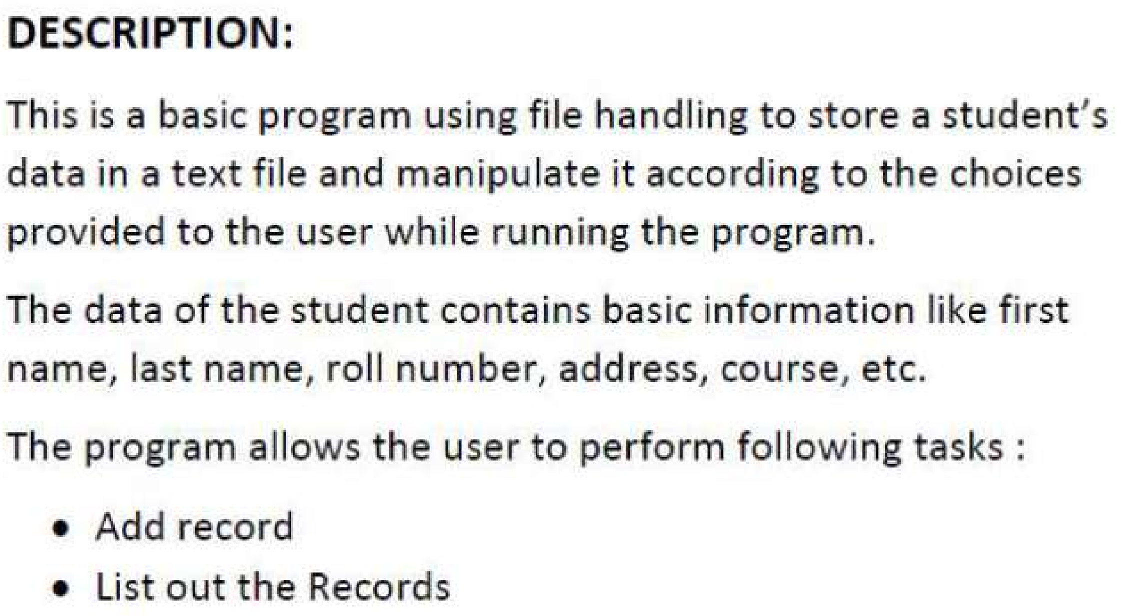
SRM INSTITUTE OF SCIENCE AND
TECHNOLOGY, KATTANKULATHUR

PPS

MINI PROJECT IN C USING FILE MANAGEMENT

STUDENT DATA STORAGE MANAGEMENT SYSTEM



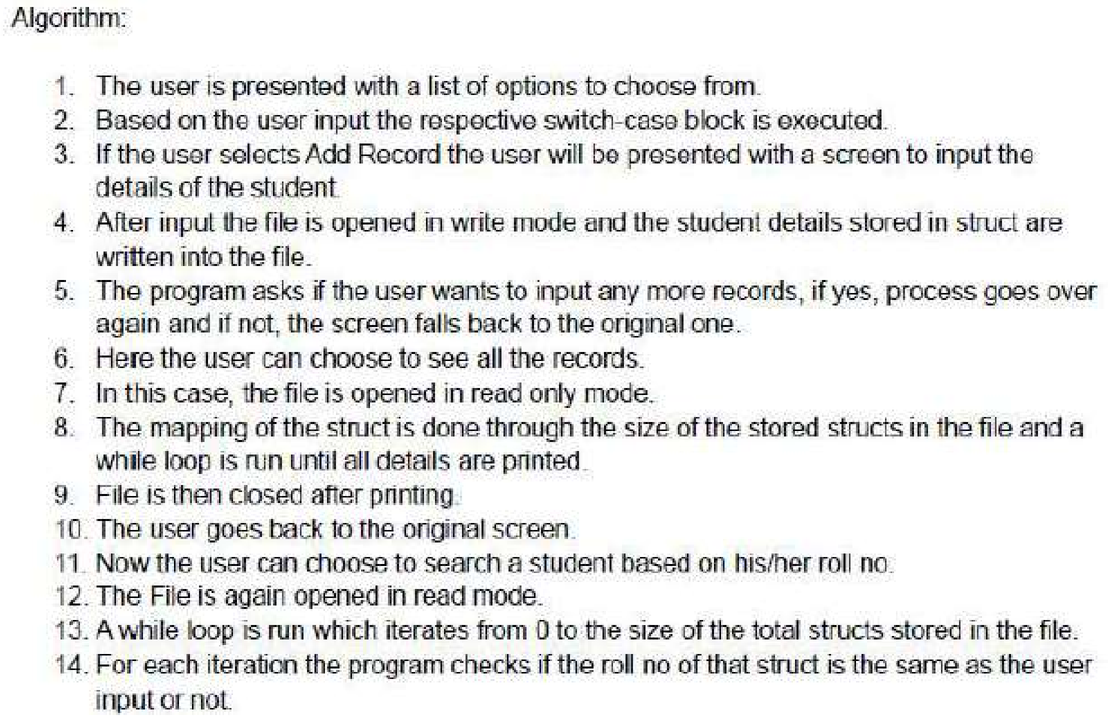
DESCRIPTION:

This is a basic program using file handling to store a student's data in a text file and manipulate it according to the choices provided to the user while running the program.

The data of the student contains basic information like first name, last name, roll number, address, course, etc.

