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CONTACT MANAGEMENT SYSTEM

C++ MINOR PROJECT (3RD SEM CSSE)

School Of Computer Engineering

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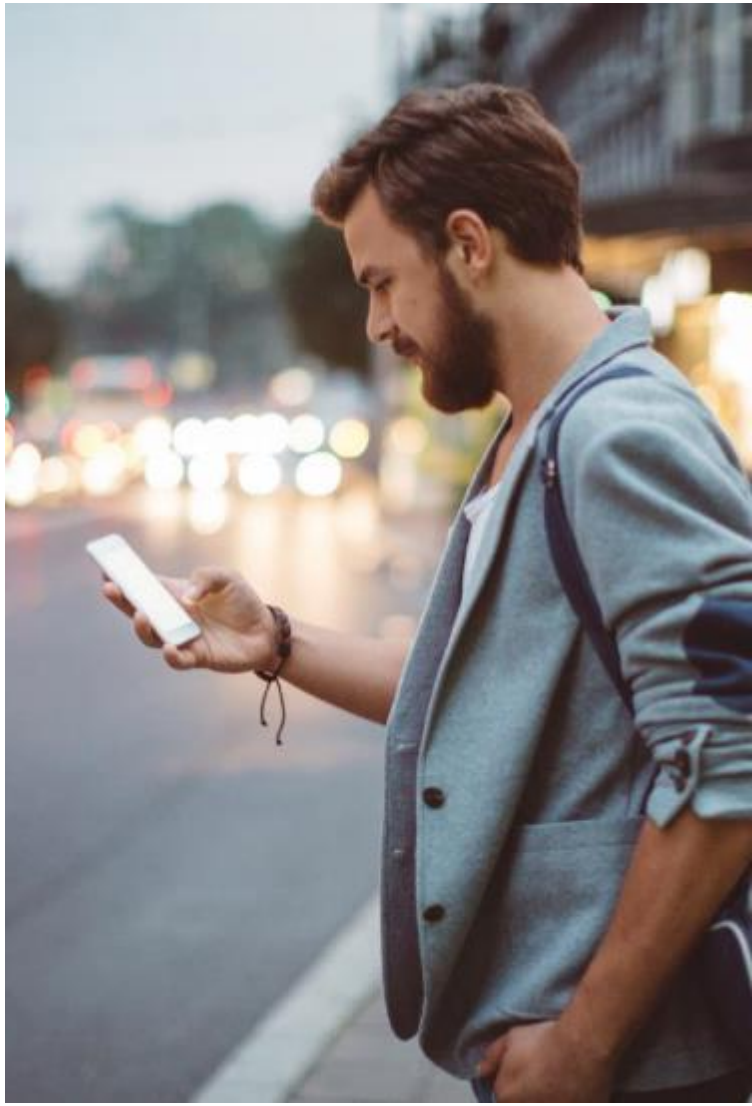
Problem Statement

- An average business organization tends to lose about fifty percent (50%) of its customers within a business cycle of five years.
- This mainly occurs due to poorly met customer needs, which keep changing from time to time.
- The principle behind constructing a Contact Management System is to effectively retrieve and implement any information that an organization may have on a pre-existing customer.
- Once a company has established a Contact Management System, it can cater to the needs of the customer better.
- All the information related to a particular customer can be linked and archived only to be retrieved later when they are required most.



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SOLUTION

File Handling

Files are used to store data in a storage device permanently. File handling provides a mechanism to store the output of a program in a file and to perform various operations on it.

A stream is an abstraction that represents a device on which operations of input and output are performed. A stream can be represented as a source or destination of characters of indefinite length depending on its usage.

Sharing: Data stored in files of computer-based systems ca be shared among multiple users at a same time.

Editing: It is easy to edit any information stored in computers in form of files.

Compactness: It is possible to store data compactly.

Backup: It is possible to take faster and automatic back-up of database stored in files of computer-based systems.


