

Created by: CPP Viewer

```
#include <iostream>
#include <vector>
#include <string>
using namespace std;
```

```
class Student {
public:
    string name;
    float grade;
```

```
    Student(string n, float g) {
        name = n;
        grade = g;
    }
};
```

```
class GradeManager {
private:
    vector<Student> students;
```

```
public:
    void addStudent(string name, float grade) {
        if (grade < 0 || grade > 100) {
            cout << "Invalid grade! Must be between 0 and 100.\n";
            return;
        }
        students.push_back(Student(name, grade));
        cout << "Student " << name << " with grade " << grade << " added.\n";
    }
```

```
    void displayStudents() {
        if (students.empty()) {
            cout << "No student records available.\n";
```

```
return;
}
```

```
cout << "\nStudent Records:\n";
cout << "-----\n";
for (const auto& student : students) {
    cout << "Name: " << student.name << ", Grade: " << student.grade << "\n";
}
cout << "-----\n";
}
```

```
void calculateAverageGrade() {
    if (students.empty()) {
        cout << "No grades to calculate average.\n";
        return;
    }
}
```

```
float total = 0;
for (const auto& student : students) {
    total += student.grade;
}
```

```
float average = total / students.size();
cout << "Average Grade: " << average << "\n";
}
};
```

```
int main() {
    GradeManager manager;
    int choice;
```

```
do {
    cout << "\nStudent Grade Manager\n";
    cout << "1. Add Student\n";
    cout << "2. Display All Students\n";
    cout << "3. Calculate Average Grade\n";
```

```
cout << "4. Exit\n";  
cout << "Choose an option (1-4): ";  
cin >> choice;
```

```
switch (choice) {  
case 1: {  
string name;  
float grade;  
cout << "Enter student's name: ";  
cin >> name;  
cout << "Enter student's grade: ";  
cin >> grade;  
manager.addStudent(name, grade);  
break;  
}  
case 2:  
manager.displayStudents();  
break;  
case 3:  
manager.calculateAverageGrade();  
break;  
case 4:  
cout << "Exiting program.\n";  
break;  
default:  
cout << "Invalid option! Try again.\n";  
}  
} while (choice != 4);
```

```
return 0;  
}
```