

# SOURCE CODE

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

typedef struct Student {
    int studNo;
    char studName[50];
    char courseYear[10];
    float gwa;
    struct Student *next;
} Student;

void gotoxy(int x, int y);
void createList(Student **START);
void addAtBeginning(Student **START);
void addAtEnd(Student **START);
void displayRecords(Student *START);
void insertBeforeNode(Student **START, int searchStudNo);
void insertAfterNode(Student *START, int searchStudNo);
void deleteNodeAtStart(Student **START);
void deleteNodeAtEnd(Student **START);
void deleteByValue(Student **headRef, int target);

int main() {
    Student *START = NULL;
    int choice;

    do {
        system("cls");
        printf("\n<@@ STUDENT RECORD MANAGEMENT @@>\n");
        printf("1. Create record of student\n");
```

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    printf("2. Add a new student record at the beginning\n");
    printf("3. Add a new student record at the end\n");
    printf("4. Display student records\n");
    printf("5. Insert a new record before a specific student
number\n");
    printf("6. Insert a new record after a specific student
number\n");
    printf("7. Delete a record at the start\n");
    printf("8. Delete a record at the end\n");
    printf("9. Delete a record by student number\n");
    printf("10. Exit\n");
    printf("Enter your choice: ");
    scanf("%d", &choice);

    switch (choice) {
        case 1:
            createList(&START);
            break;
        case 2:
            addAtBeginning(&START);
            break;
        case 3:
            addAtEnd(&START);
            break;
        case 4:
            displayRecords(START);
            break;
        case 5: {
            int searchStudNo;
            printf("\nEnter the student number before which you
want to insert a new record: ");
            scanf("%d", &searchStudNo);
            insertBeforeNode(&START, searchStudNo);
            break;
        }
        case 6: {
            int searchStudNo;

```

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        printf("\nEnter the student number after which you
want to insert a new record: ");
        scanf("%d", &searchStudNo);
        insertAfterNode(START, searchStudNo);
        break;
    }
    case 7:
        deleteNodeAtStart(&START);
        break;
    case 8:
        deleteNodeAtEnd(&START);
        break;
    case 9: {
        int target;
        printf("Enter the student number to delete: ");
        scanf("%d", &target);
        deleteByValue(&START, target);
        break;
    }
    case 10:
        printf("Exiting program...\n");
        break;
    default:
        printf("Invalid choice. Please try again.\n");
}

    printf("\nPress any key to continue...");
    getch();
} while (choice != 10);

while (START != NULL) {
    Student *temp = START;
    START = START->next;
    free(temp);
}

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        return 0;
    }

void gotoxy(int x, int y) {
    printf("\033[%d;%dH", y, x);
}

void createList(Student **START) {
    if (*START != NULL) {
        printf("There is already a student list created.\n");
        return;
    }

    char resp;
    do {
        Student *newNode = (Student*)malloc(sizeof(Student));
        if (newNode == NULL) {
            printf("Memory allocation failed.\n");
            return;
        }

        printf("\nEnter student number: ");
        scanf("%d", &newNode->studNo);
        printf("Enter student name: ");
        scanf(" %[^\\n]", newNode->studName);
        printf("Enter course and year: ");
        scanf(" %[^\\n]", newNode->courseYear);
        printf("Enter GWA: ");
        scanf("%f", &newNode->gwa);

        newNode->next = NULL;
    } while (resp != 'q');
}

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        if (*START == NULL) {
            *START = newNode;
        } else {
            Student *temp = *START;
            while (temp->next != NULL) {
                temp = temp->next;
            }
            temp->next = newNode;
        }

        printf("\nDo you want to add more students [Y/N]? : ");
        scanf(" %c", &resp);

    } while (resp == 'Y' || resp == 'y');

    printf("Student(s) added successfully!\n");
}

void addAtBeginning(Student **START) {
    Student *newNode = (Student*)malloc(sizeof(Student));
    if (newNode == NULL) {
        printf("Memory allocation failed.\n");
        return;
    }

    printf("Enter student number: ");
    scanf("%d", &newNode->studNo);
    printf("Enter student name: ");
    scanf(" %[^\n]", newNode->studName);
    printf("Enter course and year: ");
    scanf(" %[^\n]", newNode->courseYear);
    printf("Enter GWA: ");

