Student Management System

Project Description:

Program in C language to build a Student Management System by using Queue to Preform some operations :

1- Store the First name of the student.

2- Store the Last name of the student.

3- Store the unique Roll number for every student.

4- Store the GPA of every student.

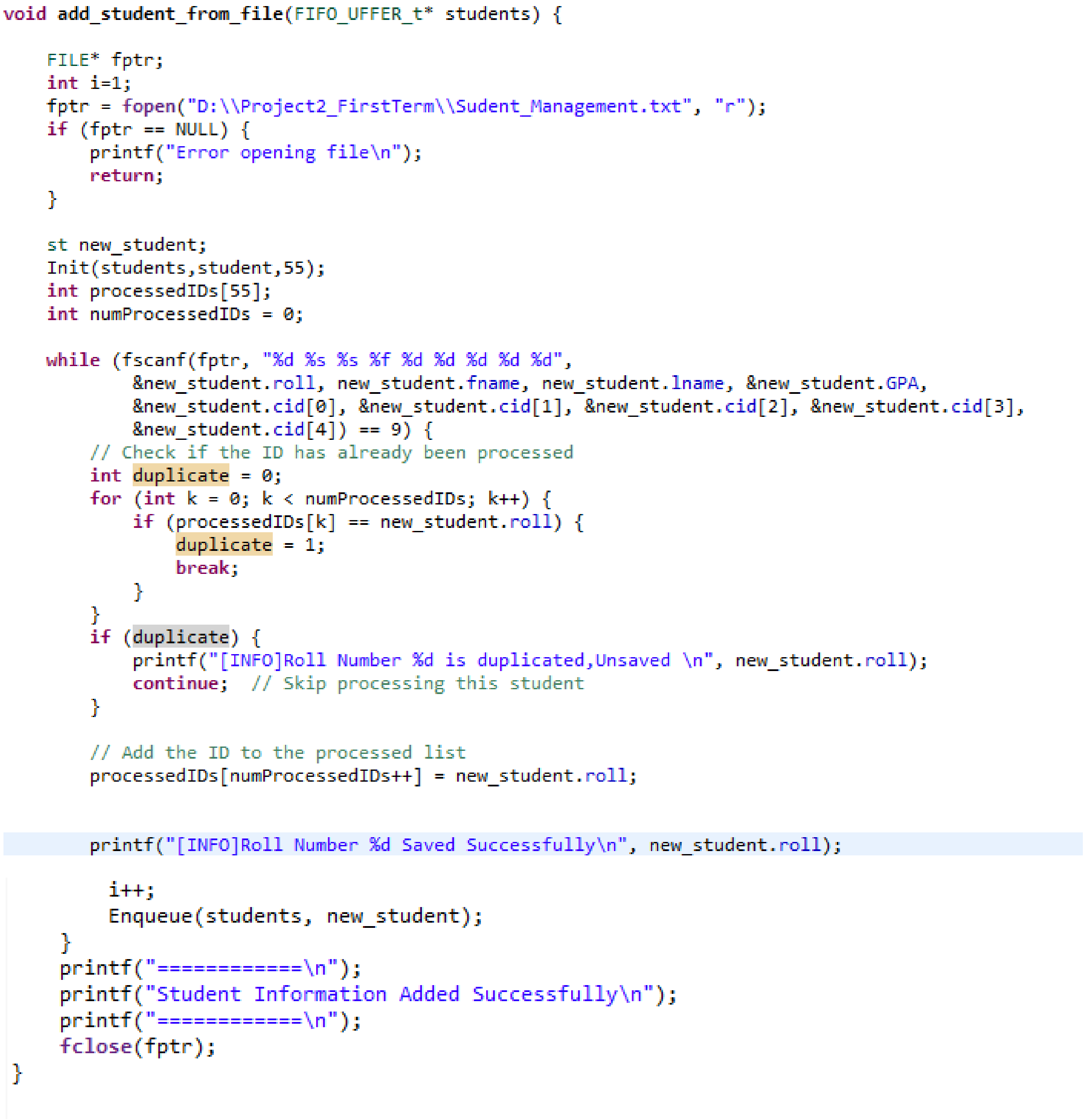
5- Store the courses registered by the student.

Approaches:

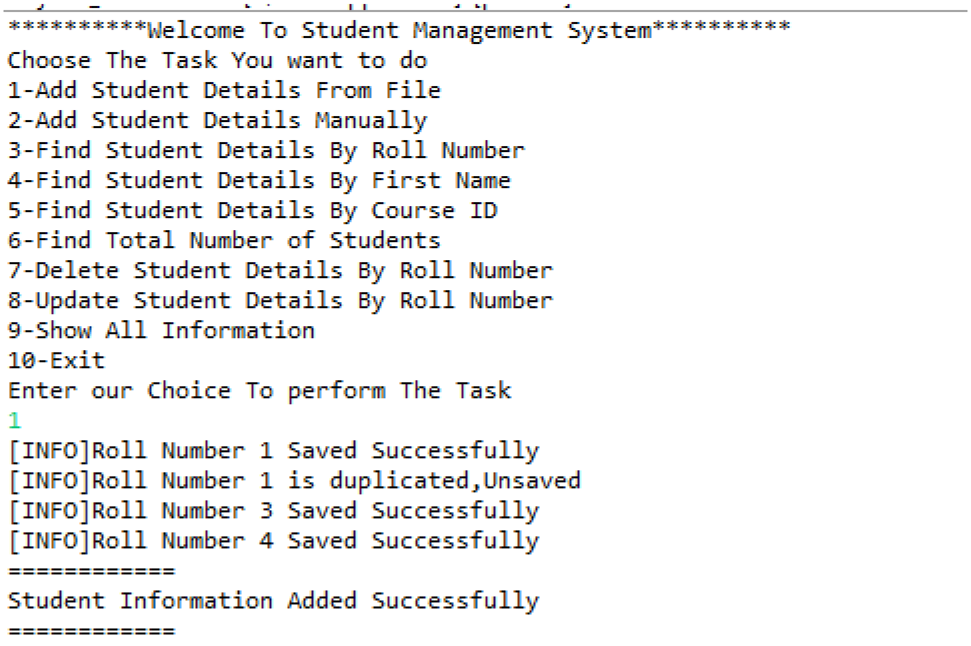
The idea is to form an individual functions for every operation. All the functions are

unified together to form software.

1-Add Student From Text File

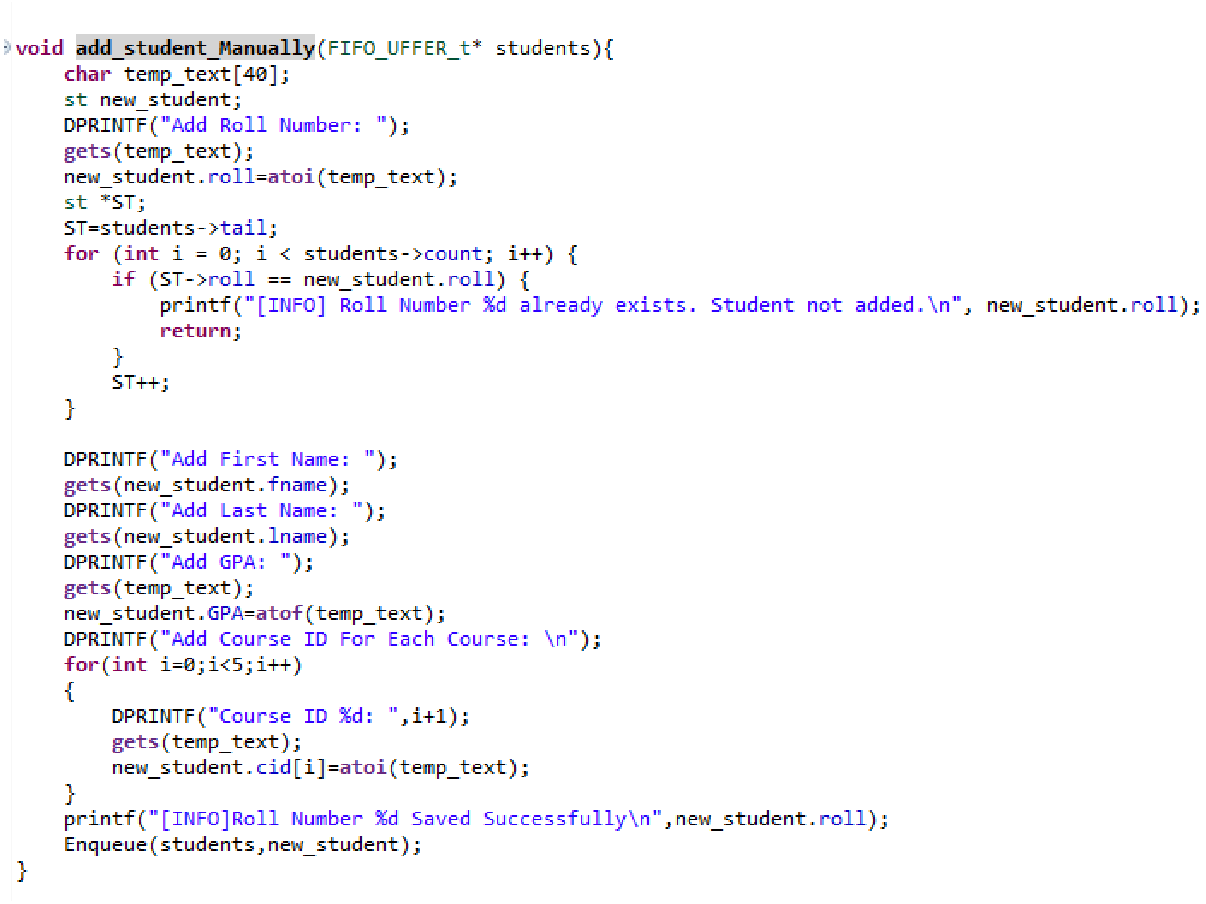


```c
void add_student_from_file(FIFO_UFFER_t* students) {

    FILE* fptr;
    int i=1;
    fptr = fopen("D:\\Project2_FirstTerm\\Sudent_Management.txt", "r");
    if (fptr == NULL) {
        printf("Error opening file\n");
        return;
    }

    st new_student;
    Init(students,student,55);
    int processedIDs[55];
    int numProcessedIDs = 0;

    while (fscanf(fptr, "%d %s %s %f %d %d %d %d %d",
            &new_student.roll, new_student.fname, new_student.lname, &new_student.GPA,
            &new_student.cid[0], &new_student.cid[1], &new_student.cid[2], &new_student.cid[3],
            &new_student.cid[4]) == 9) {
        // Check if the ID has already been processed
        int duplicate = 0;
        for (int k = 0; k < numProcessedIDs; k++) {
            if (processedIDs[k] == new_student.roll) {
                duplicate = 1;
                break;
            }
        }
        if (duplicate) {
            printf("[INFO]Roll Number %d is duplicated,Unsaved \n", new_student.roll);
            continue;  // Skip processing this student
        }

        // Add the ID to the processed list
        processedIDs[numProcessedIDs++] = new_student.roll;


        printf("[INFO]Roll Number %d Saved Successfully\n", new_student.roll);

        i++;
        Enqueue(students, new_student);
    }
    printf("============\n");
    printf("Student Information Added Successfully\n");
    printf("============\n");
    fclose(fptr);
}
```

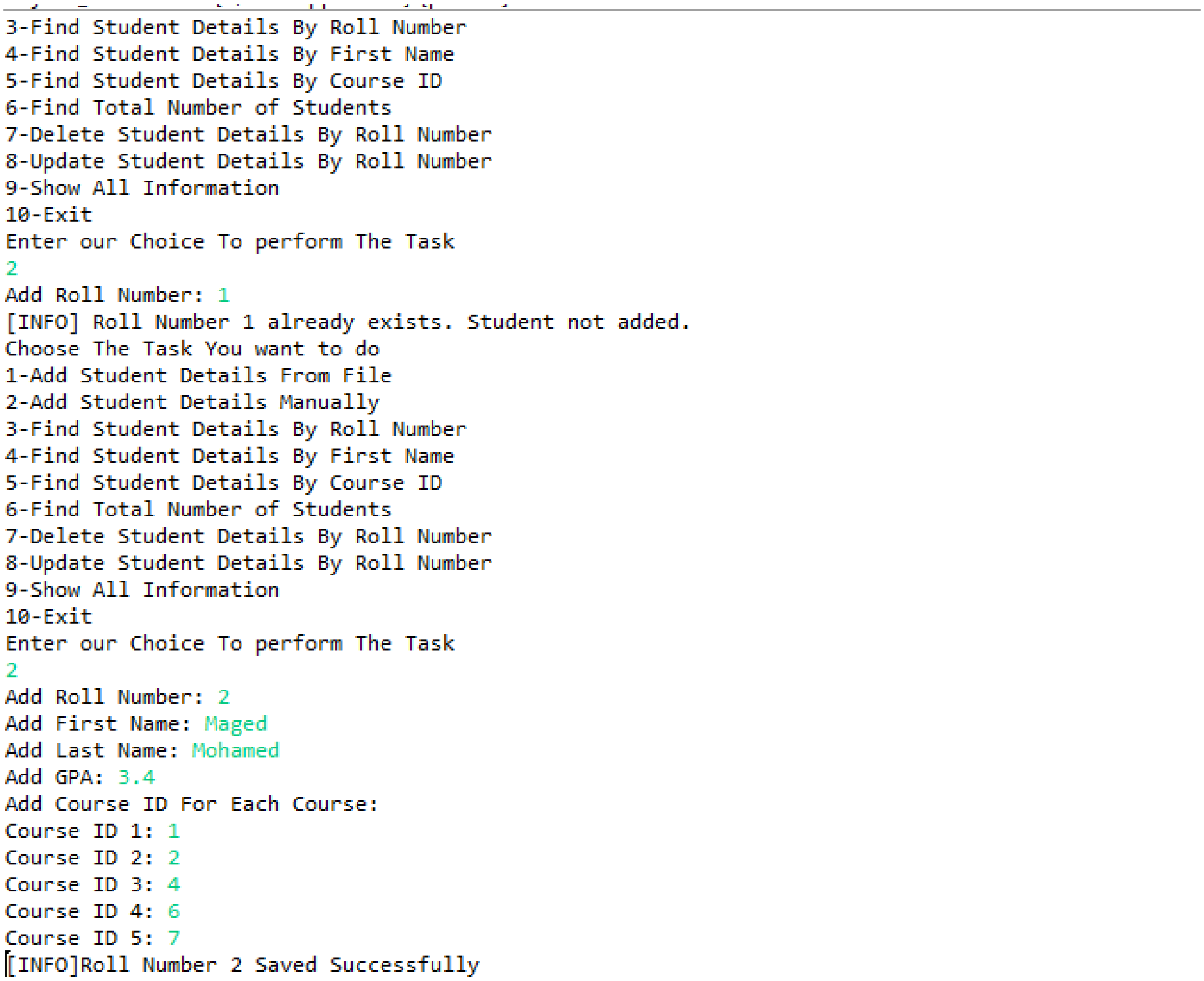


```
**********Welcome To Student Management System**********
Choose The Task You want to do
1-Add Student Details From File
2-Add Student Details Manually
3-Find Student Details By Roll Number
4-Find Student Details By First Name
5-Find Student Details By Course ID
6-Find Total Number of Students
7-Delete Student Details By Roll Number
8-Update Student Details By Roll Number
9-Show All Information
10-Exit
Enter our Choice To perform The Task
1
[INFO]Roll Number 1 Saved Successfully
[INFO]Roll Number 1 is duplicated,Unsaved
[INFO]Roll Number 3 Saved Successfully
[INFO]Roll Number 4 Saved Successfully
============
Student Information Added Successfully
============
```

