



Green University of Bangladesh

Dept. of Computer Science & Engineering (CSE)
Faculty of Sciences and Engineering
Semester: (Spring, Year:2022), B.Sc. in CSE (Day)

Lab Project Report

Course Title: Data Structure Lab **Course Code:** CSE-106

Lab Project Name : Student Database Management System

Submission Date : May 05/2022

Course Teacher Details:

Name : Dr. Nazib Abdun Nasir.
Assistance Professor, Dept. of CSE
Green University of Bangladesh

Student Details:

Name : Tarikul Islam
ID : 212002008
Batch : 212
Section : DB
Department of CSE
Green University of Bangladesh

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Lab Project Status

Marks:

Signature:

Comments:

Date:

Student Database Management System

Chapter 1

Introduction

Introduction:

Student database management system is system that can use to store all student data. It's easy to use and simple interface manus like that add record, modify record, delete any individual record, individual view record, view all record and exit program. If user choice add record to add any student data, choice modify record to modify any student data, choice delete to delete individual student record, choice individual view to show individual student data, choice view all to show stored all student data.

Design Goals/Objective:

1. This is Student database management system.
2. This program easy to user interface.
3. Easily add/delete/modify/view any record.
4. It is a storage system that stored all student data in small space.

Chapter 2

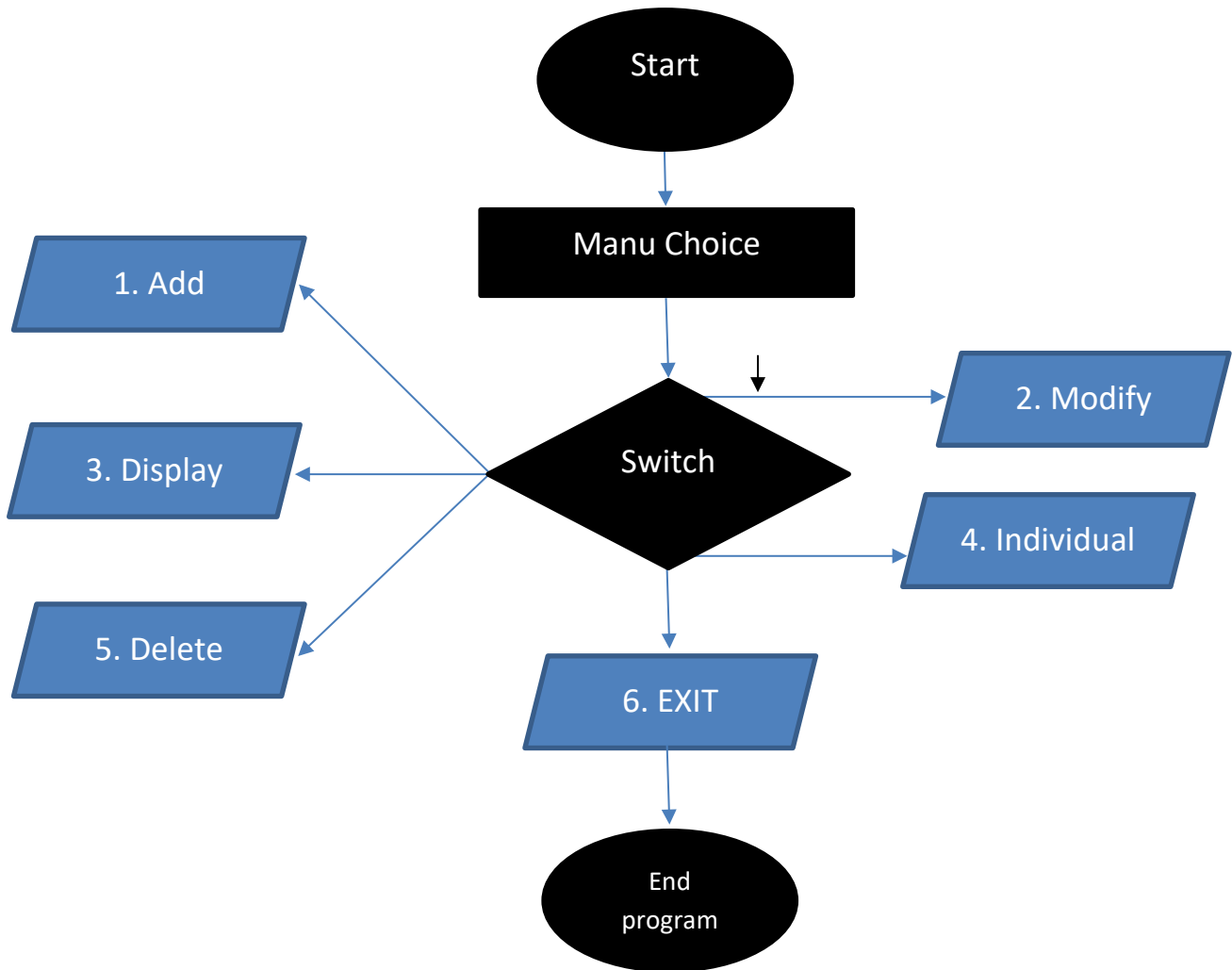
Design/Development/Implementation of the Project