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Code Snippets Implemented

1 Header Files Used

```
#include<fstream>
#include<conio.h>
#include<string>
#include<iomanip>
#include<iostream>
#include<stdlib.h>
```

- <fstream> : File represents storage medium for storing data or information. Streams refer to sequence of bytes. In Files we store data i.e. text or binary data permanently and use these data to read or write in the form of input output operations by transferring bytes of data

- <iostream>: iostream provides basic input and output services for C++ programs. iostream uses the objects cin , cout , cerr , and clog for sending data to and from the standard streams input, output, error (unbuffered), and log (buffered) respectively

- <stdlib.h>: This header defines several general purpose functions, including dynamic memory management, random number generation, communication with the environment, integer arithmetics, searching, sorting and converting

2 Class Definition

We have created a class “Contact”, which consists of three variables and 2 major member functions to input the requried information.

```
class contact
{
    long ph;
    char name[20],add[20],email[30];
```

```
void create_contact()
{
        cout<<"Phone: ";
        cin>>ph;

        cout<<"Name: ";
        cin.ignore();
        cin>>name;

        cout<<"Address: ";
        cin.ignore();
        cin>>add;

        cout<<"Email address: ";
        cin.ignore();
        cin>>email;

        cout<<"\n";
}
```

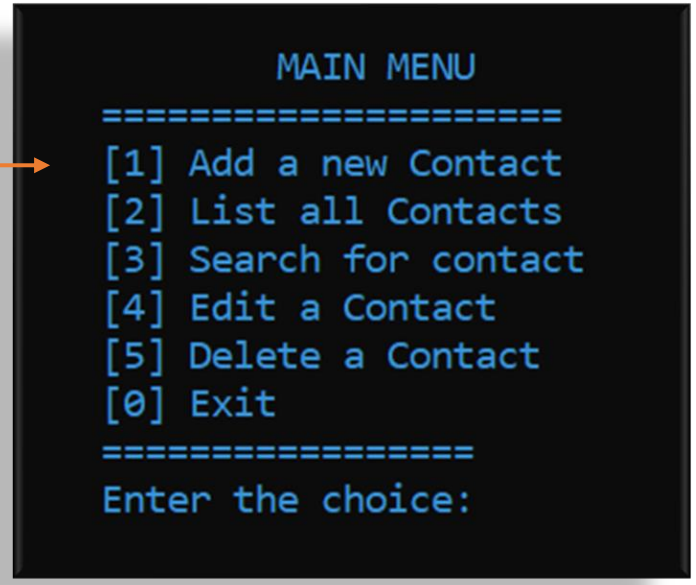
```
void show_contact()
{
    cout<<endl<<"Phone #: "<<ph;
    cout<<endl<<"Name: "<<name;
    cout<<endl<<"Address: "<<add;
    cout<<endl<<"Email Address : "<<email;
}
```

```
long getPhone()
{
    return ph;
}

char* getName()
{
    return name;
}

char* getAddress()
{
    return add;
}

char* getEmail()
{
    return email;
}
```

3 Functions Implemented

save _contact: This function opens a data file “contact2Book.dat” and writes the required information by taking the input through the member functions of the class.

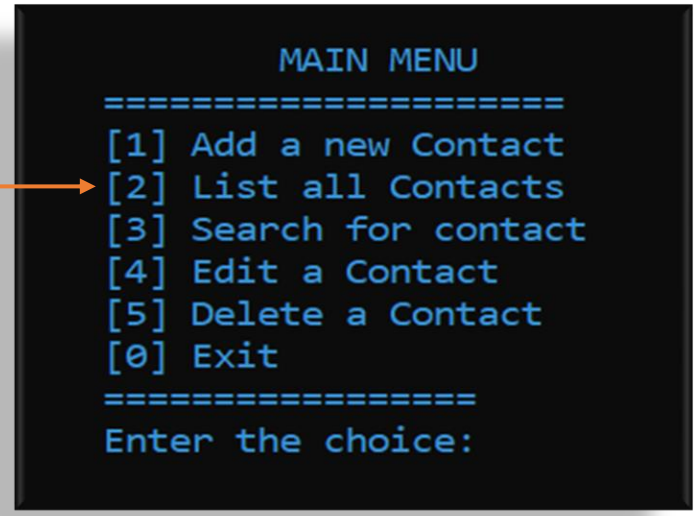
```
void save_contact()
{
    fstream fp;
    fp.open("contact2Book.dat",ios::out|ios::app);
    cont.create_contact();
    fp.write((char*)&cont,sizeof(contact));
    fp.close();
    cout<<endl<<endl<<"Contact Has Been Successfully Created...";
    getchar();
}
```



3 Functions Implemented [Contd.]

show_all_contacts: This function's task is to read and display all the information written in the "contact2Book.dat" file.