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scanf("%f", &newNode->gwa);

newNode->next = *START;
*START = newNode;
printf("Student added successfully!\n");
}

void addAtEnd(Student **START) {
    Student *newNode = (Student*)malloc(sizeof(Student));
    if (newNode == NULL) {
        printf("Memory allocation failed.\n");
        return;
    }

    printf("Enter student number: ");
    scanf("%d", &newNode->studNo);
    printf("Enter student name: ");
    scanf(" %[^\\n]", newNode->studName);
    printf("Enter course and year: ");
    scanf(" %[^\\n]", newNode->courseYear);
    printf("Enter GWA: ");
    scanf("%f", &newNode->gwa);

    newNode->next = NULL;
    printf("Student added successfully!\n");

    if (*START == NULL) {
        *START = newNode;
    } else {
        Student *temp = *START;
        while (temp->next != NULL) {
            temp = temp->next;
        }
    }
}

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        temp->next = newNode;
    }
}

void displayRecords(Student *START) {
    system("cls");
    int ctr = 1;
    printf("\n\n");
    gotoxy(40, 0);
    printf("STUDENT'S GWA REPORT\n\n");
    gotoxy(5, 2); printf("Student No.");
    gotoxy(25, 2); printf("Student Name");
    gotoxy(55, 2); printf("Course & Year");
    gotoxy(85, 2); printf("GWA");

    ctr = 1;
    Student *current = START;
    while (current != NULL) {
        gotoxy(5, 2 + ctr);
        printf("%-20d", current->studNo);
        gotoxy(25, 2 + ctr);
        printf("%-30s", current->studName);
        gotoxy(55, 2 + ctr);
        printf("%-20s", current->courseYear);
        gotoxy(85, 2 + ctr);
        printf("%.2f", current->gwa);
        current = current->next;
        ctr++;
    }
}

void insertBeforeNode(Student **START, int searchStudNo) {
    Student *newNode = (Student*)malloc(sizeof(Student));
    if (newNode == NULL) {
        printf("Memory allocation failed.\n");
        return;
    }
}

```

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}

Student *current = *START;
Student *prev = NULL;

while (current != NULL && current->studNo != searchStudNo) {
    prev = current;
    current = current->next;
}

if (current == NULL) {
    printf("Student number %d not found.\n", searchStudNo);
    free(newNode);
    return;
}

printf("Enter student number: ");
scanf("%d", &newNode->studNo);
printf("Enter student name: ");
scanf(" %[^\n]", newNode->studName);
printf("Enter course and year: ");
scanf(" %[^\n]", newNode->courseYear);
printf("Enter GWA: ");
scanf("%f", &newNode->gwa);

if (*START == NULL || (*START)->studNo == searchStudNo) {
    newNode->next = *START;
    *START = newNode;
    printf("Student added successfully!\n");
    return;
}
```



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prev->next = newNode;
newNode->next = current;
printf("Student added successfully!\n");
}

void insertAfterNode(Student *START, int searchStudNo) {
    Student *newNode = (Student*)malloc(sizeof(Student));
    if (newNode == NULL) {
        printf("Memory allocation failed.\n");
        return;
    }

    while (START != NULL && START->studNo != searchStudNo) {
        START = START->next;
    }

    if (START == NULL) {
        printf("Student number %d not found.\n", searchStudNo);
        return;
    }

    printf("Enter student number: ");
    scanf("%d", &newNode->studNo);
    printf("Enter student name: ");
    scanf(" %[^\n]", newNode->studName);
    printf("Enter course and year: ");
    scanf(" %[^\n]", newNode->courseYear);
    printf("Enter GWA: ");
    scanf("%f", &newNode->gwa);

    newNode->next = START->next;
    START->next = newNode;
}

```

```
void deleteNodeAtStart(Student **START) {
    if (*START == NULL) {
        printf("List is empty. No student record to delete.\n");
        return;
    }

    Student *temp = *START;
    *START = (*START)->next;
    free(temp);
    printf("Student record at the start deleted successfully.\n");
}
```

```
void deleteNodeAtEnd(Student **START) {
    if (*START == NULL) {
        printf("List is empty. No student record to delete.\n");
        return;
    }