The program allows the user to perform following tasks :

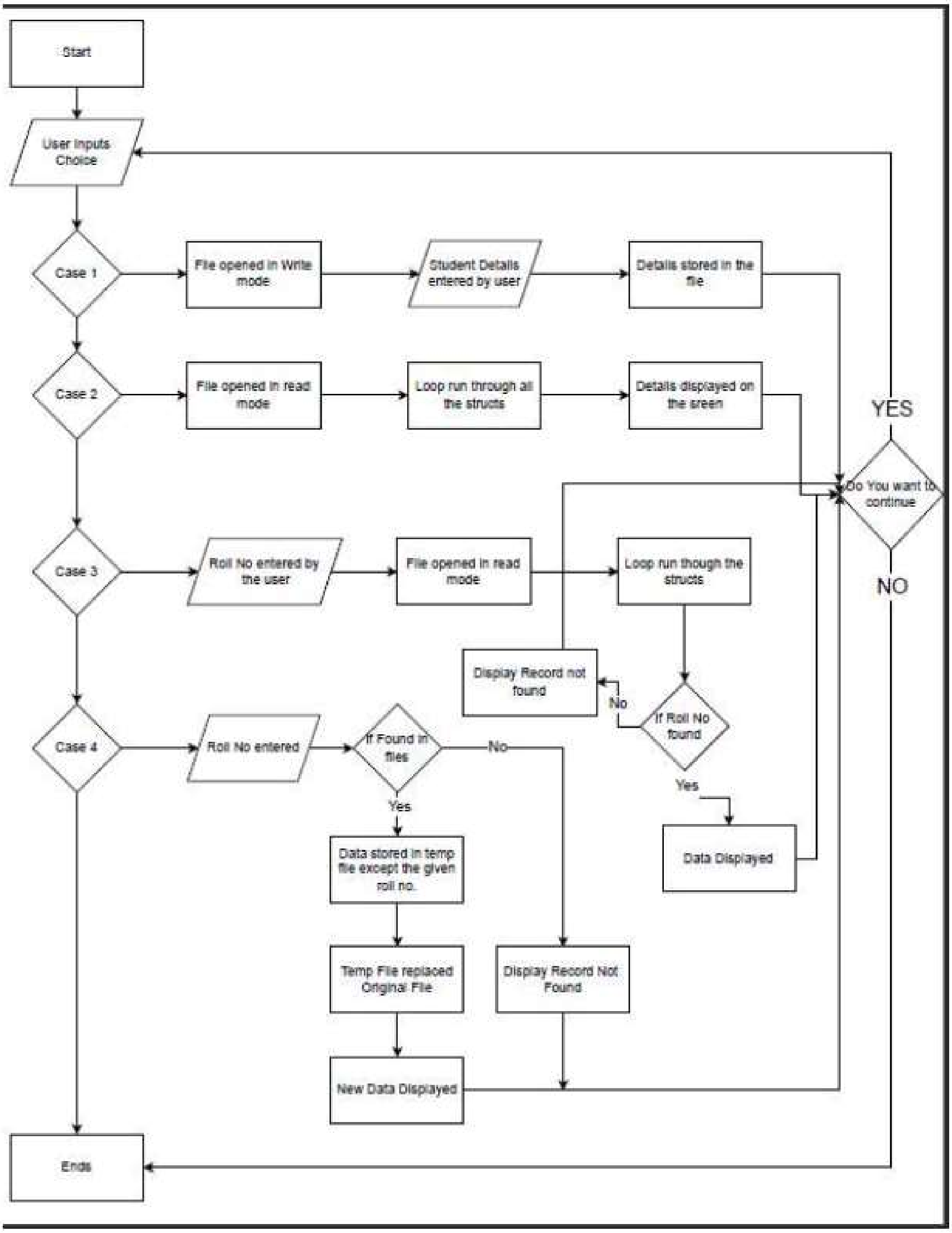
- Add record
- List out the Records



Algorithm:

1. The user is presented with a list of options to choose from.
2. Based on the user input the respective switch-case block is executed.
3. If the user selects Add Record the user will be presented with a screen to input the details of the student.
4. After input the file is opened in write mode and the student details stored in struct are written into the file.
5. The program asks if the user wants to input any more records, if yes, process goes over again and if not, the screen falls back to the original one.
6. Here the user can choose to see all the records.
7. In this case, the file is opened in read only mode.
8. The mapping of the struct is done through the size of the stored structs in the file and a while loop is run until all details are printed.
9. File is then closed after printing.
10. The user goes back to the original screen.
11. Now the user can choose to search a student based on his/her roll no.
12. The File is again opened in read mode.
13. A while loop is run which iterates from 0 to the size of the total structs stored in the file.
14. For each iteration the program checks if the roll no of that struct is the same as the user input or not.

FLOWCHART:

