1. **Write a program contains a class Data that has data members: D[30] (int), F[30] (double), n(number of elements). This class contains the following:**
    i. **Function to return the value of $\binom{a}{b}$ for two given positive integer numbers (if not convert them).**
    ii. **Function to read data members D, n.**
    iii. **Function to set the elements of F such that each F_i is equal to $\sum_{k=0}^{i+1} \binom{i+1}{k} |D_k|$ for i=0 ,.., n-1 ($D_k \neq 0$ if not increase it by one) .**
    iv. **Function to return the sum of elements of F.**
    v. **Function to display the data members in table form.**
    vi. **Operators: +, constant + (increase each element of D by this constant, and set the elements of F for the returned object).**
    vii. **Operators: < (compare only the sum of elements of F),**
    != (compare only D).
    viii. **A friend function to compare between two objects (sum of elements of F for two objects), and to return max sum.**

In main function, define several objects and apply all functions and operators on them.

2. **Write a program contains a class Student that has data members: SM [10][10] (float), n (number of elements). This class contains:**
   i. **Function to read data members (except the last column).**
   ii. **Function to return the following sum: $\sum_{j=0}^{n-2} SM[i][j]$ for a given index i.**
   iii. **Function to set the elements of the last column (each column's element is equal to the sum of its row's elements)**
   iv. **A function to display data members in matrix form.**
   v. **Operators: *, constant * (multiply each element in SM by this constant, and set the elements of the last column for returned object).**
   vi. **Operators: ==, >= (only last column).**
   vii. **A friend function to compare between two objects and to display the max object.**

In main function, define several objects and apply all functions and operators on them.

Homework

Write a program contains a class Data that has data members: D[20] (double), Fact[20] (double), n(number of elements). This class contains the following:

i. **Function to read data members D, n, and set the elements of Fact such that each element $Fact_i$ is equal to $(\sum_{j=0}^{i} D_j)!$.**
ii. **Function to display D in table form.**
iii. **Operators: + (only D and set the elements of Fact for the return object), <= (compare only Fact), == (compare only D).**
iv. **A friend function to compare between two objects and to display a message if two objects are equal or not.**

In main function, define several objects and apply all functions on them.