2-**Add Student Manually**

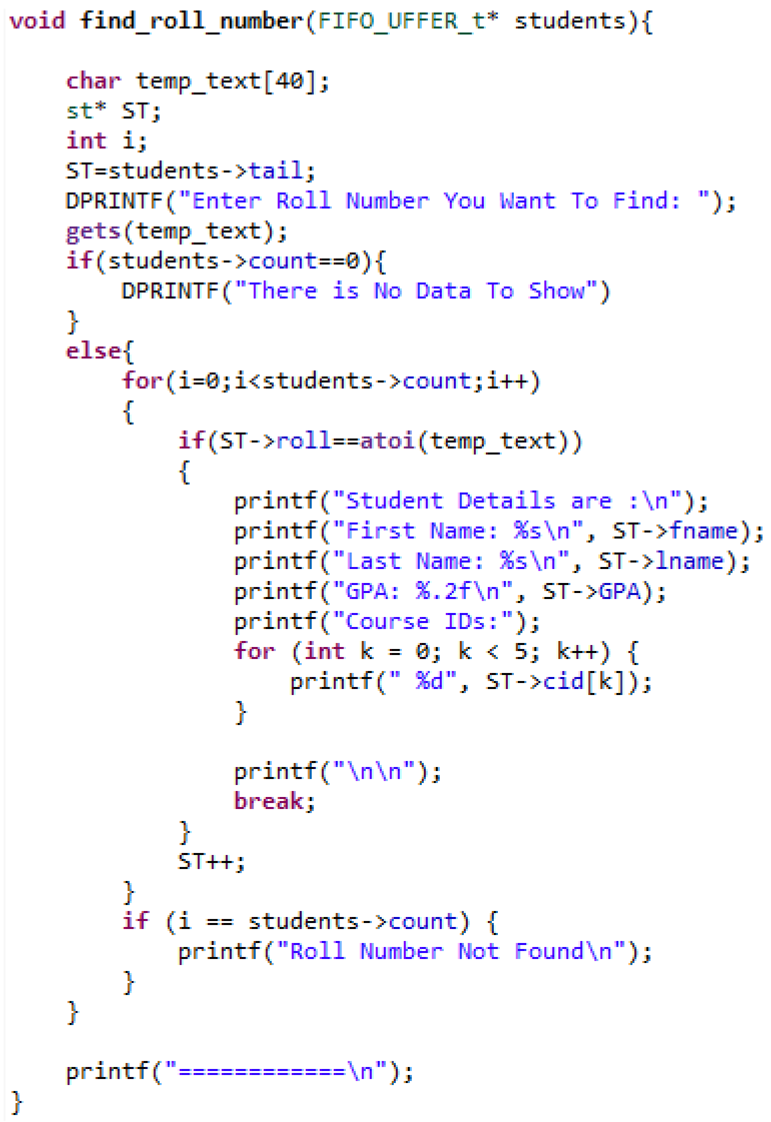


```c
void add_student_Manually(FIFO_UFFER_t* students){
    char temp_text[40];
    st new_student;
    DPRINTF("Add Roll Number: ");
    gets(temp_text);
    new_student.roll=atoi(temp_text);
    st *ST;
    ST=students->tail;
    for (int i = 0; i < students->count; i++) {
        if (ST->roll == new_student.roll) {
            printf("[INFO] Roll Number %d already exists. Student not added.\n", new_student.roll);
            return;
        }
        ST++;
    }

    DPRINTF("Add First Name: ");
    gets(new_student.fname);
    DPRINTF("Add Last Name: ");
    gets(new_student.lname);
    DPRINTF("Add GPA: ");
    gets(temp_text);
    new_student.GPA=atof(temp_text);
    DPRINTF("Add Course ID For Each Course: \n");
    for(int i=0;i<5;i++)
    {
        DPRINTF("Course ID %d: ",i+1);
        gets(temp_text);
        new_student.cid[i]=atoi(temp_text);
    }
    printf("[INFO]Roll Number %d Saved Successfully\n",new_student.roll);
    Enqueue(students,new_student);
}
```

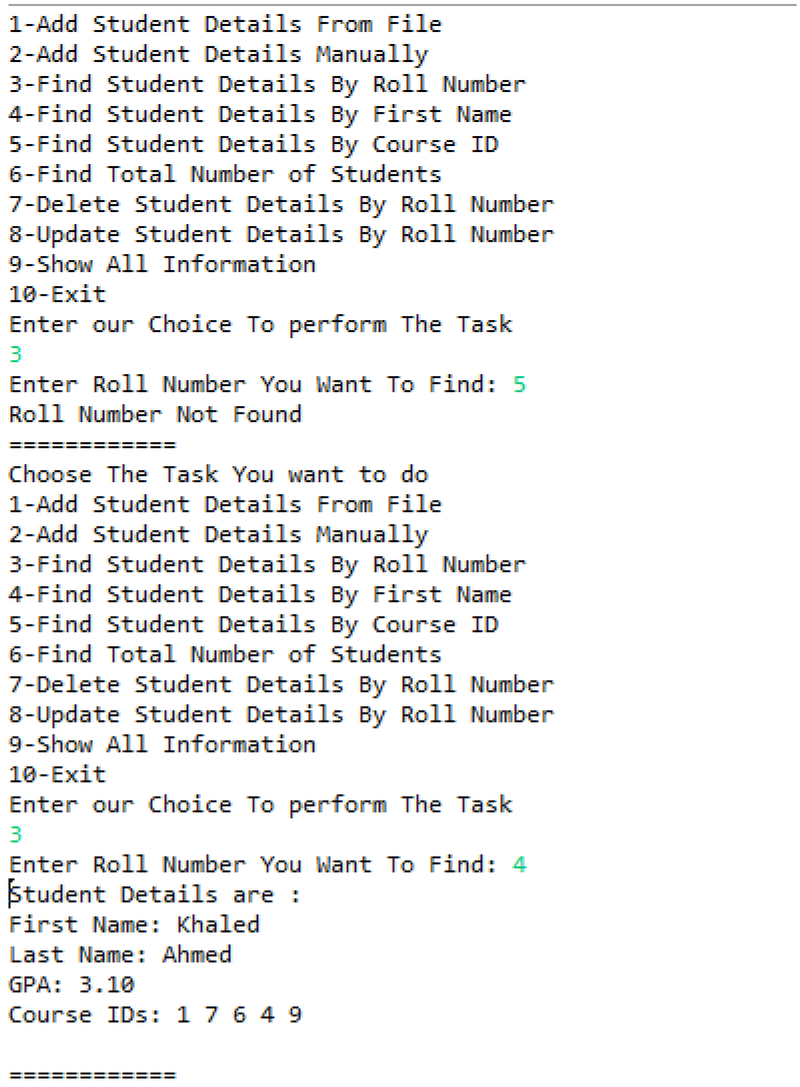


```
3-Find Student Details By Roll Number
4-Find Student Details By First Name
5-Find Student Details By Course ID
6-Find Total Number of Students
7-Delete Student Details By Roll Number
8-Update Student Details By Roll Number
9-Show All Information
10-Exit
Enter our Choice To perform The Task
2
Add Roll Number: 1
[INFO] Roll Number 1 already exists. Student not added.
Choose The Task You want to do
1-Add Student Details From File
2-Add Student Details Manually
3-Find Student Details By Roll Number
4-Find Student Details By First Name
5-Find Student Details By Course ID
6-Find Total Number of Students
7-Delete Student Details By Roll Number
8-Update Student Details By Roll Number
9-Show All Information
10-Exit
Enter our Choice To perform The Task
2
Add Roll Number: 2
Add First Name: Maged
Add Last Name: Mohamed
Add GPA: 3.4
Add Course ID For Each Course:
Course ID 1: 1
Course ID 2: 2
Course ID 3: 4
Course ID 4: 6
Course ID 5: 7
[INFO]Roll Number 2 Saved Successfully
```

3-Find Details Of Student By Roll Number

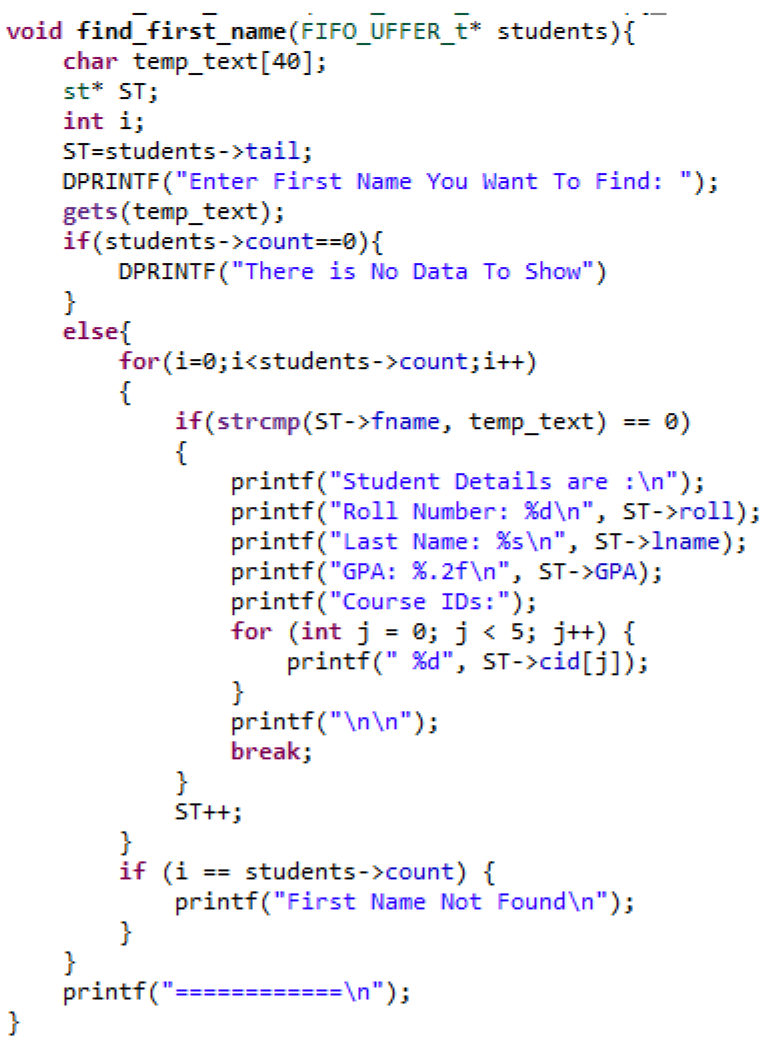


```c
void find_roll_number(FIFO_UFFER_t* students){

    char temp_text[40];
    st* ST;
    int i;
    ST=students->tail;
    DPRINTF("Enter Roll Number You Want To Find: ");
    gets(temp_text);
    if(students->count==0){
        DPRINTF("There is No Data To Show")
    }
    else{
        for(i=0;i<students->count;i++)
        {
            if(ST->roll==atoi(temp_text))
            {
                printf("Student Details are :\n");
                printf("First Name: %s\n", ST->fname);
                printf("Last Name: %s\n", ST->lname);
                printf("GPA: %.2f\n", ST->GPA);
                printf("Course IDs:");
                for (int k = 0; k < 5; k++) {
                    printf(" %d", ST->cid[k]);
                }

                printf("\n\n");
                break;
            }
            ST++;
        }
        if (i == students->count) {
            printf("Roll Number Not Found\n");
        }
    }

    printf("============\n");
}
```