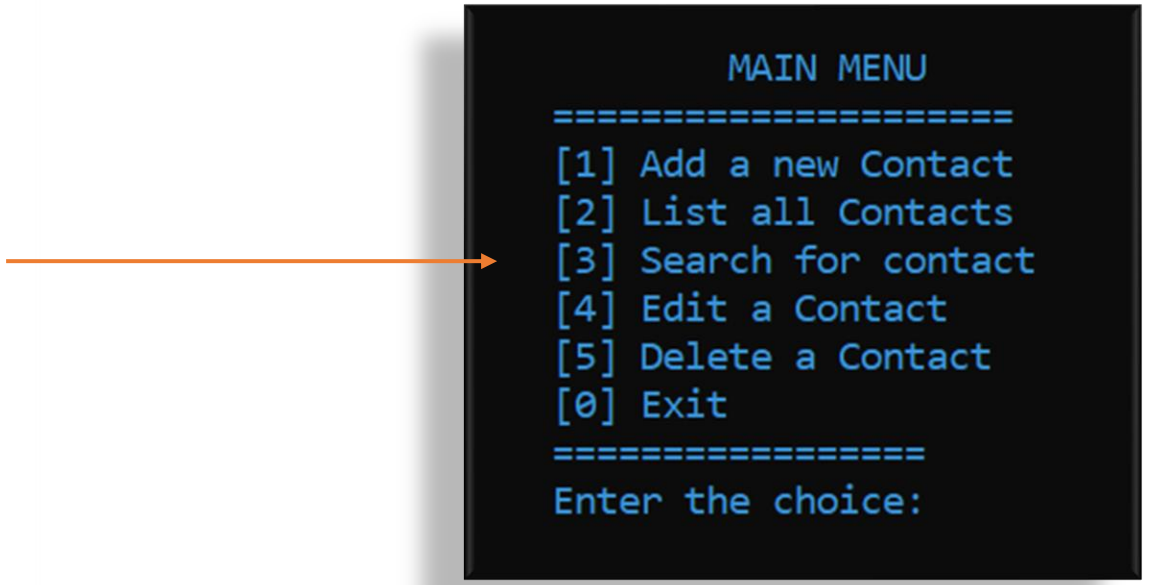
```
void show_all_contacts()
{
    system("cls");
     cout<<"\n\t\t==============================\n\t\t\tLIST OF CONTACTS\n\t\t==============================\n";
    fp.open("contact2Book.dat",ios::in);
    while(fp.read((char*)&cont,sizeof(contact)))
    {
        cont.show_contact();
        cout<<endl<<"================================================\n"<<endl;
    }
    fp.close();
}
```



3 Functions Implemented [Contd.]

display_contact: This function displays the information from the data file whose matching key is entered in the main function. It traverses the entire data file through the fstream objects

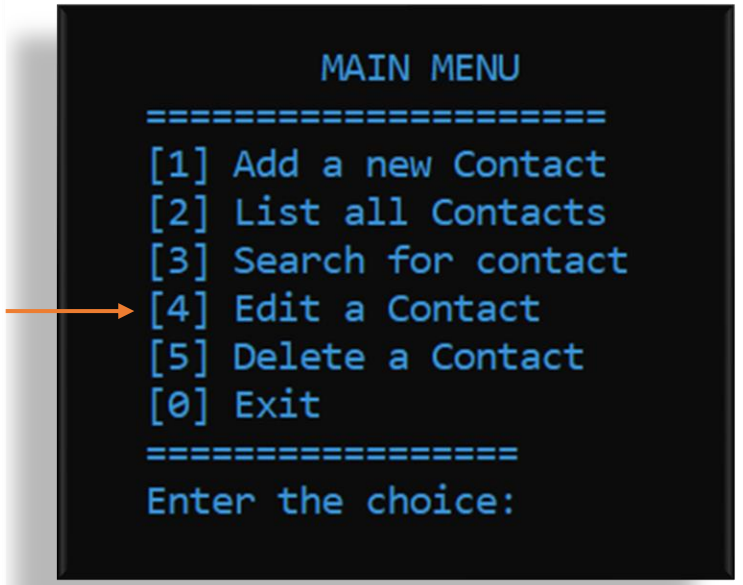
```
void display_contact(int num)
{
    bool found;
    int ch;

         found = false;
    fp.open("contact2Book.dat",ios::in);
    while(fp.read((char*)&cont,sizeof(contact)))
    {
        if(cont.getPhone()==num)
        {
            system("cls");
            cont.show_contact();
            found=true;
        }
    }

    fp.close();
    if(found == false){
    cout<<"\n\nNo record found...";}


    getchar();
}
```



3 Functions Implemented [Contd.]

edit_contact: This function edits the required contact whose key is entered (the key is taken as the phone number). It uses an additional fstream function i.e, seekp, to change the content at the required position.

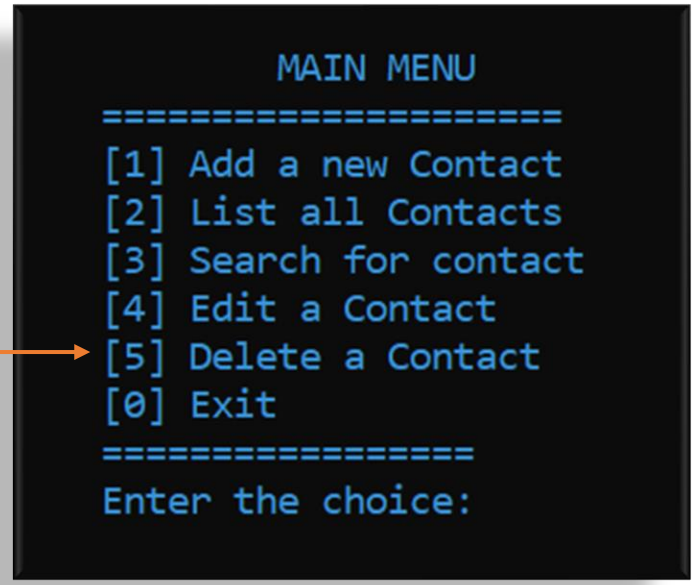
```
void edit_contact()
{
    int num;
    bool found=false;
    system("cls");
    cout<<"..::Edit contact\n==============================\n\n\t..::Enter the number of contact to edit:";
    cin>>num;

    fp.open("contact2Book.dat",ios::in|ios::out);
    while(fp.read((char*)&cont,sizeof(contact)) && found==false)
    {
        if(cont.getPhone()==num)
        {
            cont.show_contact();
            cout<<"\nPlease Enter The New Details of Contact: "<<endl;
            cont.create_contact();
            int pos=-1*sizeof(cont);
            fp.seekp(pos,ios::cur);
            fp.write((char*)&cont,sizeof(cont));
            cout<<endl<<endl<<"\t Contact Successfully Updated...";
            found=true;
        }
    }
    fp.close();
    if(found==false)
        cout<<endl<<endl<<"Contact Not Found...";
```



3 Functions Implemented [Contd.]

delete_contact: This function deletes the information corresponding to the key entered by the user. It uses another fstream function ie, seekg, to bring the file pointer to the required position and traverses through the file. In this function, we create another data file “Temp.dat” and copy all the elements of the previous file, except for the element corresponding to the key.

```
void delete_contact()
{
    int num;
    system("cls");
    cout<<endl<<endl<<"Please Enter The contact #: ";
    cin>>num;
    fp.open("contact2Book.dat",ios::in|ios::out);
    fstream fp2;
    fp2.open("Temp.dat",ios::out);
    fp.seekg(0,ios::beg);
    while(fp.read((char*)&cont,sizeof(contact)))
    {
        if(cont.getPhone()!= num)
        {
            fp2.write((char*)&cont,sizeof(contact));
        }
    }
    fp2.close();
    fp.close();
    remove("contact2Book.dat");
    rename("Temp.dat","contact2Book.dat");
    cout<<endl<<endl<<"\tContact Deleted...";
}
```



4 Main Function

The main function consists the overall design and structure of the program. It provides a menu to the user to select the desired function and calls the required functions.

```
int main()
{
        system("cls");
    system("color 03");
    cout<<"\t\t\t\t*\t*";
    cout<<"\t\t\t\t*\t*";
    cout<<"\t\t\t\t**\t**";
    cout<<"\t\t\t\t**\t**";
    cout<<"\t\t\t\t**\t**";
    cout<<"\t\t\t\t***\t***";
    cout<<"\t\t\t\t***\t***";
    cout<<"\t\t\t\t***\t***";
    cout<<"\t\t\t\t***\t***";
    cout<<"\t\t\t\t**\t**";
    cout<<"\t\t\t\t**\t**";
    cout<<"\t\t\t\t**\t**";
    cout<<"\t\t\t\t*\t*";
    cout<<"\t\t\t\t*\t*";
```

```
for(;;)
{
        int ch;
cout<<"\n\t ** Welcome to Contact Management System **";
cout<<"\n\n\n\t\t\tMAIN MENU\n\t\t=====================\n\t\t[1] Add a new Contact\n\t\t[2] List all Contacts\n\t\t
cout<<"Enter the choice:";

cin>>ch;
```

```
switch(ch)
{
    case 0: cout<<"\n\n\t\tThank you for using CMS...";
        exit(0);
            break;
    break;
         break;
    case 1:save_contact();
        break;
    case 2:show_all_contacts();
        break;
    case 3:
        int num;
        system("cls");
        cout<<"\n\n\tPhone: ";
        cin>>num;
        display_contact(num);
        break;
    case 4:edit_contact();
        break;
    case 5:delete_contact();
        break;
    default:
        break;
}
```

5 Output

Adding a new contact

```
                  =================
                  Enter the choice:1
Phone: 98007654
Name: Rishabh
Address: KIIT
Email address: rishab@gmail.com
```

Deleting a contact

```
Please Enter The contact #: 981762533


       Contact Deleted...


..::Enter the Choice:

       [1] Main Menu          [0] Exit
```

List of all contacts

```
Phone #: 981762533
Name: Yash
Address: KIIT
Email Address : yahs@gmail.com
================================================


Phone #: 98674325
Name: Swati
Address: KIIT
Email Address : swati@gmail.com
================================================


Phone #: 98670964
Name: Drishti
Address: KIIT
Email Address : dorito@gmail.com
================================================
```

5 Output

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Searching a contact

```
Phone #: 98670964
Name: Drishti
Address: KIIT
Email Address : dorito@gmail.com


..::Enter the Choice:

       [1] Main Menu          [0] Exit
```

Editing a contact

```
..::Edit contact
==============================

       ..::Enter the number of contact to edit:98674325

Phone #: 98674325
Name: Swati
Address: KIIT
Email Address : swati@gmail.com
Please Enter The New Details of Contact:
Phone: 8754489
Name: swati
Address: Bhubaneshwar
```

6 Conclusion

- The main aim behind the development of an automated system of contact management is to assist any organization to store and retrieve all the information about a pre-existing customer in a way more robust and efficient way

- The entire program was implemented in C++ and following features of C++ were leveraged

- The following functions were implemented through the program:
  - Adding a contact
  - Deleting a contact
  - Editing a contact
  - Searching a contact
  - Displaying the list

- File Operation : Following file IO operations were used:
  - Open
  - Read
  - Write
  - Close

- Object Serialization was implemented to store information about a person including Name, Phone Number, Email, Address

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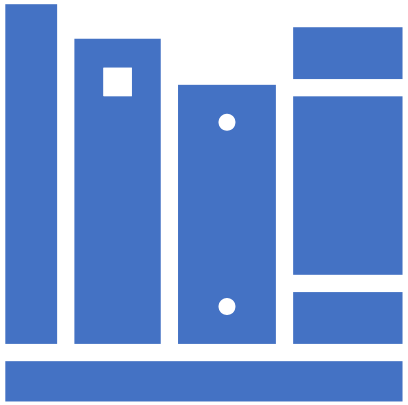


Thank You