
STUDENT GRADE TRACKER
Tracking Student Performance Made Easy

AIM OF THE PROGRAM

- This tool aims to efficiently track and manage students' grades
- All we have to do is input student names and their corresponding grades . The tracker will generate comprehensive reports instantly
- The main contents of the program include , to insert a student , to display all students , to find a student by name, to delete a student by name, to update a student information by name, to sort the students by name ,to calculate the class statistics,to display top performers, and to clear all students

```
#include <stdio.h>
#include <string.h>

#define MAX_STUDENTS 50    //declaring variables globally
#define MAX_NAME_LENGTH 50
#define NUM_GRADES 5

struct Student {        //creating a structure
    char name[MAX_NAME_LENGTH];
    int grades[NUM_GRADES];
};

// Function to insert a new student
int insertStudent(struct Student students[], int *numStudents) {
    if (*numStudents >= MAX_STUDENTS) {
        printf("Student database full. Cannot add more students.\n");
        return 0; } // Return 0 to indicate failure
```

```
//Entering details of the student
    printf("Enter name for new student: ");
    scanf("%s", students[*numStudents].name);

    printf("Enter %d grades for %s: ", NUM_GRADES, students[*numStudents].name);
    for (int i = 0; i < NUM_GRADES; ++i) {
        scanf("%d", &students[*numStudents].grades[i]);
    }

    (*numStudents)++;// Incrementing the total number of students by 1
    return 1; // Return 1 to indicate success
}
// Function to display all students
void displayStudents(struct Student students[], int numStudents) {
    if (numStudents == 0) {
        printf("No students in the database.\n");
        return; }
```

```
 printf("\nStudent Grade Details:\n");
   for (int i = 0; i < numStudents; ++i) {
      printf("\nStudent: %s\n", students[i].name);
      printf("Grades: ");
      for (int j = 0; j < NUM_GRADES; ++j) {
         printf("%d ", students[i].grades[j]);
      }

      float sum = 0;
      for (int j = 0; j < NUM_GRADES; ++j) {
         sum += students[i].grades[j];// Calculating total marks of each student
      }
      float average = sum / NUM_GRADES;
      printf("\nAverage Grade: %.2f\n", average);
   }
}
```

```
// Function to find a student by name
void findStudent(struct Student students[], int numStudents, char *searchName) {
    int found = 0;
    for (int i = 0; i < numStudents; ++i) {
        if (strcmp(students[i].name, searchName) == 0) {//Checking if the name to be searched with the student's name is the same
            printf("\nStudent found!\n");
            printf("Name: %s\n", students[i].name); // Displaying the details of the found student
            printf("Grades: ");
            for (int j = 0; j < NUM_GRADES; ++j) {
                printf("%d ", students[i].grades[j]);
            }
 float sum = 0;
            for (int j = 0; j < NUM_GRADES; ++j) {
                sum += students[i].grades[j];
            }
 float average = sum / NUM_GRADES;
            printf("\nAverage Grade: %.2f\n", average);
```

```
 found = 1;
            break;
        }
    }
 if (!found) {
        printf("Student '%s' not found.\n", searchName);
    }
}
// Function to delete a student by name
int deleteStudent(struct Student students[], int *numStudents, char *deleteName) {
    int found = 0;
    for (int i = 0; i < *numStudents; ++i) {
        if (strcmp(students[i].name, deleteName) == 0) {
            for (int j = i; j < *numStudents - 1; ++j) {
                strcpy(students[j].name, students[j + 1].name);//Copying the details of the deleted student to the previous one
                memcpy(students[j].grades, students[j + 1].grades, sizeof(int) * NUM_GRADES);
            }
```

```
 (*numStudents)--;//Decrementing the value of total number of students by one
            found = 1;
            break;
        }
    }
    return found;
}
// Function to update student information by name
void updateStudent(struct Student students[], int numStudents, char *searchName) {
    int found = 0;
    for (int i = 0; i < numStudents; ++i) {
        if (strcmp(students[i].name, searchName) == 0) {
            printf("Enter new name for %s: ", searchName);//Updating the details of the student
            scanf("%s", students[i].name);
             printf("Enter %d grades for %s: ", NUM_GRADES, students[i].name);
            for (int j = 0; j < NUM_GRADES; ++j) {
                scanf("%d", &students[i].grades[j]);}
```

```
 found = 1;
            break;
        }
    }
    if (!found) {
        printf("Student '%s' not found.\n", searchName);
    }}
// Function to sort students by name
void sortStudentsByName(struct Student students[], int numStudents) {
    struct Student temp;
    for (int i = 0; i < numStudents - 1; ++i) {
        for (int j = 0; j < numStudents - i - 1; ++j) {
            if (strcmp(students[j].name, students[j + 1].name) > 0) {
//Checking if the first string has a greater ASCII value than the second string
                temp = students[j];
                students[j] = students[j + 1];
                students[j + 1] = temp;}}}}   //Swapping the two strings
```

```
// Function to calculate class statistics
void classStatistics(struct Student students[], int numStudents) {
    float classAverage = 0;
    float highestAverage = 0;
    float lowestAverage = 100; // Assuming maximum grade is 100
    for (int i = 0; i < numStudents; ++i) {
        float sum = 0;
        for (int j = 0; j < NUM_GRADES; ++j) {
            sum += students[i].grades[j];    }
        float average = sum / NUM_GRADES; //Calculating average
        classAverage += average;
 if (average > highestAverage) {
            highestAverage = average;
        }
        if (average < lowestAverage) {
            lowestAverage = average;}}
```

```
 if (numStudents > 0) {
        classAverage /= numStudents;
        printf("Class Average: %.2f\n", classAverage);
        printf("Highest Average: %.2f\n", highestAverage);
        printf("Lowest Average: %.2f\n", lowestAverage);
    } else {
        printf("No students in the database.\n");}}
// Function to display top performers
void displayTopPerformers(struct Student students[], int numStudents) {
    if (numStudents == 0) {
        printf("No students in the database.\n");
        return;
    }
 printf("\nTop Performers:\n");
    printf("Name\t\tAverage Grade\n");
    printf("----\t\t-------------\n");
```

```
float topAverage = 0;
  for (int i = 0; i < numStudents; ++i) {
      float sum = 0;
      for (int j = 0; j < NUM_GRADES; ++j) {
         sum += students[i].grades[j];
      }
      float average = sum / NUM_GRADES;
if (average > topAverage) {
         topAverage = average;}}
for (int i = 0; i < numStudents; ++i) {
      float sum = 0;
      for (int j = 0; j < NUM_GRADES; ++j) {
         sum += students[i].grades[j];}
float average = sum / NUM_GRADES;
      if (average == topAverage) {//Comparing the average of each student with the highest average of the class
         printf("%s\t\t%.2f\n", students[i].name, average);}}}
```

```
// Function to clear all students
void clearAllStudents(int *numStudents) {
    *numStudents = 0;
    printf("All students have been cleared from the database.\n");
}
int main() {
    struct Student students[MAX_STUDENTS];//Declaring a variable to access the structure
    int numStudents = 0;
    int choice;
    char searchName[MAX_NAME_LENGTH];
    char deleteName[MAX_NAME_LENGTH];
 do {
        printf("\nStudent Grade Tracker Menu:\n");
        printf("1. Insert a new student\n");
        printf("2. Display all students\n");
        printf("3. Find a student by name\n");
        printf("4. Delete a student by name\n");
```

```
        printf("5. Update student information by name\n");
        printf("6. Sort students by name\n");
        printf("7. Calculate class statistics\n");
        printf("8. Display top performers\n");
        printf("9. Clear all students\n");
        printf("10. Exit\n");
        printf("Enter your choice: ");
        scanf("%d", &choice);
    switch (choice) {
            case 1:
                insertStudent(students, &numStudents);
                break;
            case 2:
                displayStudents(students, numStudents);
                break;
            case 3:
                printf("Enter name to search: ");
```