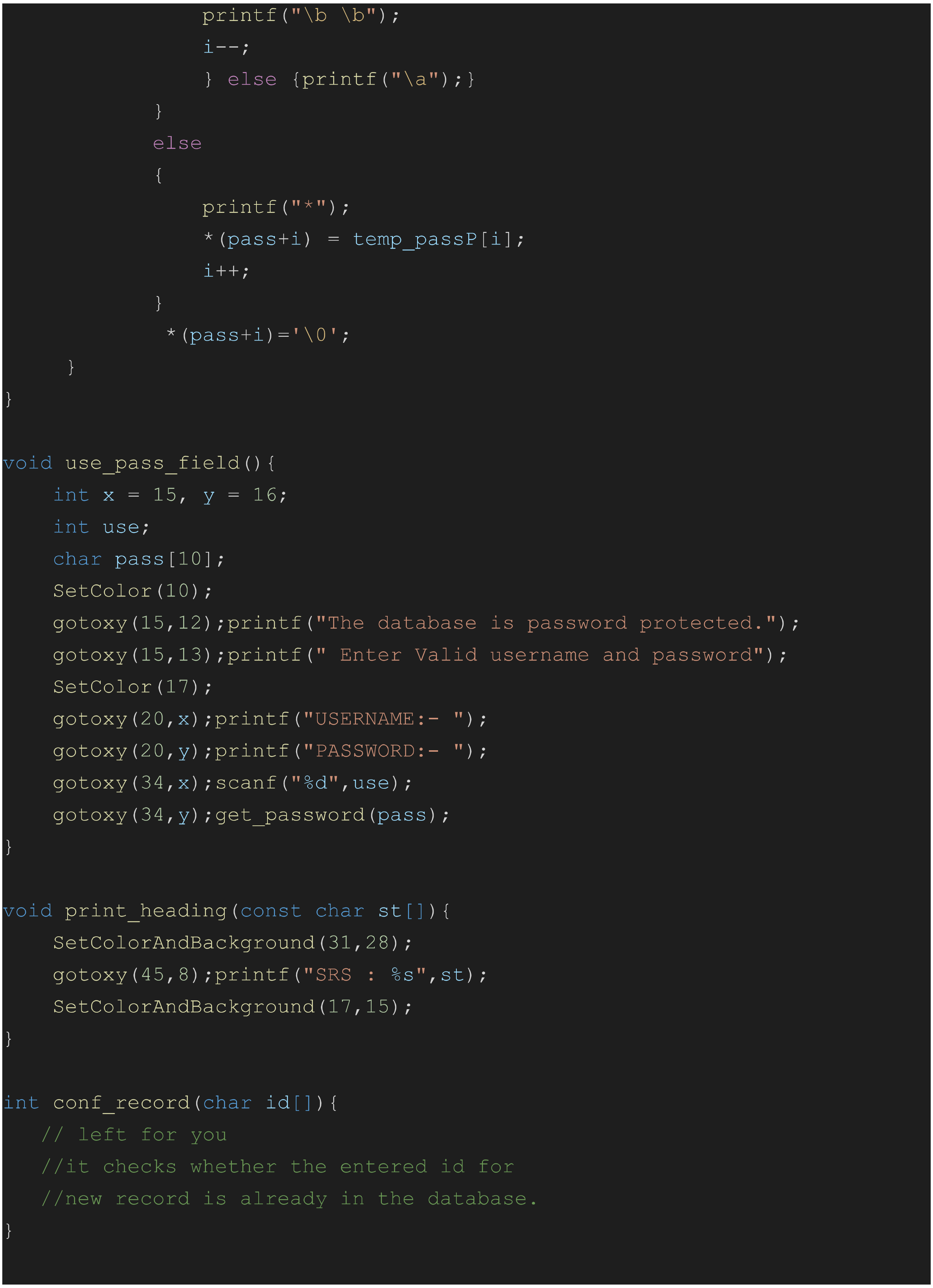

Start
User Inputs Choice
Case 1
File opened in Write mode
Student Details entered by user
Details stored in the file
Case 2
File opened in read mode
Loop run through all the structs
Details displayed on the sreen
YES
Do You want to continue
NO
Case 3
Roll No entered by the user
File opened in read mode
Loop run though the structs
Display Record not found
No
If Roll No found
Yes
Data Displayed
Case 4
Roll No entered
If Found in files
No
Yes
Data stored in temp file except the given roll no.
Temp File replaced Original File
Display Record Not Found
New Data Displayed
Ends

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

struct student{
    char ID[15];
    char name[20];
    char add[20];#include <stdio.h>
#include <string.h>
#include <conio.h>
#include <stdlib.h>
#include <windows.h>

struct student{
    char ID[15];
    char name[20];
    char add[20];
    char parname[20];
    int Class;
    long unsigned int phone_no;
};

struct student stu;

///This will set the forground color for printing in a console window.
void SetColor(int ForgC)
{
     WORD wColor;
     ///We will need this handle to get the current background attribute
     HANDLE hStdOut = GetStdHandle(STD_OUTPUT_HANDLE);
     CONSOLE_SCREEN_BUFFER_INFO csbi;

     ///We use csbi for the wAttributes word.
     if(GetConsoleScreenBufferInfo(hStdOut, &csbi))
     {
        ///Mask out all but the background attribute, and add in the
forgournd color
          wColor = (csbi.wAttributes & 0xF0) + (ForgC & 0x0F);
        SetConsoleTextAttribute(hStdOut, wColor);
    }
    return;
}

void ClearConsoleToColors(int ForgC, int BackC)
{
    WORD wColor = ((BackC & 0x0F) << 4) + (ForgC & 0x0F);
    ///Get the handle to the current output buffer...
    HANDLE hStdOut = GetStdHandle(STD_OUTPUT_HANDLE);
    ///This is used to reset the carat/cursor to the top left.
    COORD coord = {0, 0};
    ///A return value... indicating how many chars were written
    ///   not used but we need to capture this since it will be
    ///   written anyway (passing NULL causes an access violation).
    DWORD count;
    ///This is a structure containing all of the console info
    /// it is used here to find the size of the console.
    CONSOLE_SCREEN_BUFFER_INFO csbi;
    ///Here we will set the current color
    SetConsoleTextAttribute(hStdOut, wColor);
    if(GetConsoleScreenBufferInfo(hStdOut, &csbi))
    {
        ///This fills the buffer with a given character (in this case
32=space).
        FillConsoleOutputCharacter(hStdOut, (TCHAR) 32, csbi.dwSize.X *
csbi.dwSize.Y, coord, &count);
        FillConsoleOutputAttribute(hStdOut, csbi.wAttributes,
csbi.dwSize.X * csbi.dwSize.Y, coord, &count );
        ///This will set our cursor position for the next print
statement.
        SetConsoleCursorPosition(hStdOut, coord);
    }
    return;
}

void SetColorAndBackground(int ForgC, int BackC)
{
    WORD wColor = ((BackC & 0x0F) << 4) + (ForgC & 0x0F);;
    SetConsoleTextAttribute(GetStdHandle(STD_OUTPUT_HANDLE), wColor);
```

