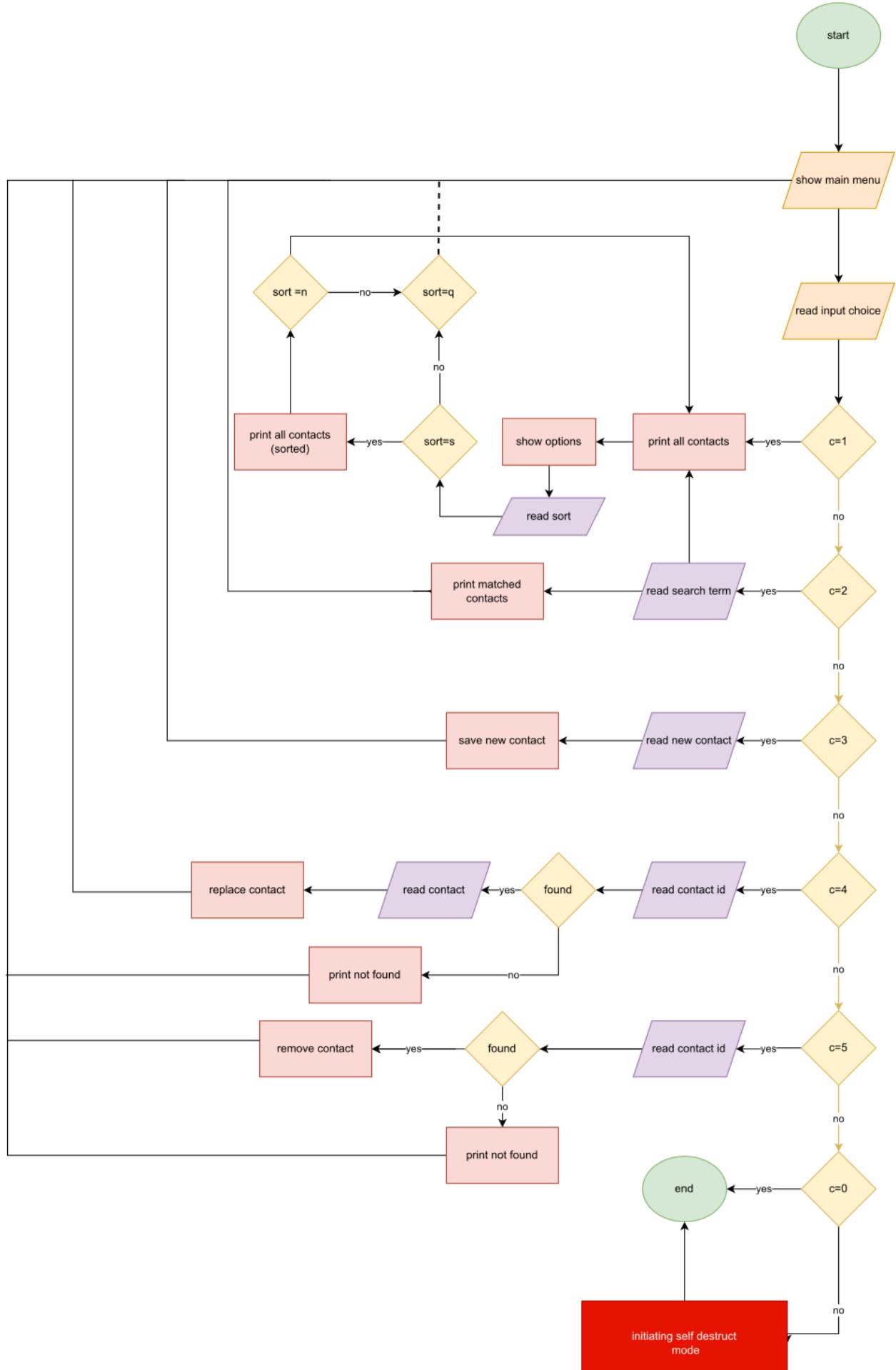


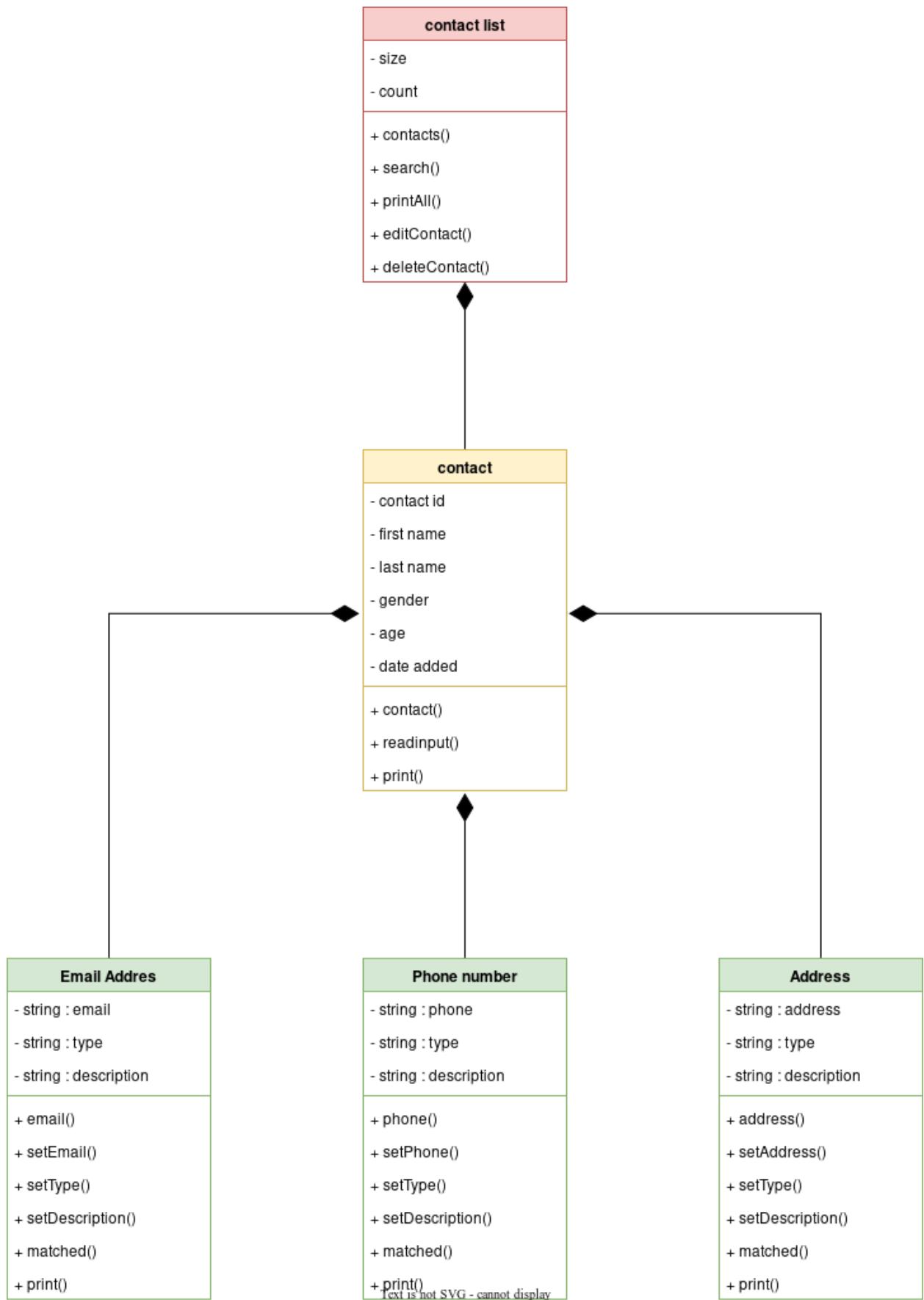
Introduction :

The Contact Book Application is a software program designed to help users organize and manage their contacts in a user-friendly and efficient manner. This application allows users to store contact information such as phone numbers, email addresses, and physical addresses, making it easy to access this information whenever needed.

Design

The Contact Book Application is designed using several classes: PhoneNumber, Address, Email, Contact, and ContactBook. These classes are designed to work together to create a comprehensive contact management system.





Implementation The Contact Book Application is implemented in C++ using object-oriented programming principles. Each class is implemented as a separate file, with the appropriate class methods defined in each file.

PhoneNumber: This class is implemented using separate strings to store the phone number, type and description. The class includes methods for setting and retrieving this information.

Address: This class is implemented using separate strings to store the address, type and description. The class includes methods for setting and retrieving this information.

Email: This class is implemented using a string to store the email address, type and description. The class includes methods for setting and retrieving this information.

Contact: This class is implemented using fields to store the contact's name, phone number, email address, physical address, age, gender and the date the contact was added in. The class includes methods for setting and retrieving this information .

