b) Implement a class **Point** whose objects are 2-D points. It must have two floating-point (10) data members **x** and **y** which stores the co-ordinates of a point, a constructor to initialize the members with values passed by the user, member functions **add()** to add another point with the current point, **sub()** to subtract another point from the current point, **mag()** to compute the distance of the current point from the origin and **dist()** to compute the distance of the another point from current point(Current point refers to the point corresponding to the object used to invoke the respective member function). Also write the main() function to test the complete functionality of the class.

14. a) Explain static data members and static member functions in a class by providing (10) suitable examples to illustrate their applications.

b) Implement a class **Time** which has integer data members **hrs, mins** and **seconds.** It must (10) have two constructors one to set the time to 00:00:00 and another to set the time to a value decided by the user. It has member functions :
   - **advance()** – to advance the time
   - **delay()** – to delay the time
   - **disp()** – to display the time in the format hrs:mins:seconds
   - **format()** – to process the values and normalize them after initialization or advance/delay operations so that the maximum value for hrs, mins and seconds is 23, 59 and 59 respectively.

Also write the main() function to test the class completely.

Module III

15. a) What is multi-level inheritance? Illustrate with examples how it is different from multiple (10) inheritance.

b) Implement a class **Complex_num** having floating point data members **real** and **imag** (10) used to store the real and imaginary parts of a complex number respectively. Write suitable constructors and a **display()** function to print the numbers in "a + jb" format. Overload the operator '+' to perform addition of two complex numbers and the operator '*' to perform their multiplication. Complete the program with a **main()** function to test all the functionality of the class.

16. a) Explain the significance of virtual functions with examples. (10)

b) Consider a record of the following structure: (10)
class Student
{
    private:
        int roll_num;
        char name[25];
        float total_marks;

    public:
        void readData();
        void printData();
};
A file "class_M2.txt" already exists with student records in the above mentioned format. Write a menu driven program to perform the following file-handling operations: