Data Structures

Lab Project (Semester-2)

WORKING PHONEBOOK

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Contents

Title of Project

WORKING PHONEBOOK

Description of Project

The aim of the project was to create the working phonebook which can perform various operations. Initially the phonebook has hundred contacts stored in it. The stored contacts are in separate binary file and that file only is used for any further operations like adding new contact or deleting some contact. Overall, after any operation is performed the binary file is modified.
Operations which are there in phonebook are

1. Add the new contact

2.Update the existing contact

3.Display all the contacts

4.Display the contacts sorted name wise

5.Display the contacts sorted phone number wise

6.Search contact by name

7.Search contact by phone number

8.Delete existing contact

9.Delete all the contacts

10.Total number of contacts in phonebook

The concepts or topics that are used in the project are structures, file handling, strings and sorting and some basic c.
In the file handling, the widely used functions are fread and fwrite. And along with them some other include fseek, rename and remove. And in sorting bubble sorting is used for creating the list name wise and phone number wise.

Code

```
#include <stdio.h>

#include <string.h>

#include <stdlib.h>

#include<conio.h>
```

```
 void add_contact(FILE *fp);//declaring functions
prototype void update(FILE *fp); int search(FILE *fp,char
name_1[]); void search_name(FILE *fp); void
search_phone(FILE *fp); void display(FILE *fp); void
phone_number_wise_sort(FILE *fp); void name_wise_sort(FILE
* fp); void delete_contact(); void delete_all(FILE
*fp,char filename[20]); int count(FILE *fp); void
clean_stdin(); struct//defining datatype
{     char name[40];
long long  int number;
} contact,num_sort[200],alpha_sort[200],temp; int
main()
{     system("cls");     FILE *fp;
int choice;     char
filename[]="dsa_project";
     fp=fopen(filename,"rb+");//open file in read and write binary form
if(fp==NULL)
    {
```

```
        fp=fopen(filename,"wb+");//if file is null then open it in
write binary form          if(fp==NULL)
        {              printf("Error in opening
File\n");              exit(1);
        }
    }
while(1)//defining menu
    {          system("cls");//clearing the console
printf("\n\t\t\t\t\t\tPHONEBOOK DIRECTORY\n\n\n");
printf("\t\t\t1.Add New Contact ");
printf("\t\t\t2.Edit Contact\n\n");
printf("\t\t\t3.Display All Contacts");
printf("\t\t\t4.Total Contacts in Phone Book\n\n");
printf("\t\t\t5.Display Contacts Name Wise");
printf("\t\t6.Display Contacts Phone Number Wise\n\n");
printf("\t\t\t7.Search Contact By Name");
printf("\t\t8.Search Contact By Phone Number\n\n");
printf("\t\t\t9.Delete Existing Contact");
printf("\t\t10.Delete all the Contacts\n\n");
printf("\t\t\t11.Exit\n\n");          printf("Enter the
choice\n");          scanf("%d",&choice);          switch(choice)
        {
case 1:
```

```
            add_contact(fp);
break;          case 2:
            update(fp);
break;          case 3:
            display(fp);
break;          case 4:
            printf("Number of Contact:%d\n",count(fp));
break;          case 5:
            name_wise_sort(fp);
break;          case 6:
            phone_number_wise_sort(fp);
break;          case 7:
            search_name(fp);
break;          case 8:
            search_phone(fp);
break;          case 9:
            fclose(fp);
delete_contact();
fp=fopen(filename,"rb+");
break;          case 10:
```

```
            delete_all(fp,filename);
break;          case 11:
            fclose(fp);
exit(0);
break;          default:
            printf("Please Enter the choice from above choices only");
        }
        _getch();
    }
 } void add_contact(FILE *fp)//add new contacts in the
directory
{     clean_stdin();     fseek(fp,0,2);
printf("Enter the contact name:");
scanf("%[^\n]s",&contact.name);
printf("Enter the contact number:");
scanf("%lld",&contact.number);


fwrite(&contact,sizeof(contact),1,fp);
printf("Contact Saved\n");
} void update(FILE *fp)//updates the
contact
{     char name_1[50];
long size=sizeof(contact);
```

```
