1. **Write a program to count the number of objects created by class Student that has data members: name (string), age (float), ID (int), a function to read data members, and a function to display data members. The program must be able to display the result even no object is created. Also find a way to create a student ID number without reading it — put the first ID = 9700.**

2. **Write a program contains a class Series that has data members: x[20] (int), S[20] (double), n (number of elements). This class contains a function to return the value of $\binom{a}{b}$ for two given positive numbers a, b. It contains a function to set data members such that each S_i is equal to $\sum_{j=0}^{i} \binom{i}{j} x_i^{j+1}$, a function to display data member in tabular form. This class contains a friend function that returns the average of max and min elements in S for a given object, and a friend function compares between the average values (average of max element and min element of S) for two given objects and return the max object. In main function define two objects, and call all functions on them.**

3. **Write a program contains a function to check if a given number prime or not. This program contains two classes Data1, Data2. A class Data1 has data members: D1[10][10] (double), n (dimension of D1), a function to read data members: n, D1 except the last column, set the values of last column such that each $D1_{(i,\ n-1)}$ the max element in row i (i=0,..,n-1), a function to return the sum of prime numbers in last column, and a function to display the data member D1 in a matrix form. Class Data2 has data members: D2[10] (double), m (number of elements), a function to read data members , a function to return the sum of all prime numbers in D2, and a function to display data member D2 in a vector form. These classes contain the following friend functions:**

i. **Function to compare between two objects' sum for two objects of two classes, and display the object with max sum.**
ii. **Function to return the sum of two objects' sum for two objects of two classes.**

In main function define two objects of two classes, and call all functions on them.

Home Work

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 call all functions on them.