```
     return;
}

COORD coord = {0,0}; ///set the cordinate to 0, 0 (top-left corner of window);
void gotoxy(int x, int y){
    coord.X = x; coord.Y = y; /// X and Y coordinates
    SetConsoleCursorPosition(GetStdHandle(STD_OUTPUT_HANDLE), coord);
}

void drawRectangle(){
    int i, j;
    gotoxy(0,0);
    printf("%c",201);
    for(i = 1; i < 78; i++){
        gotoxy(i, 0);
        printf("%c",205);
    }
    gotoxy(78,0);
    printf("%c",187);
    for(i = 1; i < 25; i++){
        gotoxy(78, i);
        if(i == 6){
            printf("%c",185);
        }else{
            printf("%c",186);
        }
    }
    gotoxy(78, 25);
    printf("%c",188);
    for(i = 77; i > 0; i--){
        gotoxy(i,25);
        if(i == 35){
            printf("%c",202);
        }else{
            printf("%c",205);
        }
    }
    gotoxy(0,25);
    printf("%c",200);
    for(i = 24; i > 0; i--){
        gotoxy(0,i);
        if(i == 6){
            printf("%c",204);
        }else{
            printf("%c",186);
        }
    }

    for(i = 1; i < 78; i++){
        gotoxy(i,6);
        if(i == 35){
            printf("%c",203);
        }else{
            printf("%c",205);
        }
    }

    for(i = 7; i < 25; i++){
        gotoxy(35,i);
        printf("%c",186);
    }


}

void clearWindow(){
    int i,j;
    for(i = 37; i < 78; i++){
        for(j = 7; j < 25; j++){
            gotoxy(i,j);printf(" ");
        }
    }
    return;
}

void window(){
    drawRectangle();
    gotoxy(28,2);
    SetColor(35);
    printf("STUDENT RECORD SYSTEM");
    gotoxy(20,3);
    printf("Tribhuvan University, Kathmandu, Nepal");
    gotoxy(31,4);
    printf("Estd.: 2016 B.S.");
    gotoxy(25,24);
    SetColor(17);

}

void get_password(char* pass)
{
    char temp_passP[25];
    int i=0;
     while(1)
    {
            temp_passP[i]=getch();
            if(temp_passP[i]==13){break;}
            else if(temp_passP[i]==8)
            {
                if(i!=0) {
                printf("\b \b");
                i--;
                } else {printf("\a");}
            }
            else
            {
                printf("*");
                *(pass+i) = temp_passP[i];
                i++;
            }
             *(pass+i)='\0';
     }
}

void use_pass_field(){
    int x = 15, y = 16;
    int use;
    char pass[10];
    SetColor(10);
    gotoxy(15,12);printf("The database is password protected.");
    gotoxy(15,13);printf(" Enter Valid username and password");
    SetColor(17);
    gotoxy(20,x);printf("USERNAME:- ");
    gotoxy(20,y);printf("PASSWORD:- ");
    gotoxy(34,x);scanf("%d",use);
    gotoxy(34,y);get_password(pass);
}

void print_heading(const char st[]){
    SetColorAndBackground(31,28);
    gotoxy(45,8);printf("SRS : %s",st);
    SetColorAndBackground(17,15);
}

int conf_record(char id[]){
   // left for you
   //it checks whether the entered id for
   //new record is already in the database.
}

void add_student(){
    clearWindow();
    print_heading("Add Record");
    int print = 37;
    FILE *fp;
    fp = fopen("record.txt","ab+");
    SetColor(45);
    if(fp == NULL){
        MessageBox(0,"Error in Opening file\nMake sure your file is not
write protected","Warning",0);

    }else{
        fflush(stdin);
        gotoxy(print,10);printf("ID: ");gets(stu.ID);
        //here you can confirms the ID
        gotoxy(print,12);printf("Name: ");gets(stu.name);
        gotoxy(print,14);printf("Address: ");gets(stu.add);
        gotoxy(print,16);printf("Parent's name: ");gets(stu.parname);
        gotoxy(print,18);printf("Class: ");scanf("%d",&stu.Class);
        gotoxy(print,20);printf("Phone Number:
");scanf("%ld",&stu.phone_no);
        fwrite(&stu, sizeof(stu), 1, fp);
        gotoxy(40,22); printf("The record is sucessfully added");
    }
    SetColor(28);
    fclose(fp);
    return;
}