Program Design: Student database management system



Fig-1: Add any record easily

Program Development:



Implementation of the project:

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

#define Student struct Stud

void addRecord(FILE *fp);
void modify(FILE *fp);
void display(FILE *fp);
void Individual(FILE *fp);
FILE *delRecord(FILE *fp);
void printChar(char ch,int n);
FILE *tp;

struct Stud{
    char name[100];
    char dept[50];
    int ID;
    float sgpa[12];
    float cgpa;
};

int main(){
    FILE * fp;
    Student s;
    int option;
    printf("\n\n\t\t\t");

    printChar('=',49);
    printf("\n\t\t\t");
    printChar('*',49);
```

```
printf("\n\t\tWELCOME TO GUB STUDENT DATABASE  
MANAGEMENT SYSTEM\n\t\t");
```

```
printChar('*',49);
```

```
printf("\n\t\t");
```

```
printChar('=',49);
```

```
if((fp=fopen("db.txt","rb+"))==NULL){  
    if((fp=fopen("db.txt","wb+"))==NULL){  
        printf("Can't create or open Database.");  
        return 0;  
    }  
}
```

```
while(1){  
    printf("\n\n1. Add Student Recors\n");  
    printf("2. Modify Student Recors\n");  
    printf("3. Show All Student Recors\n");  
    printf("4. Individual View Recors\n");  
    printf("5. Remove Student Recors\n");  
    printf("6. Exit Programm\n");  
    printf("\nEnter Your Option :==> ");  
    scanf("%d",&option);
```

```
switch(option){  
    case 1:  
        addRecord(fp);  
        break;  
    case 2:  
        modify(fp);  
        break;  
    case 3:  
        display(fp);  
        break;  
    case 4:  
        Indivisual(fp);  
        break;  
    case 5:  
        fp=delRecord(fp);
```

```

        break;
    case 6:
        return 1;
        break;
    default:
        printf("\n\t\tNo Action Detected");
        printf("\n\t\tPress Any Key\n\n\n");
        system("pause");
    }
}
return 1;
}

void printChar(char ch,int n){
    while(n--)
        putchar(ch);
}

void addRecord(FILE * fp){
    char another='y';
    Student s;
    int i;
    float cgpa;

    fseek(fp,0,SEEK_END);
    while(another=='y' || another=='Y'){

        printf("\n\tEnter Full Name of Student\t: ");
        fflush(stdin);
        fgets(s.name,100,stdin);
        s.name[strlen(s.name)-1]='\0';

        printf("\tEnter Depertment Name\t\t: ");
        fflush(stdin);
        fgets(s.dept,50,stdin);
        s.dept[strlen(s.dept)-1]='\0';
    }
}

```