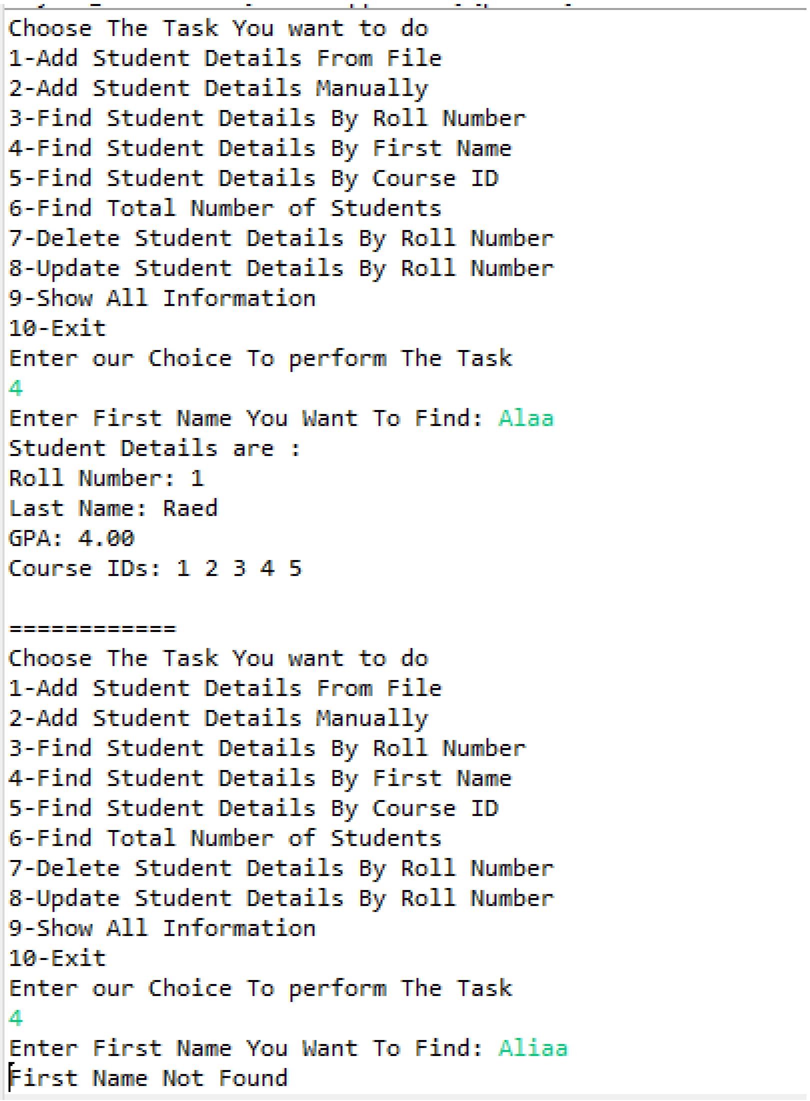


```
1-Add Student Details From File
2-Add Student Details Manually
3-Find Student Details By Roll Number
4-Find Student Details By First Name
5-Find Student Details By Course ID
6-Find Total Number of Students
7-Delete Student Details By Roll Number
8-Update Student Details By Roll Number
9-Show All Information
10-Exit
Enter our Choice To perform The Task
3
Enter Roll Number You Want To Find: 5
Roll Number Not Found
============
Choose The Task You want to do
1-Add Student Details From File
2-Add Student Details Manually
3-Find Student Details By Roll Number
4-Find Student Details By First Name
5-Find Student Details By Course ID
6-Find Total Number of Students
7-Delete Student Details By Roll Number
8-Update Student Details By Roll Number
9-Show All Information
10-Exit
Enter our Choice To perform The Task
3
Enter Roll Number You Want To Find: 4
Student Details are :
First Name: Khaled
Last Name: Ahmed
GPA: 3.10
Course IDs: 1 7 6 4 9

============
```

4-Find Details Of Student By First Name

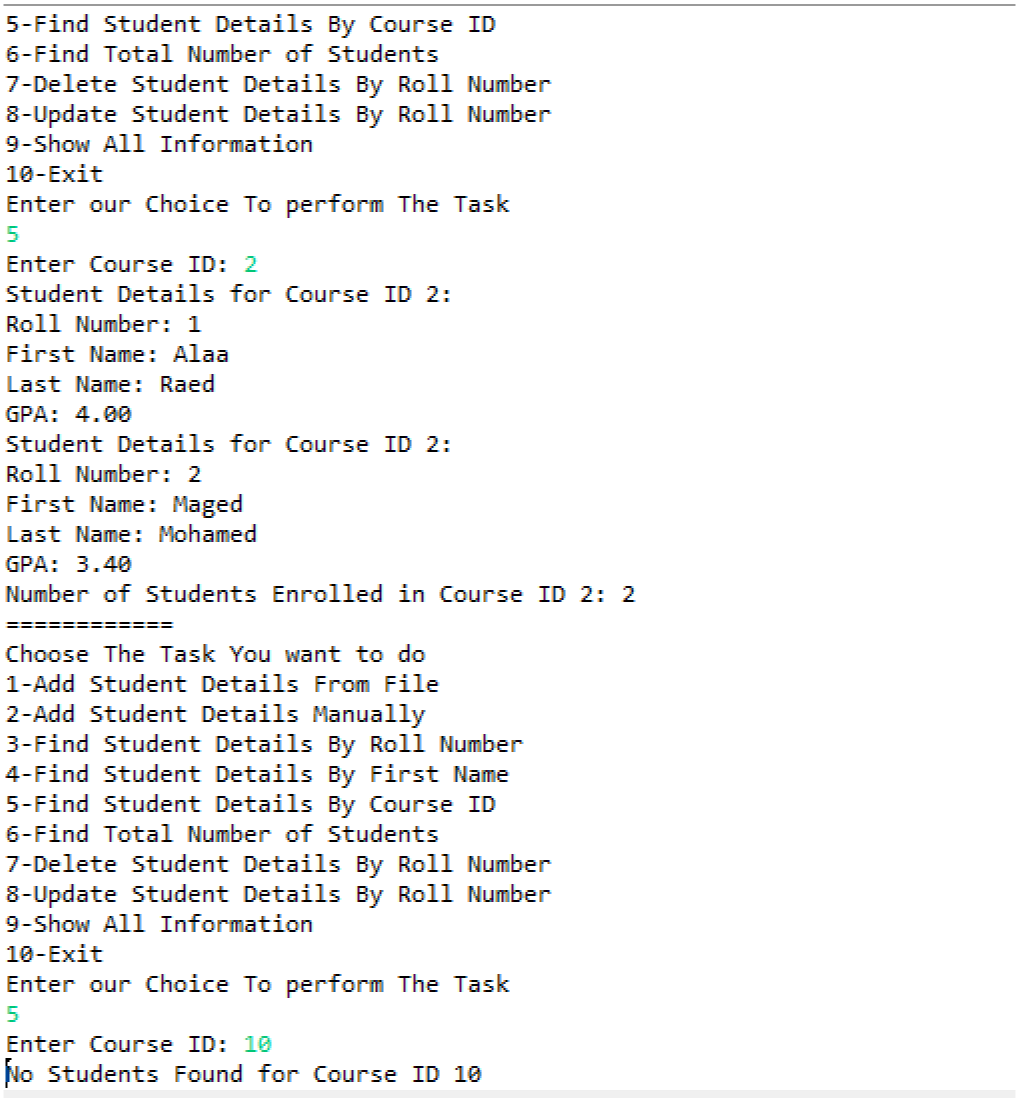


```
void find_first_name(FIFO_UFFER_t* students){
    char temp_text[40];
    st* ST;
    int i;
    ST=students->tail;
    DPRINTF("Enter First Name You Want To Find: ");
    gets(temp_text);
    if(students->count==0){
        DPRINTF("There is No Data To Show")
    }
    else{
        for(i=0;i<students->count;i++)
        {
            if(strcmp(ST->fname, temp_text) == 0)
            {
                printf("Student Details are :\n");
                printf("Roll Number: %d\n", ST->roll);
                printf("Last Name: %s\n", ST->lname);
                printf("GPA: %.2f\n", ST->GPA);
                printf("Course IDs:");
                for (int j = 0; j < 5; j++) {
                    printf(" %d", ST->cid[j]);
                }
                printf("\n\n");
                break;
            }
            ST++;
        }
        if (i == students->count) {
            printf("First Name Not Found\n");
        }
    }
    printf("============\n");
}
```

