nice anyways!!

 ----------------------------------------------

**Enter 0 to go back**
Your contact of interest is #
```

```
**Enter 0 to go back**
Your contact of interest is #2

 *[ Elsherif Mahmoud's email is: Ahmed@gmail.com ]*


 *Homepage(H)  *Copy(C)  *Delete(D)  *Select another(S)
>>d
Are you sure you want to delete this contact? y/n
>>y

 $$$$Contact Deleted, He wasn't nice anyways!!

 ----------------------------------------------

**Enter 0 to go back**
Your contact of interest is #2

****ERROR...you have already deleted this contact****


**Enter 0 to go back**
Your contact of interest is #
```

```
********* A L L   C O N T A C T S *********

(1)
Elsherif Mahmoud's email is: Elsherif.mahmoud@qatar.tamu.edu


(2)
Mohamed Mostafa's email is: Am@yahoo.com



        ***You have 2 Contacts***


**Enter 0 to go back**
Your contact of interest is #
```

"C:\Users\user\Google Drive\Fall'15\ECEN210\Project\Interface\bin\Debug\Interface.exe"

```
********* A L L   C O N T A C T S ********

   (1)
   Elsherif Mahmoud's email is: Elsherif.mahmoud@qat


   (2)
   Mohamed Mostafa's email is: Am@yahoo.com



            ***You have 2 Contacts***


  **Enter 0 to go back**
  Your contact of interest is #
3

  ****ERROR..Select From The contacts On The List****


  **Enter 0 to go back**
  Your contact of interest is #
```
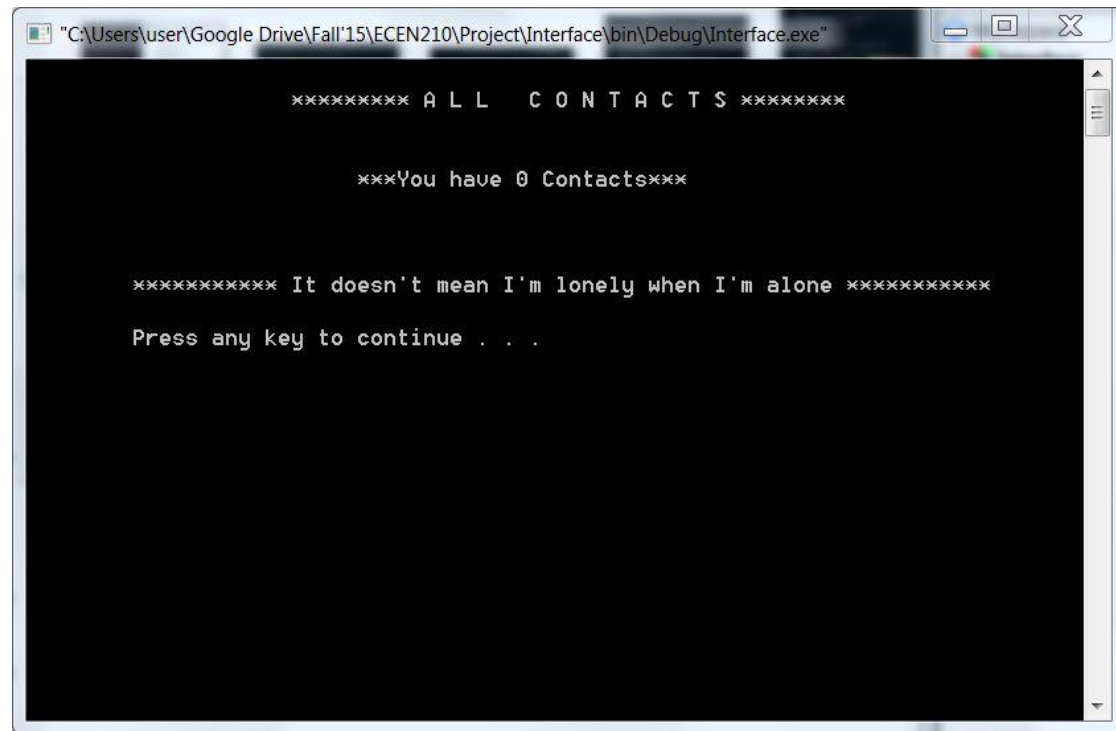
```
********* A L L   C O N T A C T S *********