void search_student(){
    clearWindow();
    print_heading("Search Record");
    SetColor(45);
    char s_id[15];
    int isFound = 0;
    gotoxy(37,10);printf("Enter ID to Search: ");fflush(stdin);
    gets(s_id);
    FILE *fp;
    fp = fopen("record.txt","rb");
    while(fread(&stu,sizeof(stu),1,fp) == 1){
        if(strcmp(s_id,stu.ID) == 0){
            isFound = 1;
            break;
        }
    }
    if(isFound == 1){
        gotoxy(37,12);printf("The record is Found");
        gotoxy(37,14);printf("ID: %s",stu.ID);
        gotoxy(37,15);printf("Name: %s",stu.name);
        gotoxy(37,16);printf("Address: %s",stu.add);
        gotoxy(37,17);printf("Parent's Name: %s",stu.parname);
        gotoxy(37,18);printf("Class: %d",stu.Class);
        gotoxy(37,19);printf("Phone No: %ld",stu.phone_no);
    }else{
        gotoxy(37,12);printf("Sory, No record found in the database");
    }
    SetColor(28);
    fclose(fp);
    return;
```

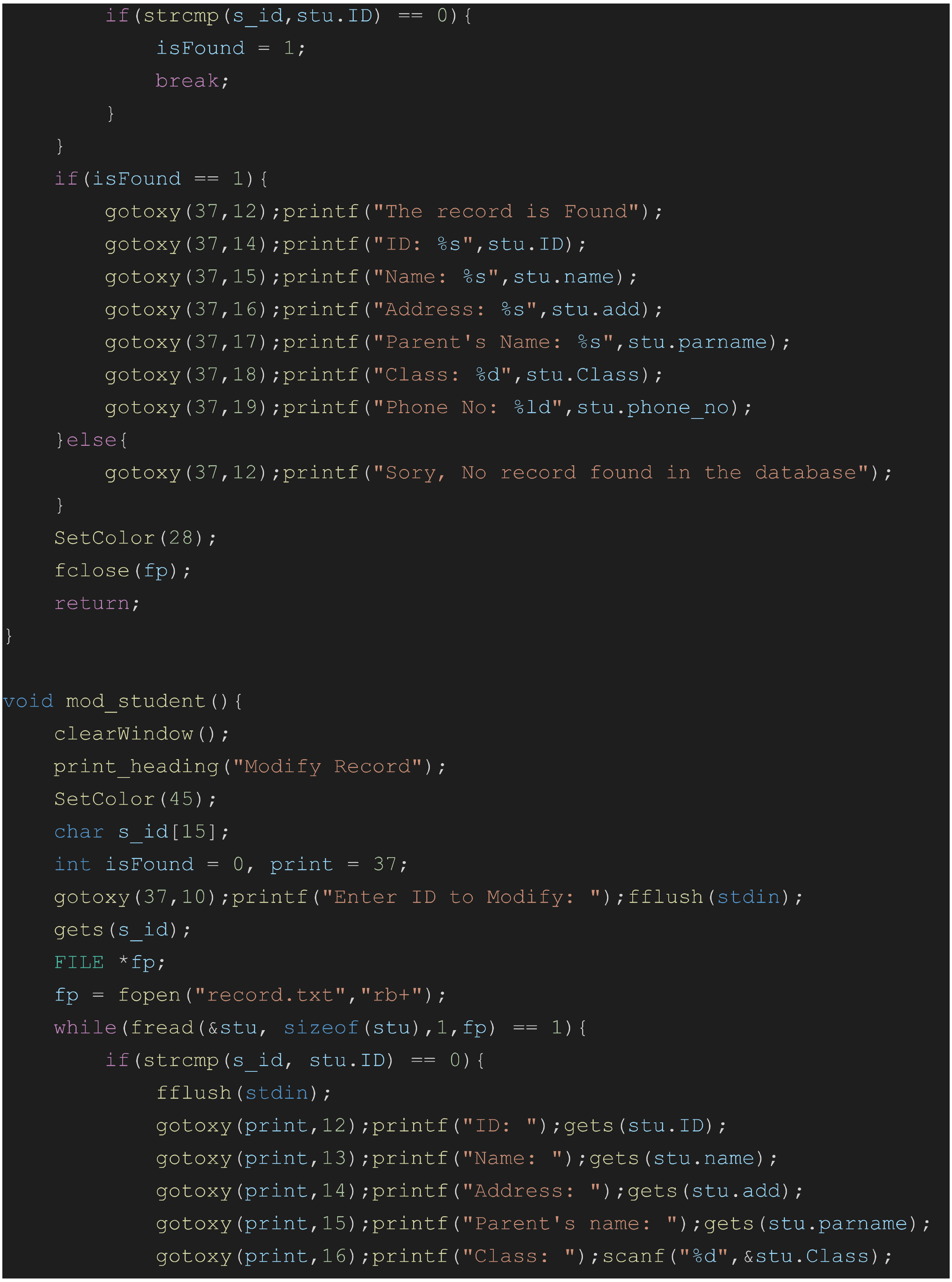
```
}

void mod_student(){
    clearWindow();
    print_heading("Modify Record");
    SetColor(45);
    char s_id[15];
    int isFound = 0, print = 37;
    gotoxy(37,10);printf("Enter ID to Modify: ");fflush(stdin);
    gets(s_id);
    FILE *fp;
    fp = fopen("record.txt","rb+");
    while(fread(&stu, sizeof(stu),1,fp) == 1){
        if(strcmp(s_id, stu.ID) == 0){
            fflush(stdin);
            gotoxy(print,12);printf("ID: ");gets(stu.ID);
            gotoxy(print,13);printf("Name: ");gets(stu.name);
            gotoxy(print,14);printf("Address: ");gets(stu.add);
            gotoxy(print,15);printf("Parent's name: ");gets(stu.parname);
            gotoxy(print,16);printf("Class: ");scanf("%d",&stu.Class);
            gotoxy(print,17);printf("Phone Number:
");scanf("%ld",&stu.phone_no);
            fseek(fp,-sizeof(stu), SEEK_CUR);
            fwrite(&stu,sizeof(stu), 1, fp);
            isFound = 1;
            break;
        }
    }
    if(!isFound){
        gotoxy(print, 12);printf("No Record Found");
    }
    fclose(fp);
    SetColor(28);
    return;
}

void gen_marksheet(){
    //left for further enhancement
}
```

```
void delete_student(){
    clearWindow();
    print_heading("Delete Record");
    SetColor(45);
    char s_id[15];
    int isFound = 0, print = 37;
    gotoxy(37,10);printf("Enter ID to Modify: ");fflush(stdin);
    gets(s_id);
    FILE *fp, *temp;
    fp = fopen("record.txt","rb");
    temp = fopen("temp.txt", "wb");
    while(fread(&stu, sizeof(stu),1,fp) == 1){
        if(strcmp(s_id, stu.ID) == 0){
            fwrite(&stu,sizeof(stu),1,temp);
        }
    }
    fclose(fp);
    fclose(temp);
    remove("record.txt");
    rename("temp.txt","record.txt");
    gotoxy(37,12);printf("The record is sucessfully deleted");
    SetColor(28);
    return;
}