```

printf("\tEnter Student ID\t\t: ");
scanf("%d",&s.ID);

printf("\tEnter GPA for 12 semesters\t: ");
for(i=0,cgpa=0; i<12; i++){
    scanf("%f",&s.sgpa[i]);
    cgpa+=s.sgpa[i];
}

cgpa/=12.0;
s.cgpa=cgpa;

fwrite(&s,sizeof(s),1,fp);

printf("\n\tAdd another student?(Y/N): ");
fflush(stdin);
another=getchar();
}
}

```

```

FILE * delRecord(FILE * fp){
    Student s;
    int flag=0,tempID,siz=sizeof(s);
    FILE *ft;

    if((ft=fopen("temp.txt","wb+"))==NULL){
        printf("\n\n\t\t\t!!! ERROR !!!\n\t\t");
        system("pause");
        return fp;
    }

    printf("\n\n\tEnter Student ID to Delete the Record");
    printf("\n\tStudent ID: ");
    scanf("%d",&tempID);

    rewind(fp);

```



```

while((fread(&s,siz,1,fp))==1){
    if(s.ID==tempID){
        flag=1;
        printf("\n\tRecord Deleted for");

printf("\n\tName\t\t:%s\n\tDepartment\t:%s\n\tID\t\t:%d\n",s.name,s.d
ept,
s.ID);
        printf("\n\t");
        printChar('-',60);
        printf("\n\n\n\t");
        printChar('*',60);
        printf("\n");
        continue;
    }

    fwrite(&s,siz,1,ft);
}

fclose(fp);
fclose(ft);

remove("db.txt");
rename("temp.txt","db.txt");

if((fp=fopen("db.txt","rb+"))==NULL){
    printf("ERROR");
    return NULL;
}

if(flag==0){
    printf("\n\tNO STUDENT FOUND WITH THE
INFORMATION\n");
    printf("\n\t");
    system("pause");
    return fp;
}

```

```
}  
}
```

```
void modify(FILE * fp){  
    Student s;  
    int i,flag=0,tempID,siz=sizeof(s);  
    float cgpa;  
  
    printf("\n\n\tEnter Student ID to MODIFY the Record : ");  
    scanf("%d",&tempID);  
  
    rewind(fp);  
    while((fread(&s,siz,1,fp))==1){  
        if(s.ID==tempID){  
            flag=1;  
            break;  
        }  
    }  
  
    if(flag==1){  
        fseek(fp,-siz,SEEK_CUR);  
        printf("\n\t\tRecord Found\n\t");  
        printChar('-',40);  
        printf("\n\tStudent Name\t: %s",s.name);  
        printf("\n\tStudent ID\t: %d\n\t",s.ID);  
        printChar('-',40);  
  
        printf("\n\n\tEnter New Data for the Student\n\t");  
        printChar('-',40);  
  
        printf("\n\tEnter Full Name\t\t: ");  
        fflush(stdin);  
        fgets(s.name,100,stdin);  
        s.name[strlen(s.name)-1]='\0';  
  
        printf("\tEnter Department\t: ");
```

```

    fflush(stdin);
    fgets(s.dept,50,stdin);
    s.dept[strlen(s.dept)-1]='\0';

    printf("\tEnter Student ID\t: ");
    scanf("%d",&s.ID);

    printf("\tEnter GPA for 12 sem.\t: ");
    for(i=0,cgpa=0; i<12; i++){
        scanf("%f",&s.sgpa[i]);
        cgpa+=s.sgpa[i];
    }
    cgpa/=12.0;

    fwrite(&s,sizeof(s),1,fp);
}

else printf("\n\n\t!!! ERROR !!!! RECORD NOT FOUND");

printf("\n\n\t");
system("pause");

}

void display(FILE * fp){
    Student s;
    int i,siz=sizeof(s);

    rewind(fp);

    while((fread(&s,siz,1,fp))==1){
        printf("\n\tNAME\t\t\t: %s",s.name);
        printf("\n\tDepartment\t\t\t: %s",s.dept);
        printf("\n\tID\t\t\t\t: %d",s.ID);
        printf("\n\tGPA\t\t\t\t: ");
    }
}

```