***You have 0 Contacts***



*********** It doesn't mean I'm lonely when I'm alone ***********

Press any key to continue . . .
```

```
******** A L L   C O N T A C T S ********

(1)
Elsherif Mahmoud's email is: Elsherif.mahmoud@qatar.tamu.edu


(2)
Mohamed Mostafa's email is: Am@yahoo.com



        ***You have 2 Contacts***


**Enter 0 to go back**
Your contact of interest is #
```

```
********* A L L   C O N T A C T S *********

  (1)
  Elsherif Mahmoud's email is: Elsherif.mahmoud@qatar.tamu.edu


  (2)
  Mohamed Mostafa's email is: Am@yahoo.com



        ***You have 2 Contacts***


**Enter 0 to go back**
Your contact of interest is #
```

```
******** P H O N E   B O O K ********




About Me                (0)
Add New Contact         (1)
Search For a Contact    (2)
List All Contacts       (3)
Delete All Contacts     (4)
Save Changes            (5)
Close The Application   (6)

So, What do you feel like doing? >> 4
         Are you sure you want to delete ALL contacts? y/n
        >>n

        $$$ oops.. my bad !!

        Press any key to continue . . .
```

```
******* P H O N E   B O O K ********



About Me                    (0)
Add New Contact             (1)
Search For a Contact        (2)
List All Contacts           (3)
Delete All Contacts         (4)
Save Changes                (5)
Close The Application        (6)

So, What do you feel like doing? >> 4
        Are you sure you want to delete ALL contacts? y/n
        >>y