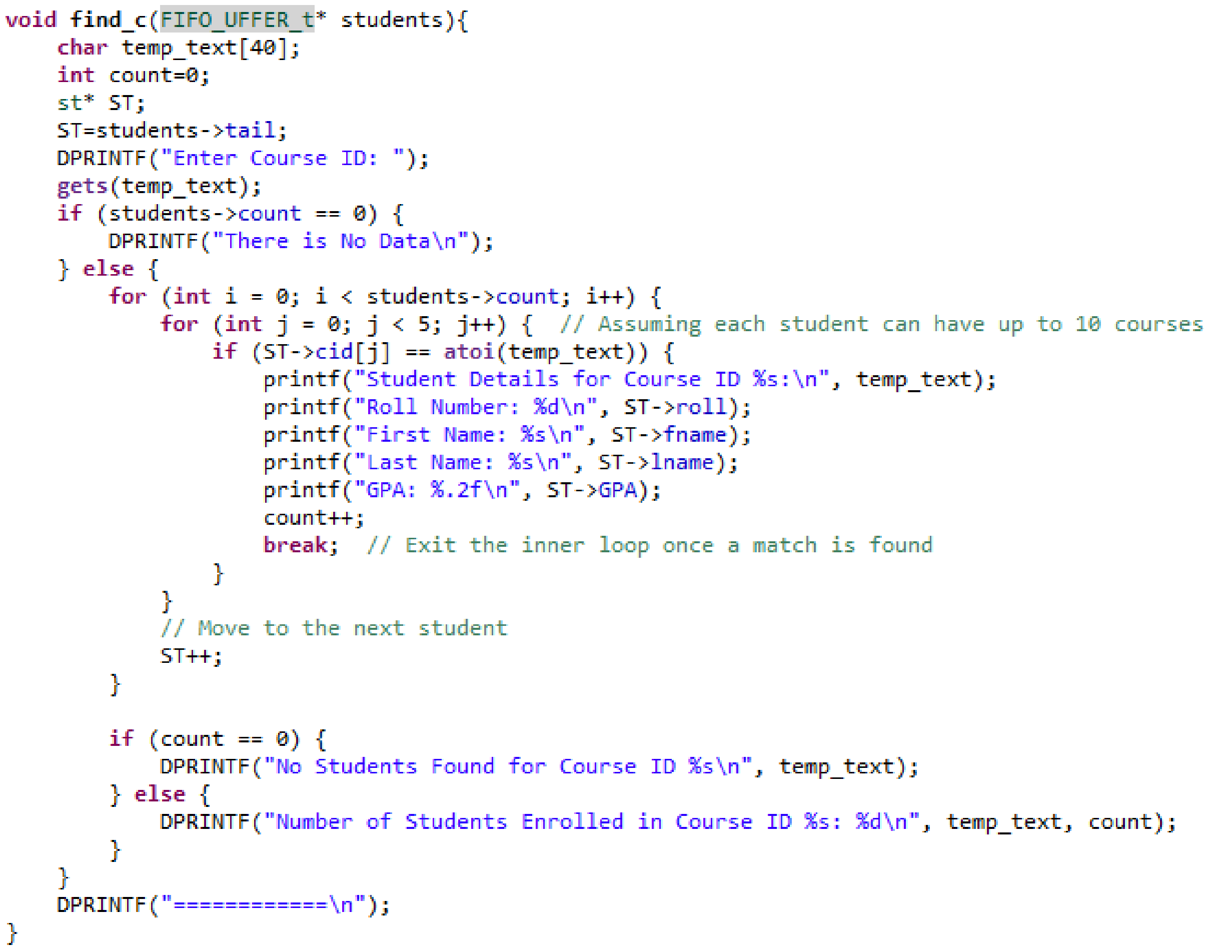


```
Choose The Task You want to do
1-Add Student Details From File
2-Add Student Details Manually
3-Find Student Details By Roll Number
4-Find Student Details By First Name
5-Find Student Details By Course ID
6-Find Total Number of Students
7-Delete Student Details By Roll Number
8-Update Student Details By Roll Number
9-Show All Information
10-Exit
Enter our Choice To perform The Task
4
Enter First Name You Want To Find: Alaa
Student Details are :
Roll Number: 1
Last Name: Raed
GPA: 4.00
Course IDs: 1 2 3 4 5

============
Choose The Task You want to do
1-Add Student Details From File
2-Add Student Details Manually
3-Find Student Details By Roll Number
4-Find Student Details By First Name
5-Find Student Details By Course ID
6-Find Total Number of Students
7-Delete Student Details By Roll Number
8-Update Student Details By Roll Number
9-Show All Information
10-Exit
Enter our Choice To perform The Task
4
Enter First Name You Want To Find: Aliaa
First Name Not Found
```

5-Find Students Register in The Course

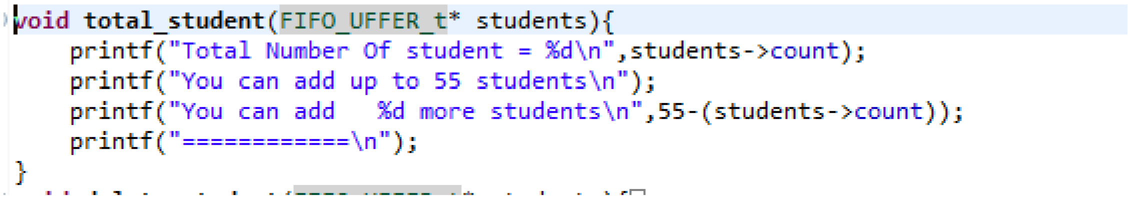


```
5-Find Student Details By Course ID
6-Find Total Number of Students
7-Delete Student Details By Roll Number
8-Update Student Details By Roll Number
9-Show All Information
10-Exit
Enter our Choice To perform The Task
5
Enter Course ID: 2
Student Details for Course ID 2:
Roll Number: 1
First Name: Alaa
Last Name: Raed
GPA: 4.00
Student Details for Course ID 2:
Roll Number: 2
First Name: Maged
Last Name: Mohamed
GPA: 3.40
Number of Students Enrolled in Course ID 2: 2
============
Choose The Task You want to do
1-Add Student Details From File
2-Add Student Details Manually
3-Find Student Details By Roll Number
4-Find Student Details By First Name
5-Find Student Details By Course ID
6-Find Total Number of Students
7-Delete Student Details By Roll Number
8-Update Student Details By Roll Number
9-Show All Information
10-Exit
Enter our Choice To perform The Task
5
Enter Course ID: 10
No Students Found for Course ID 10
```

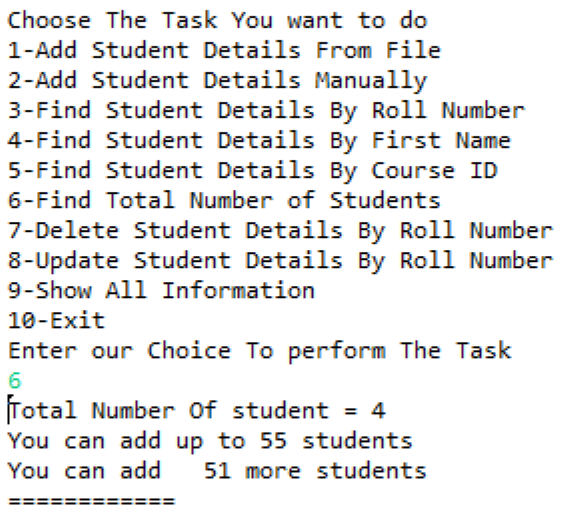


```
void find_c(FIFO_UFFER_t* students){
    char temp_text[40];
    int count=0;
    st* ST;
    ST=students->tail;
    DPRINTF("Enter Course ID: ");
    gets(temp_text);
    if (students->count == 0) {
        DPRINTF("There is No Data\n");
    } else {
        for (int i = 0; i < students->count; i++) {
            for (int j = 0; j < 5; j++) {  // Assuming each student can have up to 10 courses
                if (ST->cid[j] == atoi(temp_text)) {
                    printf("Student Details for Course ID %s:\n", temp_text);
                    printf("Roll Number: %d\n", ST->roll);
                    printf("First Name: %s\n", ST->fname);
                    printf("Last Name: %s\n", ST->lname);
                    printf("GPA: %.2f\n", ST->GPA);
                    count++;
                    break;  // Exit the inner loop once a match is found
                }
            }
            // Move to the next student
            ST++;
        }

        if (count == 0) {
            DPRINTF("No Students Found for Course ID %s\n", temp_text);
        } else {
            DPRINTF("Number of Students Enrolled in Course ID %s: %d\n", temp_text, count);
        }
    }
    DPRINTF("===========\n");
}
```