ContactBook: This class is implemented using a dynamic array to store a collection of contacts. The class includes methods for adding, editing, removing, and retrieving contacts; it can also show the contacts sorted by names or with other parameters.

Testing To ensure the Contact Book Application is working as intended, it is important to perform comprehensive testing. The testing process includes developing test cases and verifying the results of each test.

Test cases include

1. adding contacts to the ContactBook

```
2 3 4 5 []= ContactManagerApp
Enter Contact Information:-
First Name: ezz
Last Name: nabil
Age: 19
Gender (0-Male, 1-Female):0
How many phones (0-3)?2
PHONE NUMBER (1) : 12345678
Type :personal
Description :none

PHONE NUMBER (2) : 87654312
Type :work
Description :none
How many Emails (0-3)?2
EMAIL (1) : 321@1234
Type :personal
Description :none

EMAIL (2) : 251@1521
Type :school
Description :none
How many Addresses (0-3)?1
ADDRESS (1) : 122/5444
Type :home
Description :none
```

2. print contacts from the ContactBook.

```
2 3 4 5 []= ContactManagerApp
ID: 1 NAME: ezz nabil AGE: 19 MALE
DATE ADDED :Wed Apr 5 01:52:28 2023

PHONE LIST:
(1) - Phone: 15963248 Type: personal Description none
(2) - Phone: 75314712 Type: work Description none
EMAIL LIST:
(1) - Email: 123@7415 Type: school Description none

ID: 2 NAME: bob el carl AGE: 77 MALE
DATE ADDED :Wed Apr 5 01:52:28 2023

ADDRESSES LIST:
(1) - Address: 123/5241 Type: drug store Description none
(2) - Address: 324/8525 Type: hunting place Description password is *****

ID: 3 NAME: mohy el dean AGE: 19 MALE
DATE ADDED :Wed Apr 5 01:52:28 2023

EMAIL LIST:
(1) - Email: 123@5511 Type: school Description none
(2) - Email: 951@4598 Type: personal Description none

ID: 4 NAME: dt mahmoud mahdi AGE: 0 MALE
DATE ADDED :Wed Apr 5 01:52:28 2023

PHONE LIST:
(1) - Phone: 12365478 Type: work Description none
EMAIL LIST:
(1) - Email: 748@0456 Type: school Description none
ADDRESSES LIST:
(1) - Address: 951@4555 Type: office Description none
(2) - Address: 987@4444 Type: home Description none

show them sorted [S] go back to main menu [Q]
```

3. print contacts from the ContactBook sorted by name.

```

2 3 4 []= ContactManagerApp
[us 2.38G1B/3.74G1B 0% 21° 32° 08 08 156% 66% 2023 Apr 05 (Wed) 01:54AM 68%]

ID: 2 NAME: bob el carl AGE: 77 MALE
DATE ADDED :Wed Apr 5 01:52:28 2023

ADDRESSES LIST:
(1) - Address: 123/5241 Type: drug store Description none
(2) - Address: 324/8525 Type: hunting place Description password is *****

ID: 4 NAME: dr mohmoud mahdi AGE: 0 MALE
DATE ADDED :Wed Apr 5 01:52:28 2023

PHONE LIST:
(1) - Phone: 12365478 Type: work Description none
EMAIL LIST:
(1) - Email: 748@456 Type: school Description none
ADDRESSES LIST:
(1) - Address: 951/4555 Type: office Description none
(2) - Address: 987/4444 Type: home Description none

ID: 1 NAME: ezz nabil AGE: 19 MALE
DATE ADDED :Wed Apr 5 01:52:28 2023

PHONE LIST:
(1) - Phone: 15963248 Type: personal Description none
(2) - Phone: 75314712 Type: work Description none
EMAIL LIST:
(1) - Email: 123@7415 Type: school Description none

ID: 3 NAME: mohy el dean AGE: 19 MALE
DATE ADDED :Wed Apr 5 01:52:28 2023

EMAIL LIST:
(1) - Email: 123@5511 Type: school Description none
(2) - Email: 951@4598 Type: personal Description none

show them unsorted [N] go back to main menu [Q]

```

4. removing contacts from the ContactBook.