            ***********I KILLED THEM ALL !!!***********


        Press any key to continue . . .
```
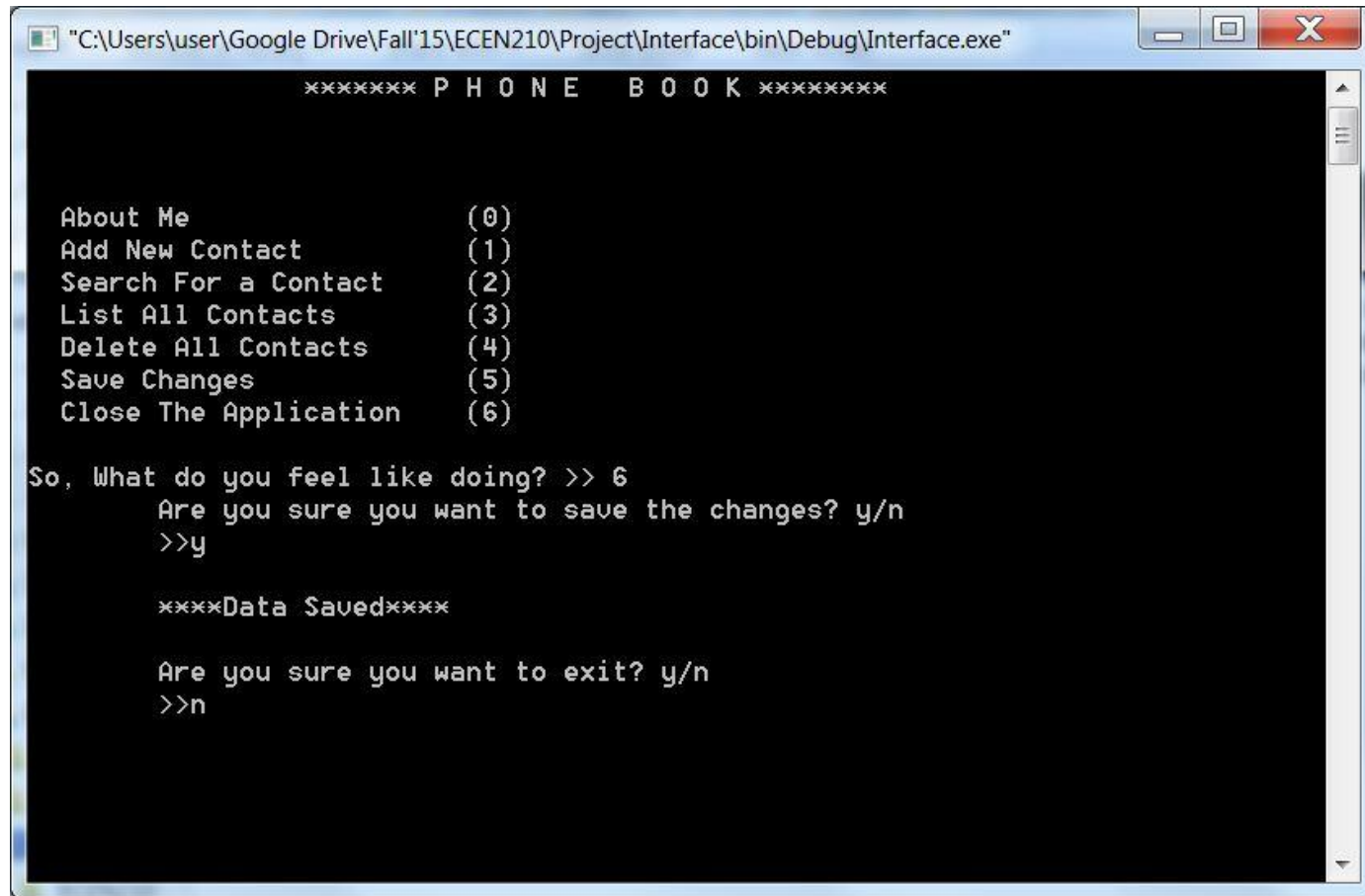
```
******* P H O N E   B O O K ********



About Me                 (0)
Add New Contact          (1)
Search For a Contact     (2)
List All Contacts        (3)
Delete All Contacts      (4)
Save Changes             (5)
Close The Application     (6)

So, What do you feel like doing? >> 6
        Are you sure you want to save the changes? y/n
        >>y