6-Total Number Of Student

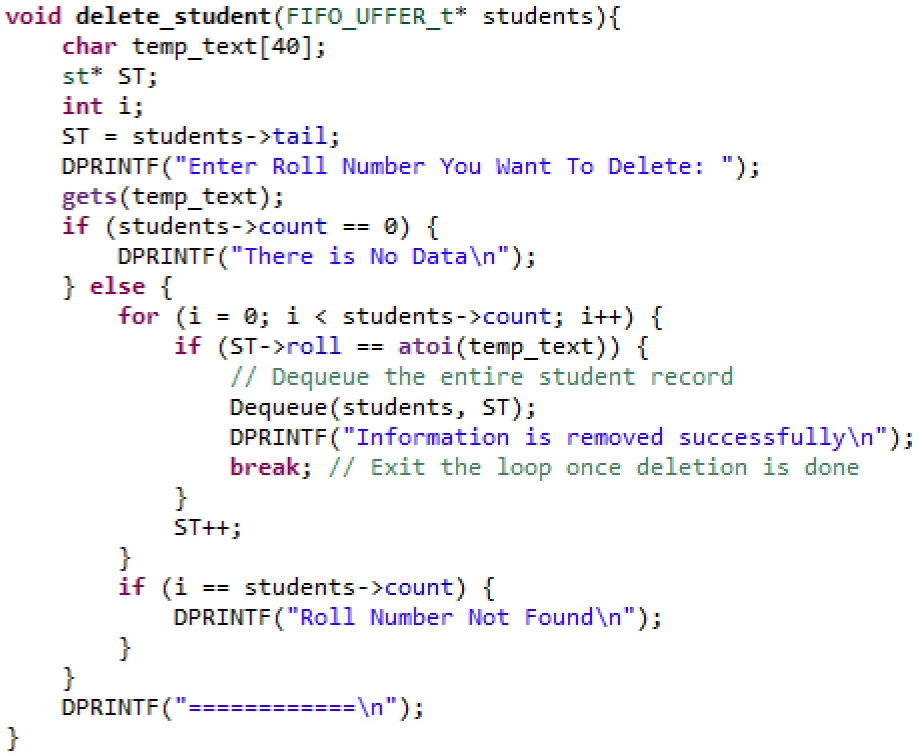


```
void total_student(FIFO_UFFER_t* students){
    printf("Total Number Of student = %d\n",students->count);
    printf("You can add up to 55 students\n");
    printf("You can add   %d more students\n",55-(students->count));
    printf("===========\n");
}
```

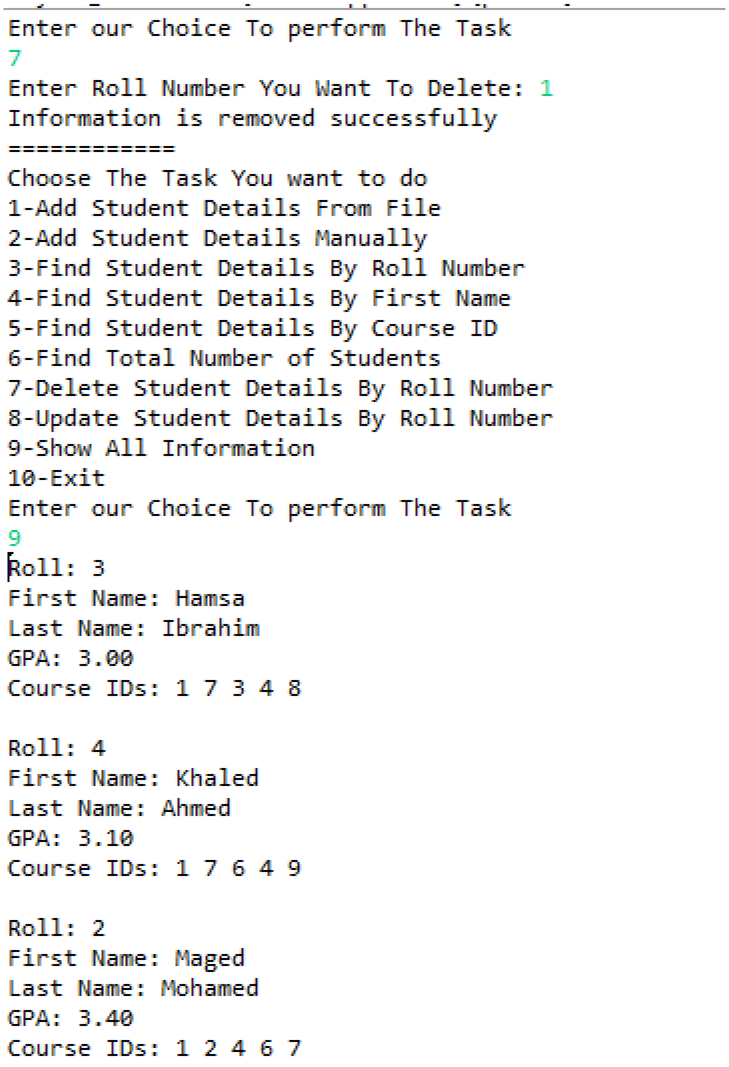


```
Choose The Task You want to do
1-Add Student Details From File
2-Add Student Details Manually
3-Find Student Details By Roll Number
4-Find Student Details By First Name
5-Find Student Details By Course ID
6-Find Total Number of Students
7-Delete Student Details By Roll Number
8-Update Student Details By Roll Number
9-Show All Information
10-Exit
Enter our Choice To perform The Task
6
Total Number Of student = 4
You can add up to 55 students
You can add   51 more students
============
```

7-Delete Student By Roll Number

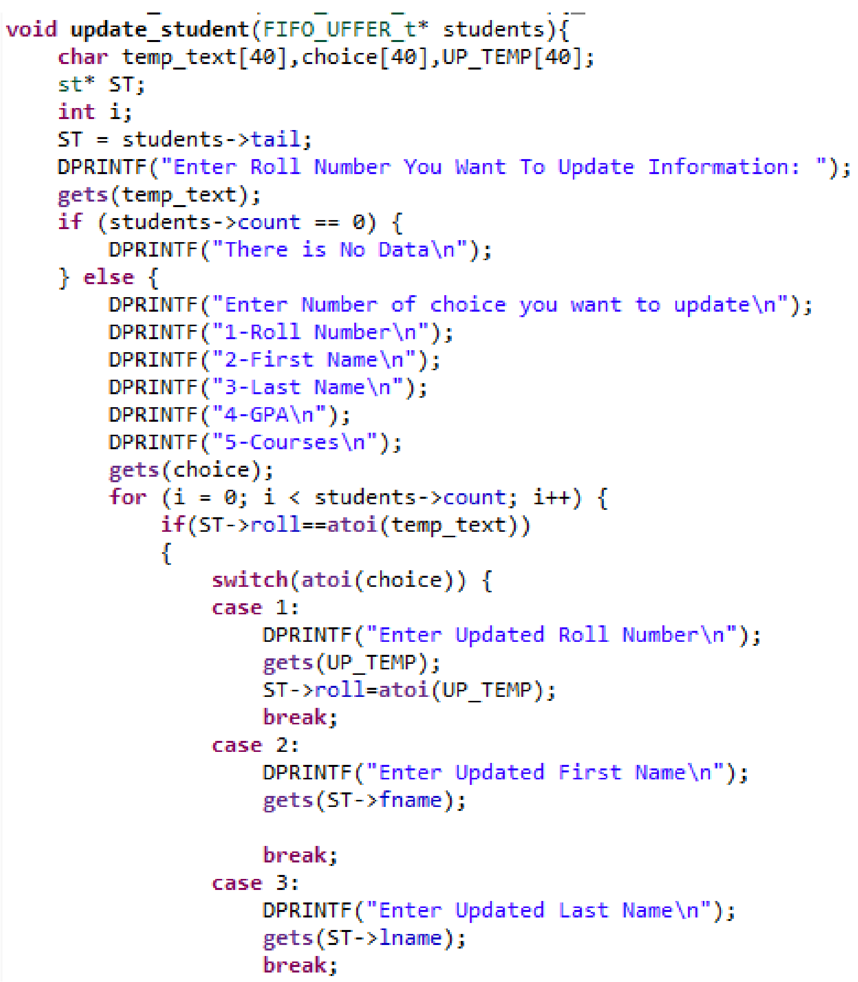


```
void delete_student(FIFO_UFFER_t* students){
    char temp_text[40];
    st* ST;
    int i;
    ST = students->tail;
    DPRINTF("Enter Roll Number You Want To Delete: ");
    gets(temp_text);
    if (students->count == 0) {
        DPRINTF("There is No Data\n");
    } else {
        for (i = 0; i < students->count; i++) {
            if (ST->roll == atoi(temp_text)) {
                // Dequeue the entire student record
                Dequeue(students, ST);
                DPRINTF("Information is removed successfully\n");
                break; // Exit the loop once deletion is done
            }
            ST++;
        }
        if (i == students->count) {
            DPRINTF("Roll Number Not Found\n");
        }
    }
    DPRINTF("============\n");
}
```