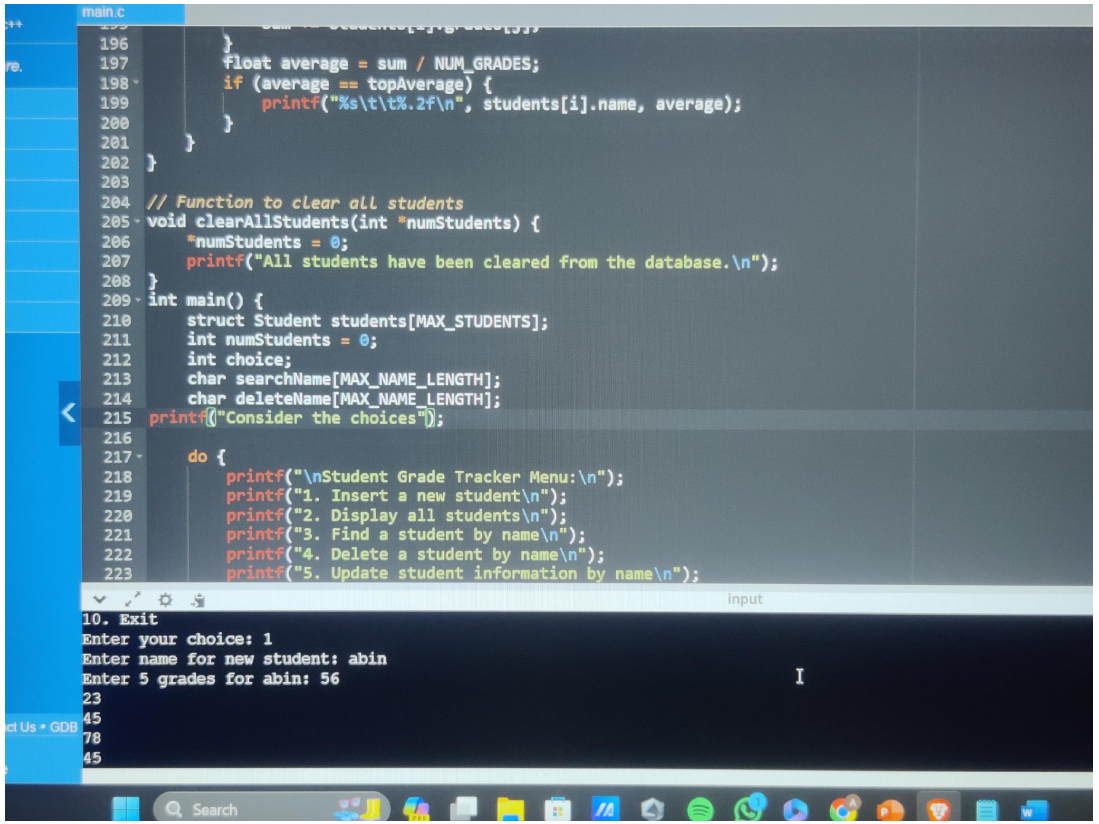
```
scanf("%s", searchName);
            findStudent(students, numStudents, searchName);
            break;
        case 4:
 printf("Enter name to delete: ");
            scanf("%s", deleteName);
            if (deleteStudent(students, &numStudents, deleteName)) {
                printf("Student '%s' deleted successfully.\n", deleteName);
            } else {
                printf("Student '%s' not found.\n", deleteName);
            }
            break;
case 5:
            printf("Enter name to update: ");
            scanf("%s", searchName);
            updateStudent(students, numStudents, searchName);
            break;
```