        ****Data Saved****

        Are you sure you want to exit? y/n
        >>n
```
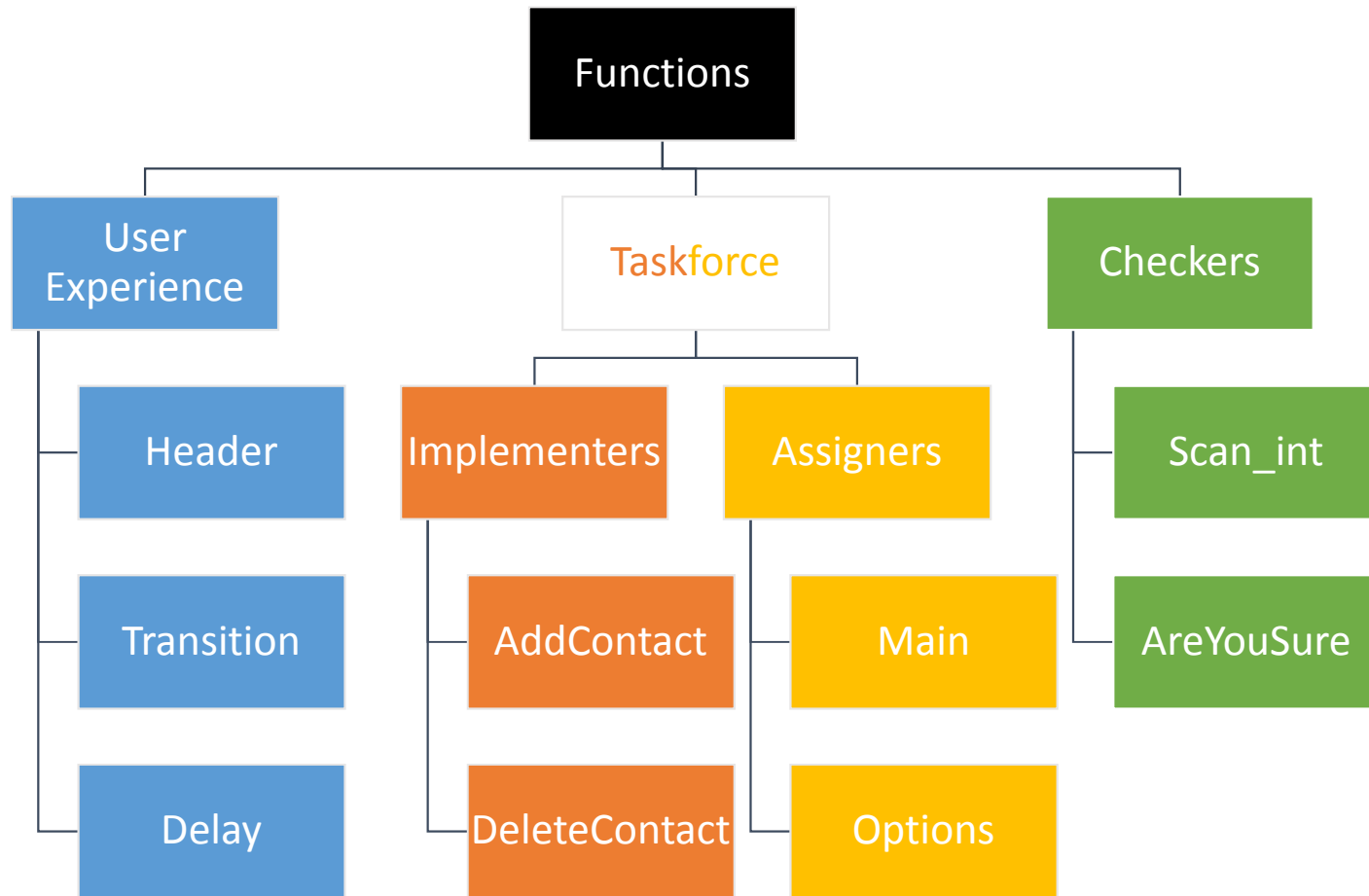
```
Functions
├── User Experience
│   ├── Header
│   ├── Transition
│   └── Delay
├── Taskforce
│   ├── Implementers
│   │   ├── AddContact
│   │   └── DeleteContact
│   └── Assigners
│       ├── Main
│       └── Options
└── Checkers
    ├── Scan_int
    └── AreYouSure
```

Phonebook_Contact Data Type.

- Exist signal
- First Name
- Last Name
- Email Address

1
Elsherif
Mahmoud
q.sheref@ymail.com
1
Hossam
Yasser
Hossam@gmail.com
0
Somebody
SomebodyElse
email@example.com

Header

Transition

- Dynamic Transition Message:
  - Project Title
  - Loading
  - Closing

```c
void transition(int type){
    system("cls");
    char option;int i;
    printf("\n\n\n\n\n                    ");
    if (type==close){//closing
        char message[]="* * * * * * * C L O S I N G * * * * * * *";
        int x = strlen(message);
        for (i=0;i<=x;i++)
        {
            printf("%c",message[i]);
            delay(0,02);
        }
    }
```

Delay

- This function freezes the compiler for specified time.
- It takes two inputs (number of integer seconds, fractional seconds)
- e.g. delay(1,33) delays the program by 1.33 seconds