```

        for(i=0; i<12; i++)
            printf("| %.2f |",s.sgpa[i]);
            printf("\n\tCGPA\t\t\t: %.2f\n\t",s.cgpa);
            printfChar('-',60);
        }
        printf("\n\n\n\t");
        printfChar('*',60);
        printf("\n\n\t");
        system("pause");
    }

```

```

void Individual(FILE *fp){
    int tempID,flag,siz,i;
    Student s;
    char another='y';

    siz=sizeof(s);

    while(another=='y'||another=='Y'){
        printf("\n\n\tEnter Student ID: ");
        scanf("%d",&tempID);

        rewind(fp);

        while((fread(&s,siz,1,fp))==1){
            if(s.ID==tempID){
                flag=1;
                break;
            }
        }

        if(flag==1){
            printf("\tNAME \t\t: %s\n",s.name);
            printf("\tDepartment \t: %s\n",s.dept);
            printf("\tID \t\t: %d\n",s.ID);
            printf("\tGPA: ");

```

```
        for(i=0; i<12; i++)
            printf("| %.2f |",s.sgpa[i]);
        printf("\n\n\tCGPA \t\t: %.2f\n\t",s.cgpa);
        printChar('-',60);

    }
    else printf("\n\n\t!!!! ERROR RECORD NOT FOUND !!!!");

    printf("\n\n\tShow another student information? (Y/N)?");
    fflush(stdin);
    another=getchar();
}
}
```

Chapter 3

Performance Evaluation

Simulation Environment/ Simulation Procedure:

TOOLS & TECHNOLOGIES -

1. Programming Language: C
2. Visual Studio Code- GCC
3. Operating system Windows 11.

Results:

```
=====
*****
WELCOME TO GUB STUDENT DATABASE MANAGEMENT SYSTEM
*****
=====

1. Add Student Recors
2. Modify Student Recors
3. Show All Student Recors
4. Individual View Recors
5. Remove Student Recors
6. Exit Programm

Enter Your Option :==> 1

Enter Full Name of Student      : Tarikul Islam
Enter Depertment Name           : CSE
Enter Student ID                : 212002008
Enter GPA for 12 semesters      : 3.12 3.17 3.12 3.17 3.12 3.17 3.12 3.17 3.12 3.17 3.12 3.17

Add another student?(Y/N): n
```

Add record-1

```
1. Add Student Recors
2. Modify Student Recors
3. Show All Student Recors
4. Individual View Recors
5. Remove Student Recors
6. Exit Programm

Enter Your Option :==> 1

Enter Full Name of Student      : Islam Sujon
Enter Depertment Name           : CSE
Enter Student ID                : 212002010
Enter GPA for 12 semesters      : 3.12 3.17 3.12 3.17 3.12 3.17 3.12 3.17 3.12 3.17 3.12 3.17

Add another student?(Y/N): N
```

Add record-2

1. Add Student Recors
2. Modify Student Recors
3. Show All Student Recors
4. Individual View Recors
5. Remove Student Recors
6. Exit Programm

Enter Your Option :==> 3

```

NAME                : Tarikul Islam
Department           : CSE
ID                   : 212002008
GPA                  : | 3.12 || 3.17 || 3.12 || 3.17 || 3.12 || 3.17 || 3.12 || 3.17 || 3.12 || 3.17 || 3.12 || 3.17 |
CGPA                 : 3.14
-----
NAME                : Islam Sujon
Department           : CSE
ID                   : 212002010
GPA                  : | 3.12 || 3.17 || 3.12 || 3.17 || 3.12 || 3.17 || 3.12 || 3.17 || 3.12 || 3.17 || 3.12 || 3.17 |
CGPA                 : 3.14
-----

```

Press any key to continue . . .

Show All-1

1. Add Student Recors
2. Modify Student Recors
3. Show All Student Recors
4. Individual View Recors
5. Remove Student Recors
6. Exit Programm

Enter Your Option :==> 2

Enter Student ID to MODIFY the Record : 212002010

Record Found