    Student *temp = *START;
    if (temp->next == NULL) {
        free(temp);
        *START = NULL;
        printf("Deleted the only student record in the list.\n");
        return;
    }

    while (temp->next->next != NULL) {
        temp = temp->next;
    }

    free(temp->next);
```

```

    temp->next = NULL;
    printf("Student record at the end deleted successfully.\n");
}

void deleteByValue(Student **headRef, int target) {
    Student *temp = *headRef;
    Student *prev = NULL;

    if (temp != NULL && temp->studNo == target) {
        *headRef = temp->next;
        free(temp);
        printf("Student record with student number %d deleted
successfully.\n", target);
        return;
    }

    while (temp != NULL && temp->studNo != target) {
        prev = temp;
        temp = temp->next;
    }

    if (temp == NULL) {
        printf("Student record with student number %d not found.\n",
target);
        return;
    }

    prev->next = temp->next;
    free(temp);
    printf("Student record with student number %d deleted
successfully.\n", target);
}

```

# SAMPLE OUTPUTS

## 1. Create List of Students

```
Enter student name: Rose Krishna Pajarito
Enter course and year: BSCS 1-1
Enter GWA: 1.00
Do you want to add more students [Y/N]? : y
Enter student number: 202334061
Enter student name: Charliz Dana Corales
Enter course and year: BSCS 1-1
Enter GWA: 1.6087
Do you want to add more students [Y/N]? : n
Student(s) added successfully!

Press any key to continue...█
```

```

                                STUDENT'S GWA REPORT
Student No.      Student Name      Course & Year      GWA
202334029      Carla Mabutas      BSCS 1-1          1.39
202334039      Rose Krishna Pajarito  BSCS 1-1          1.00
202334061      Charliz Dana Corales  BSCS 1-1          1.61
Press any key to continue...█
```

## 2. Add a new student record at the beginning

```
Enter your choice: 2
Enter student number: 202334004
Enter student name: Luis Pogi Capiral
Enter course and year: BSCS 1-1
Enter GWA: 1.00
Student added successfully!

Press any key to continue...█
```

STUDENT'S GWA REPORT			
Student No.	Student Name	Course & Year	GWA
202334004	Luis Pogi Capiral	BSCS 1-1	1.00
202334029	Carla Mabutas	BSCS 1-1	1.39
202334039	Rose Krishna Pajarito	BSCS 1-1	1.00
202334061	Charliz Dana Corales	BSCS 1-1	1.61
Press any key to continue...			

### 3. Add a new student record at the end

```

Enter your choice: 3
Enter student number: 202334006
Enter student name: Janiners Garsota King
Enter course and year: BSCS 1-1
Enter GWA: 1.00
Student added successfully!

Press any key to continue...

```

STUDENT'S GWA REPORT			
Student No.	Student Name	Course & Year	GWA
202334004	Luis Pogi Capiral	BSCS 1-1	1.00
202334029	Carla Mabutas	BSCS 1-1	1.39
202334039	Rose Krishna Pajarito	BSCS 1-1	1.00
202334061	Charliz Dana Corales	BSCS 1-1	1.61
202334006	Janiners Garsota King	BSCS 1-1	1.00
Press any key to continue...			

### 4. Display student records

STUDENT'S GWA REPORT			
Student No.	Student Name	Course & Year	GWA
202334004	Luis Pogi Capiral	BSCS 1-1	1.00
202334029	Carla Mabutas	BSCS 1-1	1.39
202334039	Rose Krishna Pajarito	BSCS 1-1	1.00
202334061	Charliz Dana Corales	BSCS 1-1	1.61
202334006	Janiners Garsota King	BSCS 1-1	1.00
Press any key to continue...			

## 5. Insert a new record before a specific student number

```
Enter your choice: 5
Enter the student number before which you want to insert a new record: 202334006
Enter student number: 202334003
Enter student name: Maria Gumiling
Enter course and year: BSCS 1-1
Enter GWA: 1.69
Student added successfully!

Press any key to continue...
```

STUDENT'S GWA REPORT			
Student No.	Student Name	Course & Year	GWA
202334004	Luis Pogi Capiral	BSCS 1-1	1.00
202334029	Carla Mabutas	BSCS 1-1	1.39
202334039	Rose Krishna Pajarito	BSCS 1-1	1.00
202334061	Charliz Dana Corales	BSCS 1-1	1.61
202334003	Maria Gumiling	BSCS 1-1	1.69
202334006	Janiners Garsota King	BSCS 1-1	1.00

Press any key to continue...