```c
void delay(unsigned  time,unsigned decimal){
    int i,j;
    float fraction=(float)(decimal)/100;//for milliseconds
    for (j=0;time!=0 && decimal!=0 && j<time;j++)//e.g. 1.35 second
        for (i=0;i<CPUFACTOR*100000000*(1+fraction);i++);
    for (j=0;time!=0 && decimal==0 && j<time;j++) //e.g. 1.00 second
        for (i=0;i<CPUFACTOR*100000000;i++);
    if (time==0 && decimal!=0) //e.g. 0.21 second
        for (i=0;i<CPUFACTOR*100000000*fraction;i++);
}
```

Main

- Intitalize the Data Structure
- Load the contact lists
- Initialize the number of contacts
- Prompt the user Input
- Call Functions (Assign Tasks)

```c
void main(){
    system("cls");
    record *phonebook[capacity];//initialize the instance
    load_data(phonebook);//loading the file containing the contact list
    int task;
    transition(Project_Title);//displays the project title message
    while (1){
        ResetMatches();//reseting the array of indexes of the matched results
        system("cls");
        header();//the interface
        scan_int(&task);
        switch (task){
            case 0:/**about me**/
                transition(load);//transition function //Project title
                aboutMe();//About Me
                system("pause");
                transition(close);
                break;
            case 1:/**Add contact**/
                transition(load);//transition function
                AddContact(phonebook);//New contact function
                system("pause");
                transition(close);//transition function //closing
                break;
```

AddContact

- This function adds a new contact to the array of phonebook
- It asks the user to enter the First and Last Names as well as the email address.
- It then creates a signal of existents (x.exists=1)

```c
void AddContact (record * phonebook){
    printf("\n\t          ********* A D D  a  C O N T A C T *********     \n");
    printf("\n\t             >>>>>> Your Memory Usage is %d%% <<<<<<      \n\n",(counter*100)/capacity);
    int i,k;
    record TempContact;//temporary instant, until the user confirms
    counter++;//number of contact increases by 1
    i=counter-1;/*index for values assignment.
    it will keep its value unless there exists a contact with
    removal signal (x[k].exist==0), then i=k and the counter should not increment
    as the memory is the same*/
    for (k=0;k<counter;k++){
        if (phonebook[k].exist==0){--counter;i=k;break;}
    }
    ///////////////USER Prompt///////////////////
    printf("\n\tFirst Name: ");
    scanf("%s", TempContact.FirstName);
    printf("\tLast Name: ");
    scanf("%s", TempContact.LastName);
    printf("\tEmail: ");
    scanf("%s", TempContact.EmailAdress);
    /*USER CONFIRMATION REQUEST*/
    if(AreYouSure("Add Contacts")==1){
        printf("\n\t          $$$$$$$$$$ Contact Successfully Added $$$$$$$$$$\n\n\t");
        phonebook[i].exist=1;
        strcpy(phonebook[i].FirstName,TempContact.FirstName);
        strcpy(phonebook[i].LastName,TempContact.LastName);
        strcpy(phonebook[i].EmailAdress,TempContact.EmailAdress);
    }
    else{//if the user doesn't ant to add
        printf("\n\t No contacts will be added...\n\t");
        --counter;//the counter must be reset to the previous value
    }
```

SearchForContact

- This function searches for contact by matching first and last names [CASE SENSITIVE]
- It takes phonebook array as an input.
- Searches only among exisiting contacts (x.exist==1)