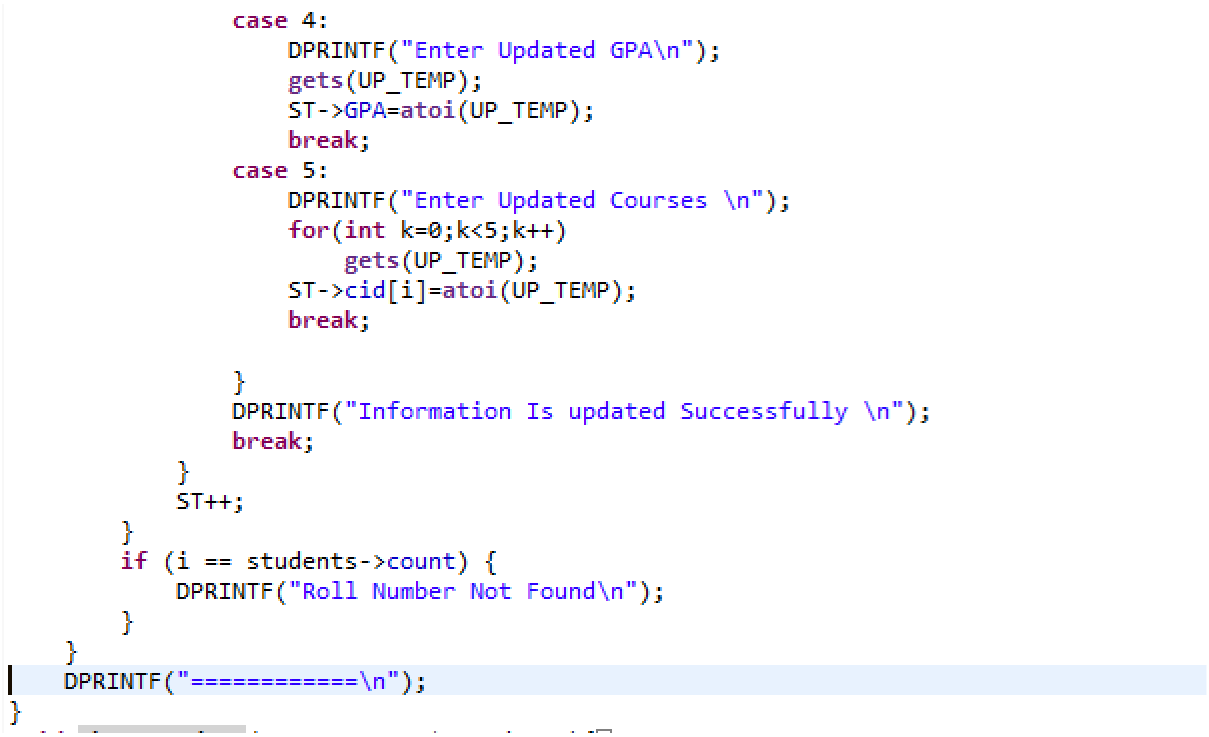


```
Enter our Choice To perform The Task
7
Enter Roll Number You Want To Delete: 1
Information is removed successfully
============
Choose The Task You want to do
1-Add Student Details From File
2-Add Student Details Manually
3-Find Student Details By Roll Number
4-Find Student Details By First Name
5-Find Student Details By Course ID
6-Find Total Number of Students
7-Delete Student Details By Roll Number
8-Update Student Details By Roll Number
9-Show All Information
10-Exit
Enter our Choice To perform The Task
9
Roll: 3
First Name: Hamsa
Last Name: Ibrahim
GPA: 3.00
Course IDs: 1 7 3 4 8

Roll: 4
First Name: Khaled
Last Name: Ahmed
GPA: 3.10
Course IDs: 1 7 6 4 9

Roll: 2
First Name: Maged
Last Name: Mohamed
GPA: 3.40
Course IDs: 1 2 4 6 7
```

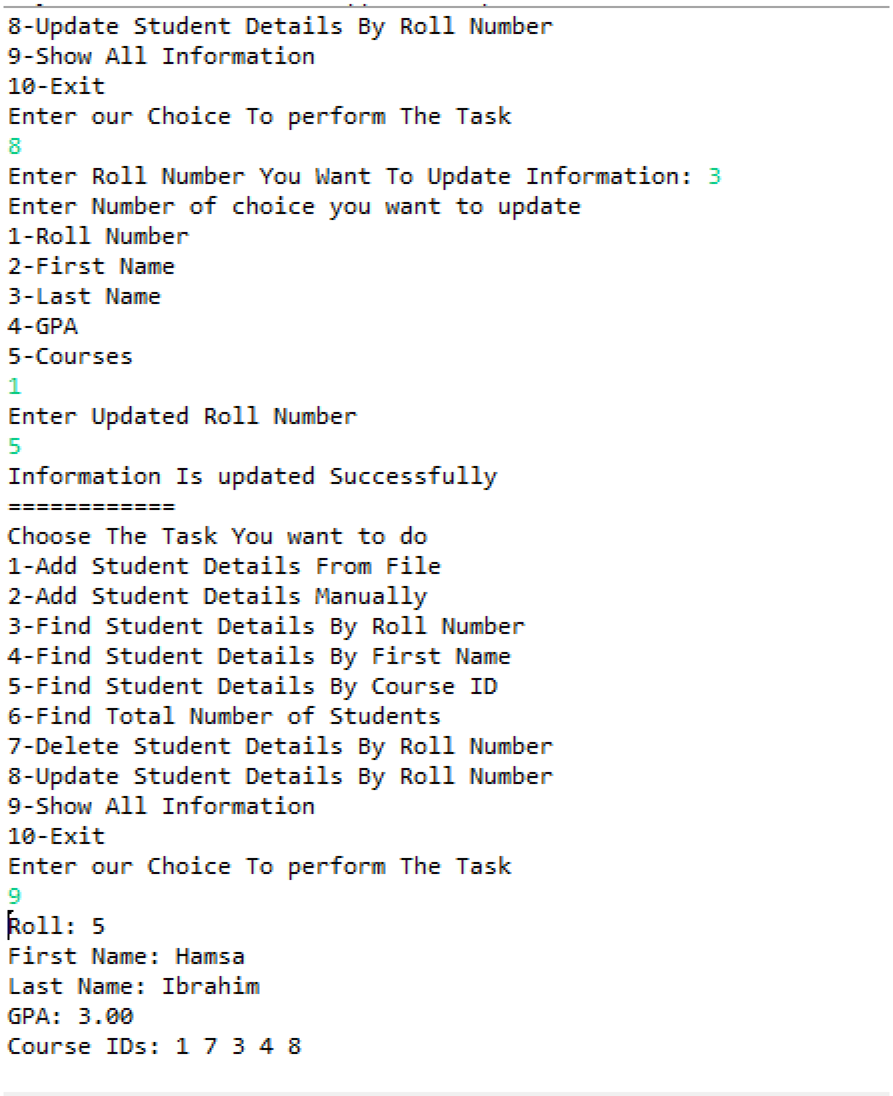
8-Update Student by Roll Number



```
void update_student(FIFO_UFFER_t* students){
    char temp_text[40],choice[40],UP_TEMP[40];
    st* ST;
    int i;
    ST = students->tail;
    DPRINTF("Enter Roll Number You Want To Update Information: ");
    gets(temp_text);
    if (students->count == 0) {
        DPRINTF("There is No Data\n");
    } else {
        DPRINTF("Enter Number of choice you want to update\n");
        DPRINTF("1-Roll Number\n");
        DPRINTF("2-First Name\n");
        DPRINTF("3-Last Name\n");
        DPRINTF("4-GPA\n");
        DPRINTF("5-Courses\n");
        gets(choice);
        for (i = 0; i < students->count; i++) {
            if(ST->roll==atoi(temp_text))
            {
                switch(atoi(choice)) {
                case 1:
                    DPRINTF("Enter Updated Roll Number\n");
                    gets(UP_TEMP);
                    ST->roll=atoi(UP_TEMP);
                    break;
                case 2:
                    DPRINTF("Enter Updated First Name\n");
                    gets(ST->fname);

                    break;
                case 3:
                    DPRINTF("Enter Updated Last Name\n");
                    gets(ST->lname);
                    break;
```