void main_window(){
    int choice;
    SetColor(28);
    int x = 2;
    while(1){
        gotoxy(x,8);printf("1. Add Student");
        gotoxy(x,10);printf("2. Search Student");
        gotoxy(x,12);printf("3. Modify Student Record");
        gotoxy(x,14);printf("4. Generate Marksheet");
        gotoxy(x,16);printf("5. Delete Student Record");
        gotoxy(x,18);printf("6. Change password");
        gotoxy(x,20);printf("7. Exit");
        gotoxy(x,22);printf("Enter your choice: ");
        scanf("%d",&choice);
        switch(choice){
            case 1:
                add_student();
                break;
            case 2:
                search_student();
                break;
            case 3:
                mod_student();
                break;
            case 4:
                break;
            case 5:
                delete_student();
                break;
            case 6:
                break;
            case 7:
                exit(0);
                break;
            default:
                break;
        }

    }

}

int main(){
    ClearConsoleToColors(17,15);
    SetConsoleTitle("Programming-technique.blogspot.com - Student Record System");
    window();
    //use_pass_field();
    main_window();
    return 0;
}



    char parname[20];
    int Class;
    long unsigned int phone_no;
};

struct student stu;

///This will set the forground color for printing in a console window.
void SetColor(int ForgC)
{
     WORD wColor;
     ///We will need this handle to get the current background attribute
     HANDLE hStdOut = GetStdHandle(STD_OUTPUT_HANDLE);
     CONSOLE_SCREEN_BUFFER_INFO csbi;

     ///We use csbi for the wAttributes word.
     if(GetConsoleScreenBufferInfo(hStdOut, &csbi))
     {
        ///Mask out all but the background attribute, and add in the
forgournd color
          wColor = (csbi.wAttributes & 0xF0) + (ForgC & 0x0F);
          SetConsoleTextAttribute(hStdOut, wColor);
     }
     return;
}

void ClearConsoleToColors(int ForgC, int BackC)
{
     WORD wColor = ((BackC & 0x0F) << 4) + (ForgC & 0x0F);
     ///Get the handle to the current output buffer...
     HANDLE hStdOut = GetStdHandle(STD_OUTPUT_HANDLE);
     ///This is used to reset the carat/cursor to the top left.
     COORD coord = {0, 0};
     ///A return value... indicating how many chars were written
     ///   not used but we need to capture this since it will be
     ///   written anyway (passing NULL causes an access violation).
     DWORD count;
     ///This is a structure containing all of the console info
     /// it is used here to find the size of the console.
     CONSOLE_SCREEN_BUFFER_INFO csbi;
     ///Here we will set the current color
     SetConsoleTextAttribute(hStdOut, wColor);
     if(GetConsoleScreenBufferInfo(hStdOut, &csbi))
     {
          ///This fills the buffer with a given character (in this case
32=space).
          FillConsoleOutputCharacter(hStdOut, (TCHAR) 32, csbi.dwSize.X *
csbi.dwSize.Y, coord, &count);
          FillConsoleOutputAttribute(hStdOut, csbi.wAttributes,
csbi.dwSize.X * csbi.dwSize.Y, coord, &count );
          ///This will set our cursor position for the next print
statement.
          SetConsoleCursorPosition(hStdOut, coord);
     }
     return;
}

void SetColorAndBackground(int ForgC, int BackC)
{
     WORD wColor = ((BackC & 0x0F) << 4) + (ForgC & 0x0F);;
     SetConsoleTextAttribute(GetStdHandle(STD_OUTPUT_HANDLE), wColor);
     return;
}

COORD coord = {0,0}; ///set the cordinate to 0, 0 (top-left corner of
window);
void gotoxy(int x, int y){
    coord.X = x; coord.Y = y; /// X and Y coordinates
    SetConsoleCursorPosition(GetStdHandle(STD_OUTPUT_HANDLE), coord);
}

void drawRectangle(){
    int i, j;
    gotoxy(0,0);
    printf("%c",201);
    for(i = 1; i < 78; i++){
        gotoxy(i, 0);
        printf("%c",205);
    }
    gotoxy(78,0);
    printf("%c",187);
    for(i = 1; i < 25; i++){
        gotoxy(78, i);
        if(i == 6){
            printf("%c",185);
        }else{
            printf("%c",186);
        }
    }
    gotoxy(78, 25);
    printf("%c",188);
    for(i = 77; i > 0; i--){
        gotoxy(i,25);
        if(i == 35){
            printf("%c",202);
        }else{
            printf("%c",205);
        }
    }
    gotoxy(0,25);
    printf("%c",200);
    for(i = 24; i > 0; i--){
        gotoxy(0,i);
        if(i == 6){
            printf("%c",204);
        }else{
            printf("%c",186);
        }
    }

    for(i = 1; i < 78; i++){
        gotoxy(i,6);
        if(i == 35){
            printf("%c",203);
        }else{
            printf("%c",205);
        }
    }

    for(i = 7; i < 25; i++){
        gotoxy(35,i);
        printf("%c",186);
    }

}

void clearWindow(){
    int i,j;
    for(i = 37; i < 78; i++){
        for(j = 7; j < 25; j++){
            gotoxy(i,j);printf(" ");
        }
    }
    return;
}

void window(){
    drawRectangle();
    gotoxy(28,2);
    SetColor(35);
    printf("STUDENT RECORD SYSTEM");
    gotoxy(20,3);
    printf("Tribhuvan University, Kathmandu, Nepal");
    gotoxy(31,4);
    printf("Estd.: 2016 B.S.");
    gotoxy(25,24);
    SetColor(17);

