

Student Name _____ **Section** _____
Instructor _____ **Due Date** _____

Thoroughly read the objectives, instructions and requirements of this special project and then use suitable electronic technology tools to solve the given project(s).

Submit both your program source code, with your name, date and course information in the heading portion of your code, as well as the required output(s).

(Operator Overloading) (100 Points Maximum) *your score* _____

Objective To overload an operator in C++.

PROJECT DESCRIPTION

The program code given in **Figure 1**, which follows, uses a `friend` function to overload the `+` operator to average the GPAs (Grade Point Average) of two student objects. Modify this code to create an array of objects such that the user can define the number of required objects to be averaged. Use the `new` operator to allocate memory to these objects with a statement such as included below:

```
int size;
cout << "How many students do you want to process? ";
cin >> size;

Student *stud = new Student[size];
//creates a pointer to array of objects
```

Information About This Project

The `new` operator is useful to allocate memory to a dynamic array of objects.

Steps To Complete This Project

Modify the given in **Figure 1** to have the program user designate how many student objects will have their GPAs averaged.

Submit both your program code as well as a run time image of your output indicating that the average GPA of various students objects.

Student Name _____ Section _____

Figure 1 Student's GPA Object Averaging Program

```
//This program creates student objects
//and computes their average grade point averages
#include <iostream.h>
#include <iomanip.h>

class Student
{
private:
    int IDNumber;
    double gpa;
public:
    Student(const int i, const double g);
    friend double operator+(const Student &, const Student &);
};
Student::Student(const int id, const double g)
{
    Student::IDNumber = id;
    Student::gpa = g;
}
double operator+(const Student &stud1, const Student &stud2)
{
    double sum;
    sum = stud1.gpa + stud2.gpa;
    return(sum);
}

void main()
{
    Student s1(100, 3.00), s2(200, 3.75);
    double average = (s1 + s2) / 2;
    cout << setiosflags(ios::fixed | ios::showpoint);
    cout.precision(2);
    cout << "Average is " << average << endl;
}
```