```c
void SearchForContact(record *phonebook){
    int i;//index for contacts
    int j=0;//counter for matches
    int firstNameMatch,lastNameMatch;
    char QueryFirstName[StringLength];//search query
    char QueryLastName[StringLength];//search query
    ///////////////////InterFace////////////////////
    printf("\n\t              ******* S E A R C H   F O R   C O N T A C T *******     \n");
    printf("\n\n\n\n\tPlease type the name of the contact");
    printf("\n\n\tFirst Name: ");
    scanf("%s",&QueryFirstName);//First Name Query
    printf("\tLast Name: ");
    scanf("%s",&QueryLastName);//Last Name Query
    ////////////////////////////////////////////////
    for (i=0;i<counter;i++){
        //Case Sensitive comparison
        firstNameMatch=strcmp(QueryFirstName, phonebook[i].FirstName) == 0;//1 if matches 0 otherwise
        lastNameMatch=strcmp(QueryLastName, phonebook[i].LastName) == 0;//1 if matches 0 otherwise
        /*&&&&&&&&&&&&&&& Display &&&&&&&&&&&&&&&&&&&&&&*/
        if (phonebook[i].exist==1 && firstNameMatch && lastNameMatch){
            contact_matched[j]=i;/*reserving the index of the matched contact
            for further references */
            j++;//counter for matches
            printf("\n\t (%d)\n\t %s %s's email is: %s\n\n",j,phonebook[i].FirstName, phonebook[i].Last
        }
    }//for loop
    if (j==0){printf("\n\n\t*********** No Matches Found ***********\n\n\t");}
    else if(j>1) {//if there's more than 1 match
        printf("\t*********** %d Matches Found ***********\n\n\t",j);
    }
}
```

```
******* S E A R C H   F O R   C O N T A C T *******



Please type the name of the contact

First Name: Elsherif
Last Name: Mahmoud

 (1)
 Elsherif Mahmoud's email is: Elsherif@qatar.tamu.edu


 (2)
 Elsherif Mahmoud's email is: q.sheref@ymail.com

*********** 2 Matches Found ***********


**Enter 0 to go back**
Your contact of interest is #
```

Options

- This function is executed after listing All or searched contacts.
- The user is asked to select the contact of interest.
- The user is then asked to select the action to be performed on the contact:
- 1)go to homepage
- 2)Copy the contact's email to clipboard
- 3)Delete the contact
- 4)Back to the list of contact

```c
void options(record * phonebook){
    char action;int i;fflush(stdin);
    int k; //index for match of interest
    //if there's no contacts/ no matches
    if (contact_matched[0]==-1){system("pause");return;}

    /**_____Contact of interest_____**/
    //This is executed  if  there's more than 1 match
    if (contact_matched[1]!=-1){
        printf("\n\t**Enter 0 to go back**\n\tYour contact of interest is #");
        scan_int(&k);//scanning the user choice of the contact
        i=contact_matched[k-1];//index of the selected matched query
        if (k==0){
            return;
        }
        else if (i==-1){//checking that the user chose a number within the range
            printf("\n\t****ERROR..Select From The contacts On The List*****\n\n\t");
            options(phonebook);
        }
        else if(phonebook[i].exist==0){//checking that the user didn't choose a contact he already
            printf("\n\t****ERROR...you have already deleted this contact****\n\n\t");
            options(phonebook);
        }
        printf("\n\t *[ %s %s's email is: %s ]*\n",phonebook[i].FirstName, phonebook[i].LastName,
    }else{i=contact_matched[0];}//index of the only matched contact