}

void get_password(char* pass)
{
    char temp_passP[25];
    int i=0;
     while(1)
    {
            temp_passP[i]=getch();
            if(temp_passP[i]==13){break;}
            else if(temp_passP[i]==8)
            {
                if(i!=0) {
```



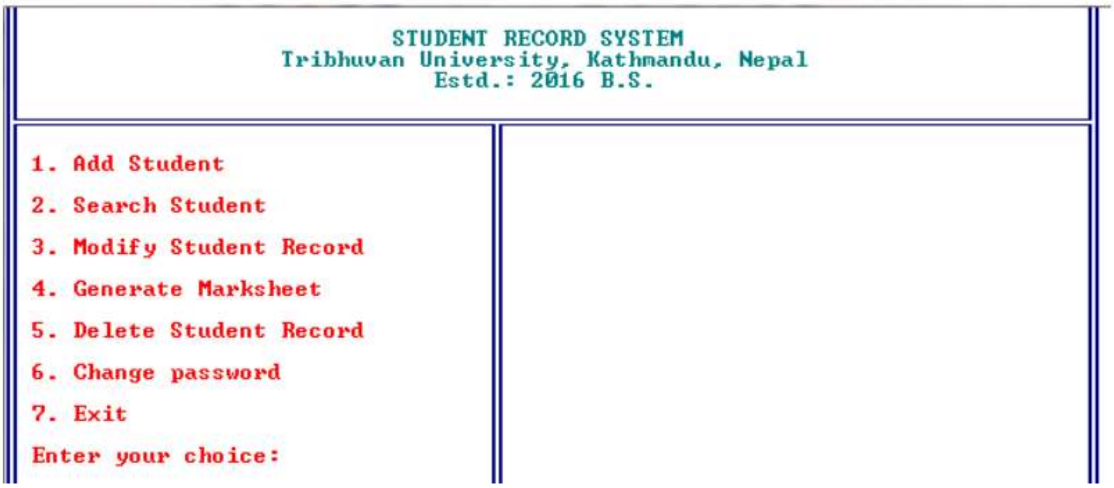
```
                printf("\b \b");
                i--;
                } else {printf("\a");}
            }
            else
            {
                printf("*");
                *(pass+i) = temp_passP[i];
                i++;
            }
             *(pass+i)='\0';
     }
}

void use_pass_field(){
    int x = 15, y = 16;
    int use;
    char pass[10];
    SetColor(10);
    gotoxy(15,12);printf("The database is password protected.");
    gotoxy(15,13);printf(" Enter Valid username and password");
    SetColor(17);
    gotoxy(20,x);printf("USERNAME:- ");
    gotoxy(20,y);printf("PASSWORD:- ");
    gotoxy(34,x);scanf("%d",use);
    gotoxy(34,y);get_password(pass);
}

void print_heading(const char st[]){
    SetColorAndBackground(31,28);
    gotoxy(45,8);printf("SRS : %s",st);
    SetColorAndBackground(17,15);
}

int conf_record(char id[]){
   // left for you
   //it checks whether the entered id for
   //new record is already in the database.
}
```

```
void add_student(){
    clearWindow();
    print_heading("Add Record");
    int print = 37;
    FILE *fp;
    fp = fopen("record.txt","ab+");
    SetColor(45);
    if(fp == NULL){
        MessageBox(0,"Error in Opening file\nMake sure your file is not
write protected","Warning",0);

    }else{
        fflush(stdin);
        gotoxy(print,10);printf("ID: ");gets(stu.ID);
        //here you can confirms the ID
        gotoxy(print,12);printf("Name: ");gets(stu.name);
        gotoxy(print,14);printf("Address: ");gets(stu.add);
        gotoxy(print,16);printf("Parent's name: ");gets(stu.parname);
        gotoxy(print,18);printf("Class: ");scanf("%d",&stu.Class);
        gotoxy(print,20);printf("Phone Number:
");scanf("%ld",&stu.phone_no);
        fwrite(&stu, sizeof(stu), 1, fp);
        gotoxy(40,22); printf("The record is sucessfully added");
    }
    SetColor(28);
    fclose(fp);
    return;
}

void search_student(){
    clearWindow();
    print_heading("Search Record");
    SetColor(45);
    char s_id[15];
    int isFound = 0;
    gotoxy(37,10);printf("Enter ID to Search: ");fflush(stdin);
    gets(s_id);
    FILE *fp;
    fp = fopen("record.txt","rb");
    while(fread(&stu,sizeof(stu),1,fp) == 1){
```

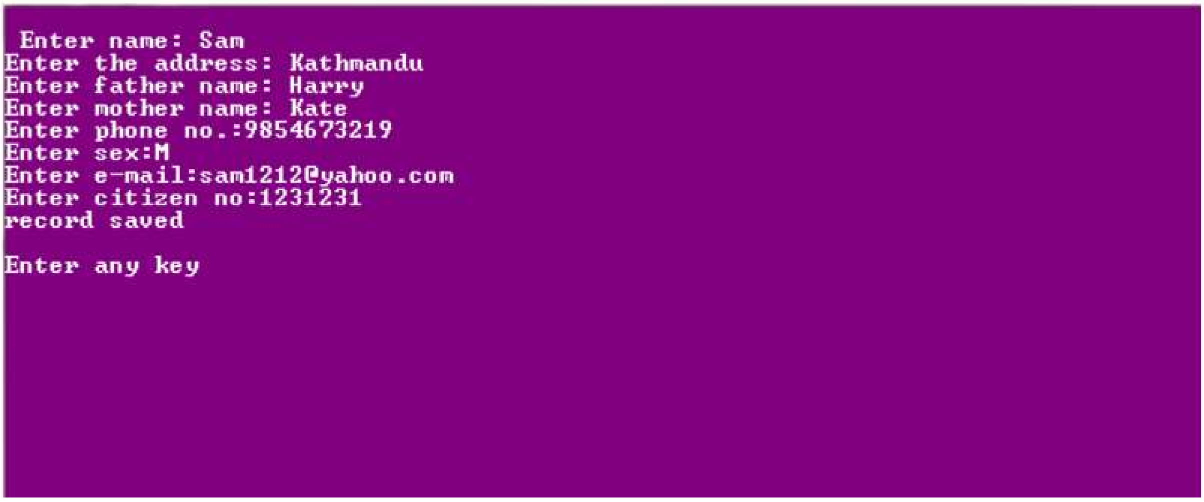