Remove the second contact

```

1 2 3 4 5 []= ContactManagerApp
[us 2.38G1B/3.74G1B 0% 21° 32° 08 08 156% 27% 2023 Apr 05 (Wed) 02:46AM 65%]

ID: 1 NAME: ezz el dean AGE: 19 MALE
DATE ADDED :Wed Apr 5 02:04:06 2023

PHONE LIST:
(1) - Phone: 75295112 Type: personal Description none
(2) - Phone: 85214763 Type: work Description none
EMAIL LIST:
(1) - Email: 951@456 Type: Description none

ID: 2 NAME: mohy el dean AGE: 19 MALE
DATE ADDED :Wed Apr 5 02:04:06 2023

EMAIL LIST:
(1) - Email: 752@1244 Type: school Description none
(2) - Email: 951@9511 Type: personal Description none

ID: 3 NAME: dr mohmoud mahdi AGE: 0 MALE
DATE ADDED :Wed Apr 5 02:04:06 2023

PHONE LIST:
(1) - Phone: 15975312 Type: school Description none
EMAIL LIST:
(1) - Email: 951@4568 Type: school Description none
ADDRESSES LIST:
(1) - Address: 954/4444 Type: office Description none

show them sorted [S] go back to main menu [Q]

```

5. editing contacts from the ContactBook.

```
1 2 3 4 5 [=] ContactManagerApp
Enter contact Id to edit: 1
Enter Contact Information:-
First Name: ezz
Last Name: el dean
Age: 20
Gender (0-Male, 1-Female):0
How many phones (0-3)?0
How many Emails (0-3)?1
EMAIL (1) : 123@511
Type :[REDACTED]
Description :[REDACTED]
How many Addresses (0-3)?0
CONTACT EDITED SUCESSFULLY

Press the Enter key to continue.
```

```
1 2 3 4 5 [=] ContactManagerApp
ID: 1 NAME: ezz el dean AGE: 20 MALE
DATE ADDED :Wed Apr 5 02:04:06 2023

EMAIL LIST:
(1) - Email: 123@511 Type: [REDACTED] Description [REDACTED]

ID: 2 NAME: mohy el dean AGE: 19 MALE
DATE ADDED :Wed Apr 5 02:04:06 2023

EMAIL LIST:
(1) - Email: 752@1244 Type: school Description none
(2) - Email: 951@9511 Type: personal Description none

ID: 3 NAME: dr mahmmoud mahdi AGE: 0 MALE
DATE ADDED :Wed Apr 5 02:04:06 2023

PHONE LIST:
(1) - Phone: 15975312 Type: school Description none
EMAIL LIST:
(1) - Email: 951@4568 Type: school Description none
ADDRESSES LIST:
(1) - Address: 954/4444 Type: office Description none

show them sorted [S] go back to main menu [Q]
```