    /**_____Action Type_____**/

    printf("\n\n\t *Homepage(H)   *Copy(C)   *Delete(D)   *Select another(S)\n\t>>");
    fflush(stdin);
    scanf("%c",&action);
    if (action=='H'||action=='h'){//go to home screen
        return;
    }
    else if (action=='C'||action=='c'){//copy to clipboard
        copy_to_clipboard(&phonebook[i].EmailAdress);
        options(phonebook);
```
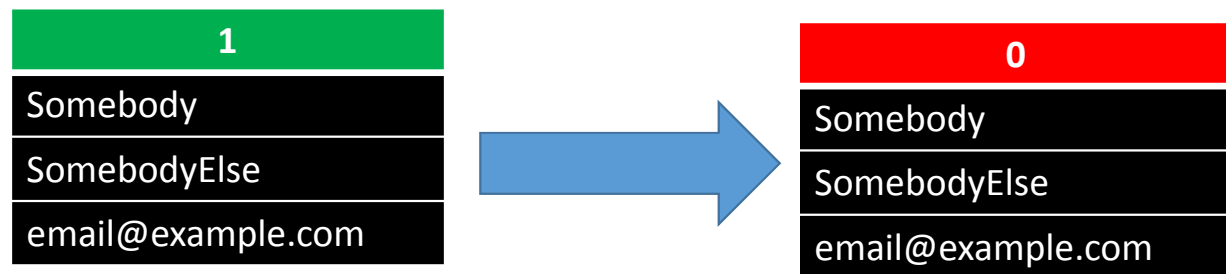
DeleteContact

- This function deletes specific contact.
- It takes two inputs
  - the phonebook instance array
  - the specific index of the contact.
- It then sends a removal signal by assigning 0 to "exist" the parameter (i.e. x[i].exist=0)

1
Somebody
SomebodyElse
email@example.com

→

0
Somebody
SomebodyElse
email@example.com

```c
void DeleteContact (record * phonebook,int i){

    if(AreYouSure("delete this contact")==yes){
        //sending a signal of removal
        phonebook[i].exist=0;
        printf("\n\t $$$$Contact Deleted, He wasn't nice anyways!!\n\t");
        printf("\n\t ---------------------------------------------\n\t");
    }
    else{
        printf("\n\t$$$ oops.. my bad !!\n\t");
        printf("\n\t ---------------------------------------------\n\t");
    }
}
/*********************************************************************/
```

Scan_int

- This function checks the scanned integers
- Performs error analysis

```
2   int scan_int(int* value){
3       int status,flag=0;
4       while(flag!=1){
5           status=scanf("%d",value);
6           fflush(stdin);
7           if (status==0) {
8               printf("\n\n\t*********** ERROR..Enter a Number Please ***********\n");
9               printf("\n\t>>");
0
1           }
2           else {flag=0;return value;}
3       }
4   }
```

AreYouSure

- Checks if the user is sure of the operation he commanded
- It takes the message to be displayed as an input
- i.e. AreYouSure("Delete All Contacts");

```c
int AreYouSure(char x[]){
    char isSure='y';
    printf("\tAre you sure you want to %s? y/n \n\t>>",x);
    fflush(stdin); //flushing carriage return
    scanf("%c",&isSure);
    if (isSure=='y'||isSure=='Y'){return(yes);}// if not sure
    else if (isSure=='n'||isSure=='N'){return(no);}
    else {AreYouSure(x);}

}
```

```
             ******** P H O N E   B O O K ********



  About Me                    (0)
  Add New Contact             (1)
  Search For a Contact        (2)
  List All Contacts           (3)
  Delete All Contacts         (4)
  Save Changes                (5)
  Close The Application        (6)

So, What do you feel like doing? >> 4
        Are you sure you want to delete ALL contacts? y/n
        >>y


            ***********I KILLED THEM ALL !!!***********


        Press any key to continue . . .
```

Save_Data

- This function stores the updated contacts list in a file ready for retrieval after closing the application.

- It only stores the contacts which have existence signal of 1 (x.exist=1)

```
void save_data(record * phonebook){
    int i=0;
    fWrite = fopen("phonebook_contacts.dat", "w");
    if ( fWrite == NULL ){
        perror("The following error occurred ");
        exit(EXIT_FAILURE);
    }
    else{
        for (i=0;i<counter;i++){
            if(phonebook[i].exist==1)
                fprintf(fWrite, "%d\t%s\t%s\t%s\n",phonebook[i].exist,phonebook[i].FirstName, phoneb
        }

    }
    printf("\n\t****Data Saved****\n\n");
    fclose(fWrite);
}
```