```
Enter your choice: 5

Enter the student number before which you want to insert a new record: 0
Student number 0 not found.

Press any key to continue...
```

## 6. Insert a new record after a specific student number

```
Enter your choice: 6
Enter the student number after which you want to insert a new record: 202334004
Enter student number: 202334037
Enter student name: Shawn Kieffery Ravena
Enter course and year: BSCS 1-1
Enter GWA: 1.37

Press any key to continue...
```

```
Enter your choice: 6
Enter the student number after which you want to insert a new record: 202334004
Enter student number: 202334015
Enter student name: Mariana Luiza Queen
Enter course and year: BSCS 1-1
Enter GWA: 1.4209

Press any key to continue...
```

```

                                STUDENT'S GWA REPORT
Student No.      Student Name      Course & Year      GWA
202334004        Luis Pogi Capiral    BSCS 1-1          1.00
202334015        Mariana Luiza Queen  BSCS 1-1          1.42
202334037        Shawn Kieffery Ravena BSCS 1-1          1.37
202334029        Carla Mabutas       BSCS 1-1          1.39
202334039        Rose Krishna Pajarito BSCS 1-1          1.00
202334061        Charliz Dana Corales BSCS 1-1          1.61
202334003        Maria Gumiling       BSCS 1-1          1.69
202334006        Janiners Garsota King BSCS 1-1          1.00

Press any key to continue...
```

```
Enter your choice: 6

Enter the student number after which you want to insert a new record: 2025
Student number 2025 not found.

Press any key to continue...
```

## 7. Delete a record at the start

```
Enter your choice: 7
Student record at the start deleted successfully.

Press any key to continue...
```

```

                                STUDENT'S GWA REPORT
Student No.      Student Name      Course & Year      GWA
202334015        Mariana Luiza Queen  BSCS 1-1          1.42
202334037        Shawn Kieffery Ravena BSCS 1-1          1.37
202334029        Carla Mabutas       BSCS 1-1          1.39
202334039        Rose Krishna Pajarito BSCS 1-1          1.00
202334061        Charliz Dana Corales BSCS 1-1          1.61
202334003        Maria Gumiling       BSCS 1-1          1.69
202334006        Janiners Garsota King BSCS 1-1          1.00

Press any key to continue...
```

## 8. Delete a record at the end

```
Enter your choice: 8
Student record at the end deleted successfully.

Press any key to continue...
```

STUDENT'S GWA REPORT			
Student No.	Student Name	Course & Year	GWA
202334015	Mariana Luiza Queen	BSCS 1-1	1.42
202334037	Shawn Kieffery Ravena	BSCS 1-1	1.37
202334029	Carla Mabutas	BSCS 1-1	1.39
202334039	Rose Krishna Pajarito	BSCS 1-1	1.00
202334061	Charliz Dana Corales	BSCS 1-1	1.61
202334003	Maria Gumiling	BSCS 1-1	1.69

Press any key to continue...

## 9. Delete a record by student number

```
Enter your choice: 9
Enter the student number to delete: 202334029
Student record with student number 202334029 deleted successfully.

Press any key to continue...
```

STUDENT'S GWA REPORT			
Student No.	Student Name	Course & Year	GWA
202334015	Mariana Luiza Queen	BSCS 1-1	1.42
202334037	Shawn Kieffery Ravena	BSCS 1-1	1.37
202334039	Rose Krishna Pajarito	BSCS 1-1	1.00
202334061	Charliz Dana Corales	BSCS 1-1	1.61
202334003	Maria Gumiling	BSCS 1-1	1.69

Press any key to continue...

## 10. Exit the program

```
Enter your choice: 10
Exiting program...

Press any key to continue...
```



***GROUP 4 MEMBERS:***

- Callangan, Moira
- Capiral, Luis
- Charliz Dana
- Garsota, Janine
- Goyena, Shawn
- King, Mariano Luiz
- Mabutas, Carla
- Pajarito, Rose Krishna
- Verdida, Maverick