5. Programs using Classes and Objects

CO2: Map real-world objects into programming objects.

1. Define a class **student** with the following specification
   Private members of class student
   Admno integer
   Sname 20 character
   Eng, Math,Science float
   Total float
   Public member function of class student
   Takedata() Function to accept values for Admno, Sname, Eng,Science
   Ctotal() Function to calculate Eng + Math + Science and store the result in Total.
   Showdata() Function to display all the data members on the screen.
   Write a main function to create objects of class student and invoke all the public member functions.

2. Define a class **batsman** with the following specifications:
   Private members:
   bcode 4 digits code number
   bname 20 characters
   innings, notout, runs integer type
   batavg it is calculated according to the formula →batavg =runs/(innings-notout)
   calcAvg() Function to compute batavg
   Public members:
   readData() → Function to accept value from bcode, name, innings, notout and invoke the function calcAvg()
   displayData() → Function to display the data members on the screen.
   Write a main function to create objects of class **batsman** and invoke all the public member functions.

3. Define a class in C++ with following description:
   Private Members
   A data member Flight number of type integer
   A data member Destination of type string
   A data member Distance of type float
   A data member Fuel of type float
   A member function CALFUEL() to calculate the value of Fuel as per the following criteria

Distance	Fuel
<=1000	500
more than 1000 and <=2000	1100
more than 2000	2200

Public Members

A function FEEDINFO() to allow user to enter values for Flight Number, Destination, Distance & call function CALFUEL() to calculate the quantity of Fuel

A function SHOWINFO() to allow user to view the content of all the data members

4. Write a C++ program to declare a class with 2 integers. Read values using member function. Pass the object to another member function. Display the differences between them.

5. Create a 'DISTANCE' class with :
   - feet and inches as data members
   - member function to input distance
   - member function to output distance
   - member function to add two distance objects

   Write a main function to create objects of DISTANCE class. Input two distances and output the sum.

6. Write the definition for a class called **complex** that has floating point data members for storing real and imaginary parts. The class has the following member functions:

   void set(float, float) to set the specified value in object

   void disp() to display complex number object

   Implement the following overloading functions ADD that return a COMPLEX number.

   complex ADD (a, s2) - where a is an integer (real part) and s2 is a complex number.

   complex ADD (s1, s2)-where s1 & s2 are complex numbers.

   complex ADD(complex) to sum two complex numbers & return complex number

7. Write a C++ program to create a class Two which has two integers as its members. Write an inline function to find the biggest out of the two integer values.

8. Write a C++ program to create a class Number which has an integer as its member. Write two inline functions to find the square and cube of the integer respectively.

9. Create a class student with data members roll number, name, address, total marks. Create array of objects and display them. Write a C++ program to read and display the member variable. Create a function called checkpass to check whether the student has been passed or failed by passing total marls and passing marks. Have passing marks=50 as default

argument. Check the program with Default argument for first student and also change the passing mark as 60 for second student during function call.

10. Given that an **EMPLOYEE** class contains following members: ***Data members:*** Employee number, Employee name, Basic, DA, IT, Net Salary and number of dependents . Write a C++ program to read the data of N employee and compute Net salary of each employee (DA=52% of Basic and Income Tax(IT) =30% of the gross salary) and display information about employees. Also display employee with more than 2 dependents **.Note**: Net salary=Basic + DA –IT.