6. Searching for a contact with name ,email and phone number.

```
1 2 3 4 [5] [= ContactManagerApp
Enter what you want to search for: ezz
ID: 1 NAME: ezz el dean AGE: 20 MALE
DATE ADDED :Wed Apr 5 02:04:06 2023

EMAIL LIST:
(I) - Email: 123@511 Type: [REDACTED] Description [REDACTED]

1 FOUND
```

```
1 2 3 4 [5] [= ContactManagerApp
Enter what you want to search for: el dean
ID: 1 NAME: ezz el dean AGE: 20 MALE
DATE ADDED :Wed Apr 5 02:04:06 2023

EMAIL LIST:
(I) - Email: 123@511 Type: [REDACTED] Description [REDACTED]

ID: 2 NAME: mohy el dean AGE: 19 MALE
DATE ADDED :Wed Apr 5 02:04:06 2023

EMAIL LIST:
(1) - Email: 752@1244 Type: school Description none
(2) - Email: 951@9511 Type: personal Description none

2 FOUND
```

```
1 2 3 4 5 [=] ContactManagerApp
Enter what you want to search for: 123@511
ID: 1 NAME: ezz el dean AGE: 20 MALE
DATE ADDED :Wed Apr 5 02:04:06 2023

EMAIL LIST:
(1) - Email: 123@511 Type: [REDACTED] Description [REDACTED]

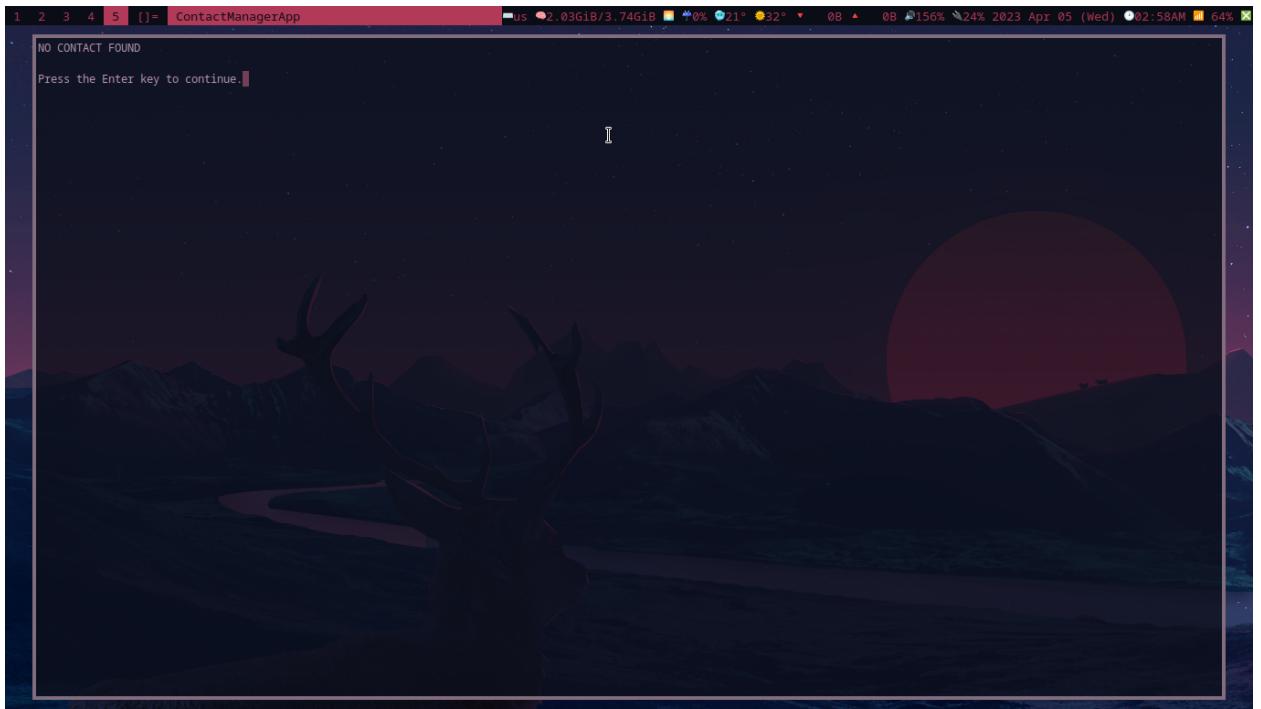
1 FOUND
```

```
1 2 3 4 5 [=] ContactManagerApp
Enter what you want to search for: 15975312
ID: 3 NAME: dr mahmmoud mahdi AGE: 0 MALE
DATE ADDED :Wed Apr 5 02:04:06 2023

PHONE LIST:
(1) - Phone: 15975312 Type: school Description none
EMAIL LIST:
(1) - Email: 951@4568 Type: school Description none
ADRESSES LIST:
(1) - Address: 954/4444 Type: office Description none

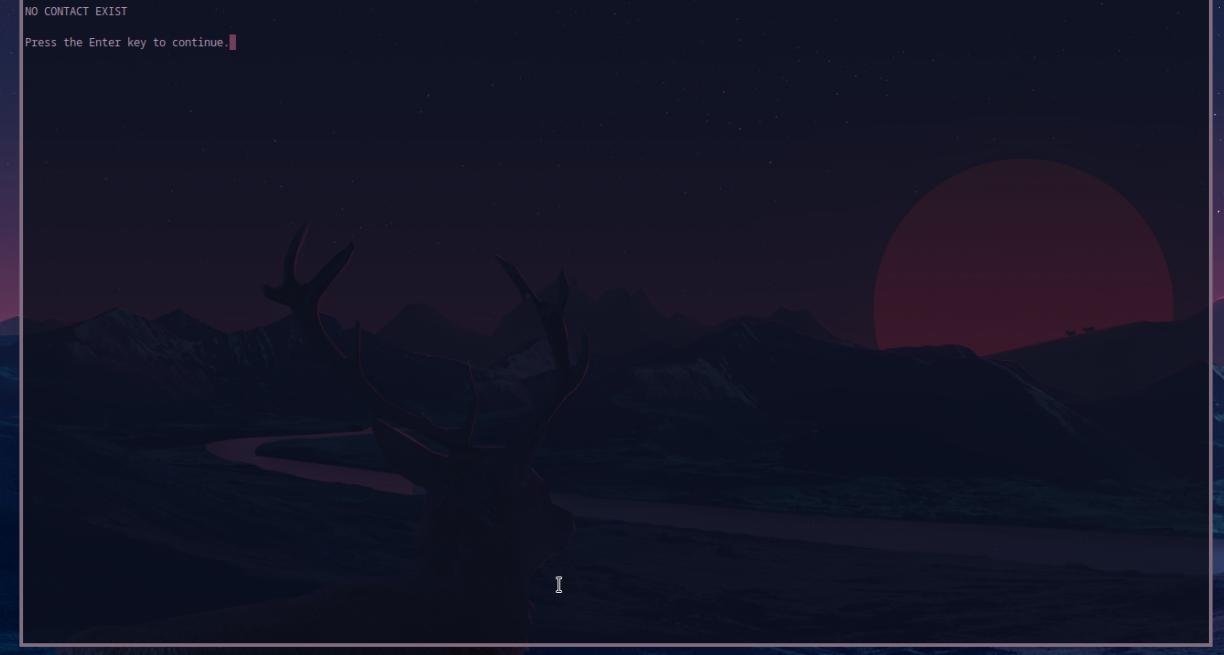
1 FOUND
```