    clean_stdin();//clearing the buffer     printf("Enter
the name of the contact want to modify:");
scanf("%[^\n]s",&name_1);     if(search(fp,name_1)==1)
    {          clean_stdin();
printf("Enter the New Contact name:");
scanf("%[^\n]s",&contact.name);
printf("Enter the Contact number:");
scanf("%lld",&contact.number);
    }     else     {
printf("No match found");
    }     fseek(fp,-size,1);//deleting the previous contact
fwrite(&contact,sizeof(contact),1,fp);//writing the new contact
printf("Contact modified\n");
}
void search_name(FILE *fp)//search the contact of particular person by
name {     int flag;     char name_1[50];     printf("Enter the name
for contact details:");     clean_stdin();
scanf("%[^\n]s",name_1);     rewind(fp);
while(fread(&contact,sizeof(contact),1,fp)==1)
```

```
    {
if(strcmp(name_1,contact.name)==0)
        {              printf("----------------------\n");
printf("NAME:%s\n",contact.name);
printf("CONTACT NUMBER:%lld\n",contact.number);
flag=1;              break;
        }      }
if(flag==0)
    {          printf("Match not
found\n");
    }
}
void search_phone(FILE *fp)//search the contact of particular person by
phone number
{      int flag;      long long int temp_con;      clean_stdin();
printf("Enter the contact no whose contact details want to know:");
scanf("%lld",&temp_con);      rewind(fp);//take pointer to the top of
file      while(fread(&contact,sizeof(contact),1,fp)==1)
    {
if((contact.number==temp_con))
        {
```

```
            printf("---------------------\n");
printf("NAME:%s\n",contact.name);              printf("FIRST
MOBILE NUMBER:%lld\n",contact.number);              flag=1;
break;
        }      }
if(flag==0)
    {          printf("Match not
found\n");
    }
}
void phone_number_wise_sort(FILE *fp)//sort contacts according to the
phone numbers
{      int
i,j,k;      k=0;
rewind(fp);
     while(fread(&contact,sizeof(contact),1,fp)==1)//using bubble
sort
    {
num_sort[k++]=contact;
    }      for(i=1;
i<=k; i++)
    {          for(j=0; j<k-
i; j++)
        {
if(num_sort[j].number>num_sort[j+1].number)
```

```
            {
temp=num_sort[j];
num_sort[j]=num_sort[j+1];
num_sort[j+1]=temp;


            }
        }      }
for(i=0; i<k; i++)
    {          printf("---------------------\n");
printf("NAME:%s\n",num_sort[i].name);
printf("CONTACT NUMBER:%lld\n",num_sort[i].number);       }
if(count(fp)==0)
    {          printf("\nContact list is
Empty\n");
    } }
void name_wise_sort(FILE *fp)//sort contacts according to the names in
alphabetical order
{       int
i,j,k;      k=0;
rewind(fp);
     while(fread(&contact,sizeof(contact),1,fp)==1)//using bubble
sort
```

```
    {
alpha_sort[k++]=contact;
    }
```

```
    for(i=1; i<=k; i++)
    {          for(j=0; j<k-
i; j++)
        {
if(strcmp(alpha_sort[j].name,alpha_sort[j+1].name)>0)
            {
temp=alpha_sort[j];
alpha_sort[j]=alpha_sort[j+1];
alpha_sort[j+1]=temp;


            }
        }      }
for(i=0; i<k; i++)
    {          printf("----------------------\n");
printf("NAME:%s\n",alpha_sort[i].name);
printf("CONTACT NUMBER:%lld\n",alpha_sort[i].number);
    }
if(count(fp)==0)
    {          printf("\nContact list is
Empty\n");
    } } void display(FILE *fp)//displays all the
contacts
```

```
{
    rewind(fp);

while(fread(&contact,sizeof(contact),1,fp)==1)
```

```
    {          printf("---------------------\n");
printf("NAME:%s\n",contact.name);
printf("CONTACT NUMBER:%lld\n",contact.number);
    }
if(count(fp)==0)
    {          printf("\nContact list is
Empty\n");
    }


 } int search(FILE *fp,char
name_1[])//search
{      int
flag=0;
     rewind(fp);
while(fread(&contact,sizeof(contact),1,fp)==1)
    {
if(strcmp(name_1,contact.name)==0)
        {
flag=1;
```

```
            break;

        }


    }
    if(flag==0)     {
printf("Match not found\n");
```

```
    }
return flag;
} int count(FILE * fp)//count the number of
contacts
{     rewind(fp);     int res;     int count=0;
while(fread(&contact,sizeof(contact),1,fp)==1)
    {
count++;
    }     return
count;
     printf("Number of
Contact:%d\n",count);
} void delete_contact()//delete existing
contact
{
    FILE *fp;     char
filename[]="dsa_project";     char
newfile[]="temp";
```