```
        if(strcmp(s_id,stu.ID) == 0){
            isFound = 1;
            break;
        }
    }
    if(isFound == 1){
        gotoxy(37,12);printf("The record is Found");
        gotoxy(37,14);printf("ID: %s",stu.ID);
        gotoxy(37,15);printf("Name: %s",stu.name);
        gotoxy(37,16);printf("Address: %s",stu.add);
        gotoxy(37,17);printf("Parent's Name: %s",stu.parname);
        gotoxy(37,18);printf("Class: %d",stu.Class);
        gotoxy(37,19);printf("Phone No: %ld",stu.phone_no);
    }else{
        gotoxy(37,12);printf("Sory, No record found in the database");
    }
    SetColor(28);
    fclose(fp);
    return;
}

void mod_student(){
    clearWindow();
    print_heading("Modify Record");
    SetColor(45);
    char s_id[15];
    int isFound = 0, print = 37;
    gotoxy(37,10);printf("Enter ID to Modify: ");fflush(stdin);
    gets(s_id);
    FILE *fp;
    fp = fopen("record.txt","rb+");
    while(fread(&stu, sizeof(stu),1,fp) == 1){
        if(strcmp(s_id, stu.ID) == 0){
            fflush(stdin);
            gotoxy(print,12);printf("ID: ");gets(stu.ID);
            gotoxy(print,13);printf("Name: ");gets(stu.name);
            gotoxy(print,14);printf("Address: ");gets(stu.add);
            gotoxy(print,15);printf("Parent's name: ");gets(stu.parname);
            gotoxy(print,16);printf("Class: ");scanf("%d",&stu.Class);
            gotoxy(print,17);printf("Phone Number:
");scanf("%ld",&stu.phone_no);
            fseek(fp,-sizeof(stu), SEEK_CUR);
            fwrite(&stu,sizeof(stu), 1, fp);
            isFound = 1;
            break;
        }
    }
    if(!isFound){
        gotoxy(print, 12);printf("No Record Found");
    }
    fclose(fp);
    SetColor(28);
    return;
}

void gen_marksheet(){
    //left for further enhancement
}

void delete_student(){
    clearWindow();
    print_heading("Delete Record");
    SetColor(45);
    char s_id[15];
    int isFound = 0, print = 37;
    gotoxy(37,10);printf("Enter ID to Modify: ");fflush(stdin);
    gets(s_id);
    FILE *fp, *temp;
    fp = fopen("record.txt","rb");
    temp = fopen("temp.txt", "wb");
    while(fread(&stu, sizeof(stu),1,fp) == 1){
        if(strcmp(s_id, stu.ID) == 0){
            fwrite(&stu,sizeof(stu),1,temp);
        }
    }
    fclose(fp);
    fclose(temp);
    remove("record.txt");
    rename("temp.txt","record.txt");
    gotoxy(37,12);printf("The record is sucessfully deleted");
    SetColor(28);
    return;
}

void main_window(){
    int choice;
    SetColor(28);
    int x = 2;
    while(1){
        gotoxy(x,8);printf("1. Add Student");
        gotoxy(x,10);printf("2. Search Student");
        gotoxy(x,12);printf("3. Modify Student Record");
        gotoxy(x,14);printf("4. Generate Marksheet");
        gotoxy(x,16);printf("5. Delete Student Record");
        gotoxy(x,18);printf("6. Change password");
        gotoxy(x,20);printf("7. Exit");
        gotoxy(x,22);printf("Enter your choice: ");
        scanf("%d",&choice);
        switch(choice){
            case 1:
                add_student();
                break;
            case 2:
                search_student();
                break;
            case 3:
                mod_student();
                break;
            case 4:
                break;
            case 5:
                delete_student();
                break;
            case 6:
                break;
            case 7:
                exit(0);
                break;
            default:
                    break;
                }

            }

}

int main(){
    ClearConsoleToColors(17,15);
    SetConsoleTitle("Programming-technique.blogspot.com - Student Record
System");
    window();
    //use_pass_field();
    main_window();
    return 0;
}
```

Output Screens:



```
                    STUDENT RECORD SYSTEM
          Tribhuvan University, Kathmandu, Nepal
                      Estd.: 2016 B.S.

 1. Add Student
 2. Search Student
 3. Modify Student Record
 4. Generate Marksheet
 5. Delete Student Record
 6. Change password
 7. Exit
 Enter your choice:
```



```
 Enter name: Sam
Enter the address: Kathmandu
Enter father name: Harry
Enter mother name: Kate
Enter phone no.:9854673219
Enter sex:M
Enter e-mail:sam1212@yahoo.com
Enter citizen no:1231231
record saved

Enter any key
```

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