1. **Write a program contains a class Student that has data members: name (string), age (float), ID (int), count (static variable). It contains a function to read data members (find a way to create a student ID number without reading it — put the first ID = 3000.), and a function to display data members, function to display the count of objects. In main function define an array of student class, and apply all functions on it. Add to the previous class data members: seven marks (double), avg (average of marks), two constructors one with default parameters, and the other copy constructor, and a function to display data members (remove static variable). Rewrite the main function to define several objects, and display them**

2. **Write a program contains a class GCD that has data members: A[30](int) , B[30](int), G(int), n(number of elements). It contains a function to return the greatest common divisor for two given positive numbers (recursive function), and a function to read data members, and set the elements of G such that each G_i is the greatest common divisor for A_i and B_i for i=0,..,n-1. It contains function to display data members in tabular form. This class contains a friend function that returns the average of all elements of G which are greater than 3 for a given object, and a friend function compares between the averages for two given objects and returns the max object. In main function define two objects, and apply all functions on them.**

3. **Write a program contains two classes Ser1, Ser2. Class Ser1 has data members: SX[30] (float) , x[30] (float), n (number of elements), a function to read data members and to set the elements of SX such that each SX_i is equal to the $\sum_{j=0}^{i} \frac{j+i}{x_j^2+i+1}$ for i=0,.., n-1, a function to return max element in SX, and a function**

to display data members. Class Ser2 has data members: SY[30](float), y[30] (float), m (number of elements), a function to read data members and to set the elements of SY such that each SY_i is equal to $\sum_{j=0}^{i} \frac{j+i}{y_j^3+i+1}$ for i=0,..,m-1, a function to return the max element in SY, and a function to display data members. These classes contain a friend function to compares between max elements for two given objects of two classes, and display the max object, and a friend function to return the following average $\frac{SX_0+SX_{n-1}+SY_0+SY_{m-1}}{4}$ where SX and SY are data members for the given two objects. In main function define two objects of two classes, and apply all functions on them.

Homework

Write a program contains a structure Data that has: name (string), age (float), salary (float). This program contains a class Employees that has data members: E[10] (Data) , n (number of elements). This class has a function to read data members, a function to display data members, and a friend class NS. A class NS contains data member tax (float). This class contains a function to read data member, a function to return the sum of all net salaries for one Employees' object, and a function to compare between the net salaries for two Employees' objects and display the max object. In main function, define two Employees' objects and one NS's object, and apply all functions on them.