```

-----
Student Name       : Islam Sujon
Student ID        : 212002010
-----

```

Enter New Data for the Student

```

-----
Enter Full Name    : Sujon Islam
Enter Department   : CSE
Enter Student ID   : 212002010
Enter GPA for 12 sem. : 3.30 3.40 3.15 3.50 3.75 3.66 3.78 3.98 3.55 3.47 3.90 3.77

```

Press any key to continue . . .

Modify Record-1

1. Add Student Recors
2. Modify Student Recors
3. Show All Student Recors
4. Individual View Recors
5. Remove Student Recors
6. Exit Programm

Enter Your Option :==> 3

```

NAME                : Tarikul Islam
Department           : CSE
ID                   : 212002008
GPA                  : | 3.12 || 3.17 || 3.12 || 3.17 || 3.12 || 3.17 || 3.12 || 3.17 || 3.12 || 3.17 || 3.12 || 3.17 |
CGPA                 : 3.14
-----
NAME                : Sujon Islam
Department           : CSE
ID                   : 212002010
GPA                  : | 3.30 || 3.40 || 3.15 || 3.50 || 3.75 || 3.66 || 3.78 || 3.98 || 3.55 || 3.47 || 3.90 || 3.77 |
CGPA                 : 3.14
-----

```

Press any key to continue . . .

Show All after
modify

1. Add Student Recors
2. Modify Student Recors
3. Show All Student Recors
4. Individual View Recors
5. Remove Student Recors
6. Exit Programm

Individual view by
searching ID

Enter Your Option :==> 4

```

Enter Student ID: 212002008
NAME           : Tarikul Islam
Department     : CSE
ID             : 212002008
GPA: | 3.12 || 3.17 || 3.12 || 3.17 || 3.12 || 3.17 || 3.12 || 3.17 || 3.12 || 3.17 || 3.12 || 3.17 |
CGPA          : 3.14
-----

```

Show another student information? (Y/N)?Y

```

Enter Student ID: 212002010
NAME           : Sujon Islam
Department     : CSE
ID             : 212002010
GPA: | 3.30 || 3.40 || 3.15 || 3.50 || 3.75 || 3.66 || 3.78 || 3.98 || 3.55 || 3.47 || 3.90 || 3.77 |
CGPA          : 3.14
-----

```

Show another student information? (Y/N)?N

1. Add Student Recors
2. Modify Student Recors
3. Show All Student Recors
4. Individual View Recors
5. Remove Student Recors
6. Exit Programm

Delete record by
using through ID

Enter Your Option :==> 5

```

Enter Student ID to Delete the Record
Student ID: 212002010

```

```

Record Deleted for
Name           :Sujon Islam
Depertment     :CSE
ID             :212002010
-----

```

1. Add Student Recors
2. Modify Student Recors
3. Show All Student Recors
4. Individual View Recors
5. Remove Student Recors
6. Exit Programm

Show all after
deleting record

Enter Your Option :==> 3

```

NAME           : Tarikul Islam
Department     : CSE
ID             : 212002008
GPA: | 3.12 || 3.17 || 3.12 || 3.17 || 3.12 || 3.17 || 3.12 || 3.17 || 3.12 || 3.17 || 3.12 || 3.17 |
CGPA          : 3.14
-----

```

Press any key to continue . . .

Discussions:

This application is easy to use and its interface is very simple that means application is user friendly.

Chapter 4

Conclusion

Conclusion:

As i am a beginner in using C programming language. So, I think it a good start with the project of student database management system. Usually, the program of student database management system contains basic of c with a conditional statement, switch statement, for loop, structure, file handling, user define function and with some special functions.

Practical Implications:

The program can be used to build simple application software. Student database management system has no limitation of specific subject. It easy to use and stored student record digital process using some function add, delete, update, searching and display all record. If the user choices correct option, then add, delete, update, search, view record otherwise showing invalid choices.

Scope of Future Work:

Finally, this project we will learn how to create a student database management system in C program using vs code and this will

increase our program skill level and help us to solve real life problems.



END