1. **Write a program contains a class Product that has data members: P[20] (float), n(number of elements), a(int), b(int), avg (float). This class contains the following:**
    i. **Function to read data members: P, n, a, b (b must be greater than a), and set the value of avg which is the average of all elements of P which are in the rang [a .. b].**
    ii. **Operators: +, (tax) + (P_i + tax * P_i)**
    iii. **Operators: > (for P only), < (for avg only).**
    iv. **Operator [ ] to display the elements of P only.**
    v. **Function to display all data members (except P)**

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

2. **Write a program contains a class Data that has data members: D1[20] (double), D2[20] (double), n (number of elements of D1, D2). This class contains the following:**
    i. **Function to read the elements of D1, and set the elements of D2 such that each $D2_i$ is equal to $\sum_{j=0}^{i} \frac{1}{2^j} D1_j$ ($D1_j > 0$ if not convert it to positive number).**
    ii. **Operators: += , ++ (postfix, prefix),**
    iii. **Operators: > (only for D2), [ ] (only for D2).**

This class contains a friend function to compares two objects and display min object (hint: use >, [ ] operators). In main function, define several objects, and apply all operators and friend function on them.

3. **Write a program contains a class Matrix that has data members: M[10][10] (double), n, m (dimensions of M). This class contains the following:**
   i. **Function to check if a given number prime or not.**
   i. **Function to read all elements of M except last column, and set the elements of last column such each element** $\mathbf{M_{i,n-1}} = \sum_{j=0}^{n-2} \mathbf{M_{i,j}}$ $(\mathbf{M_{i,j}} > \mathbf{0}$ **and prime**$)$ **(for i=0…n-1).**
   ii. **Function to displays only all elements in M (except the elements of last column) in a matrix form.**
   iii. **Operator [ ] to display the elements of last column.**
   iv. **Operators: *, (constant) ***
   v. **Operator > = (only for last column).**

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