7. Print contacts when the contact book is empty.

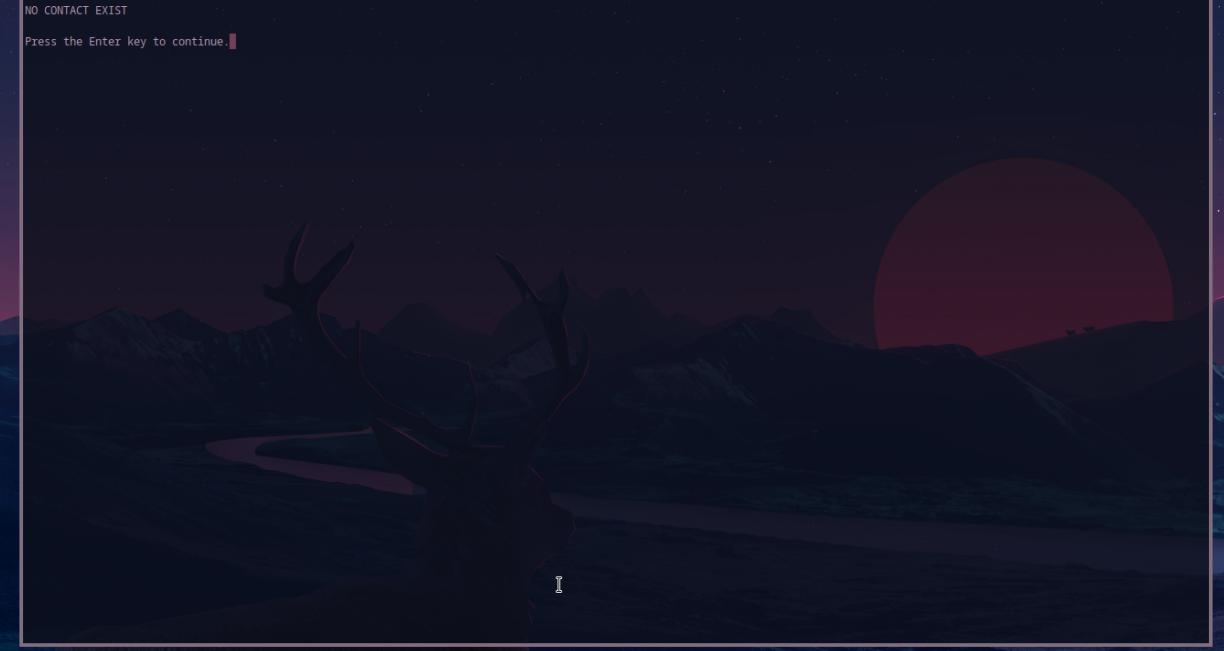


8. Access a contact that doesn't exist either in edit or delete.

```
1 2 3 4 5 [ ]= ContactManagerApp
Enter contact Id to edit: 5
NO CONTACT EXIST
Press the Enter key to continue.
```



```
1 2 3 4 5 [ ]= ContactManagerApp
Enter contact Id to delete: 5
NO CONTACT EXIST
Press the Enter key to continue.
```



Conclusion:

The Contact Book Application provides an efficient and user-friendly way for users to organize and manage their contacts. The application is designed using several classes, each with specific methods and data structures, that work together to provide a comprehensive contact management system. Through comprehensive testing, the Contact Book Application has been verified to work as intended, providing users with an effective way to manage their contacts.