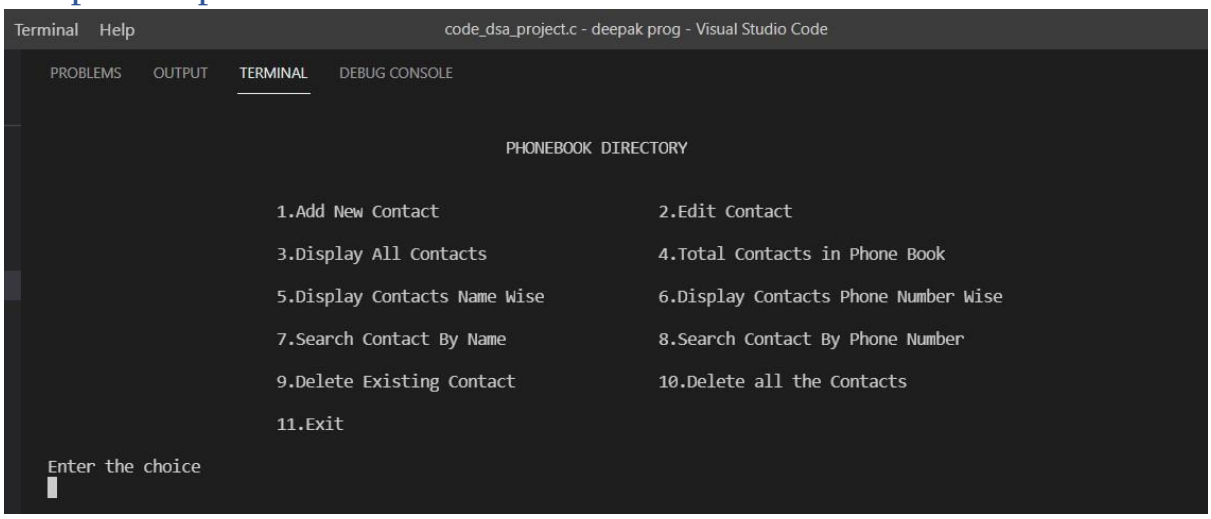
```
    FILE *ft;      int flag;
char name[100];
fp=fopen(filename,"rb+");
```

```
    if(fp==NULL)          printf("Contact data
not yet added.");
```

```
    else     {          ft=fopen(newfile,"wb+");
if(ft==NULL)              printf("file opening error");
else          {             fflush(stdin);
printf("Enter contact name:");             gets(name);
while(fread(&contact,sizeof(contact),1,fp)==1)
            {
if(strcmp(contact.name,name)!=0)
fwrite(&contact,sizeof(contact),1,ft);
if(strcmp(contact.name,name)==0)
flag=1;
            }
fclose(fp);
fclose(ft);
if(flag!=1)
            {                 printf("No Contact
To Delete.");                 remove(newfile);
            }             else
{
remove(filename);
```

```
                rename(newfile,filename);
printf("Contact Deleted");
            }
        }
    } } void delete_all(FILE *fp,char filename[20])//delete all the
contacts
{     fp=fopen(filename,"wb");     printf("All The
Contacts Deleted Successfully\n");
} void clean_stdin(void)//for clearing the buffer
memory
{     int c;     do
{         c =
getchar();
    }     while (c !=
'\n');
}
```

Sample Outputs



References

Stackoverflow.com

Geeksfgorgeeks.com