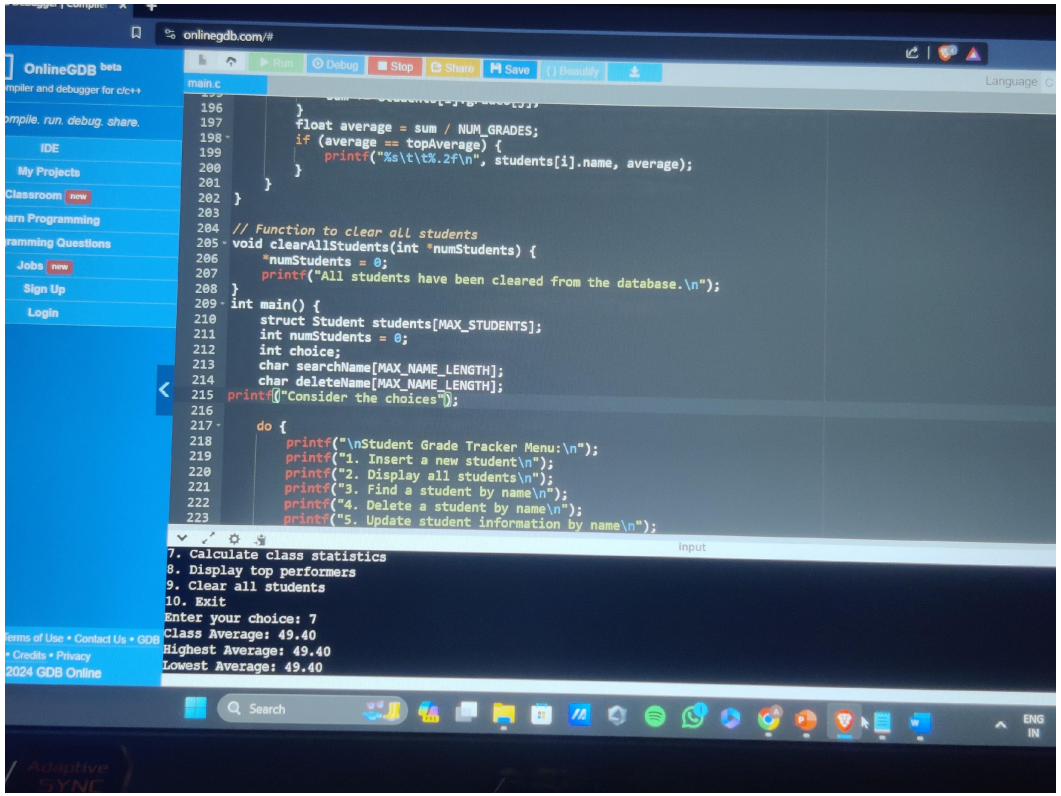
```
case 6:
            sortStudentsByName(students, numStudents);
            printf("Students sorted by name.\n");
            break;
        case 7:
            classStatistics(students, numStudents);
            break;
        case 8:
            displayTopPerformers(students, numStudents);
            break;
        case 9:
            clearAllStudents(&numStudents);
            break;
case 10:
            printf("Exiting program.\n");
            break;
        default:
```

```
 printf("Invalid choice. Please enter a valid option.\n");
        }}
while (choice != 10);


    return 0;
}
```

OutPut of the Code





Thank you