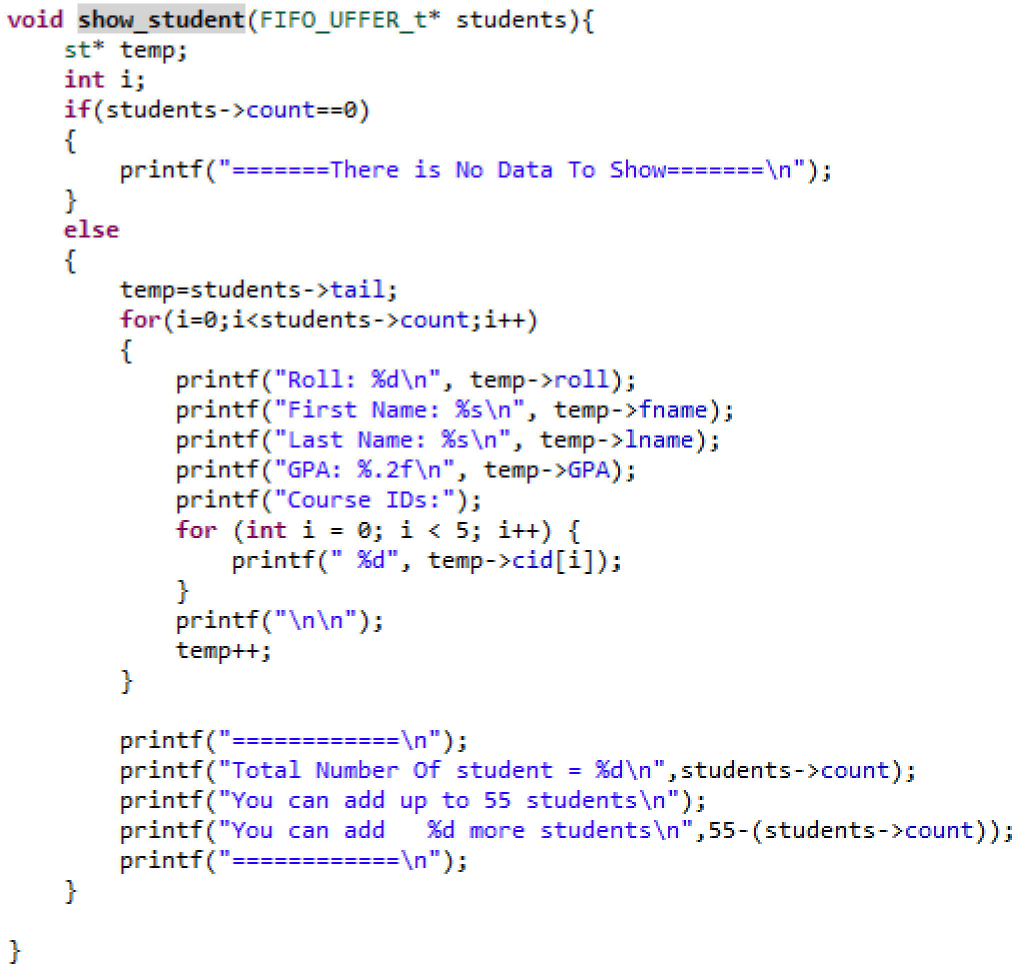


```
                case 4:
                    DPRINTF("Enter Updated GPA\n");
                    gets(UP_TEMP);
                    ST->GPA=atoi(UP_TEMP);
                    break;
                case 5:
                    DPRINTF("Enter Updated Courses \n");
                    for(int k=0;k<5;k++)
                        gets(UP_TEMP);
                    ST->cid[i]=atoi(UP_TEMP);
                    break;

                }
                DPRINTF("Information Is updated Successfully \n");
                break;
            }
            ST++;
        }
        if (i == students->count) {
            DPRINTF("Roll Number Not Found\n");
        }
    }
    DPRINTF("===========\n");
}
```

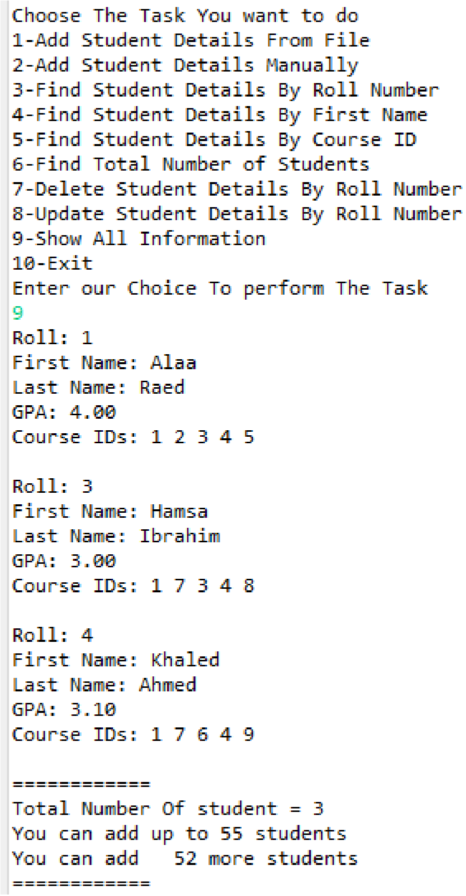


```
8-Update Student Details By Roll Number
9-Show All Information
10-Exit
Enter our Choice To perform The Task
8
Enter Roll Number You Want To Update Information: 3
Enter Number of choice you want to update
1-Roll Number
2-First Name
3-Last Name
4-GPA
5-Courses
1
Enter Updated Roll Number
5
Information Is updated Successfully
============
Choose The Task You want to do
1-Add Student Details From File
2-Add Student Details Manually
3-Find Student Details By Roll Number
4-Find Student Details By First Name
5-Find Student Details By Course ID
6-Find Total Number of Students
7-Delete Student Details By Roll Number
8-Update Student Details By Roll Number
9-Show All Information
10-Exit
Enter our Choice To perform The Task
9
Roll: 5
First Name: Hamsa
Last Name: Ibrahim
GPA: 3.00
Course IDs: 1 7 3 4 8
```

9-Show All Information

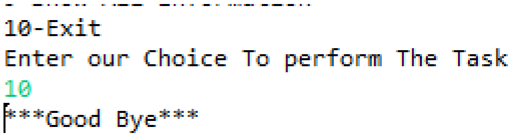


```c
void show_student(FIFO_UFFER_t* students){
    st* temp;
    int i;
    if(students->count==0)
    {
        printf("=======There is No Data To Show=======\n");
    }
    else
    {
        temp=students->tail;
        for(i=0;i<students->count;i++)
        {
            printf("Roll: %d\n", temp->roll);
            printf("First Name: %s\n", temp->fname);
            printf("Last Name: %s\n", temp->lname);
            printf("GPA: %.2f\n", temp->GPA);
            printf("Course IDs:");
            for (int i = 0; i < 5; i++) {
                printf(" %d", temp->cid[i]);
            }
            printf("\n\n");
            temp++;
        }

        printf("============\n");
        printf("Total Number Of student = %d\n",students->count);
        printf("You can add up to 55 students\n");
        printf("You can add   %d more students\n",55-(students->count));
        printf("============\n");
    }

}
```



```
Choose The Task You want to do
1-Add Student Details From File
2-Add Student Details Manually
3-Find Student Details By Roll Number
4-Find Student Details By First Name
5-Find Student Details By Course ID
6-Find Total Number of Students
7-Delete Student Details By Roll Number
8-Update Student Details By Roll Number
9-Show All Information
10-Exit
Enter our Choice To perform The Task
9
Roll: 1
First Name: Alaa
Last Name: Raed
GPA: 4.00
Course IDs: 1 2 3 4 5

Roll: 3
First Name: Hamsa
Last Name: Ibrahim
GPA: 3.00
Course IDs: 1 7 3 4 8

Roll: 4
First Name: Khaled
Last Name: Ahmed
GPA: 3.10
Course IDs: 1 7 6 4 9

============
Total Number Of student = 3
You can add up to 55 students
You can add   52 more students
============
```

10-Exit



```
10-Exit
Enter our Choice To perform The Task
10
***Good Bye***
```