6. Programs using Constructors and Destructors

CO2: Map real-world objects into programming objects.

1. Write a C++ program to declare a class with three data members. Declare overloaded ***constructor with no arguments, one argument, two argument, and three arguments***. Pass values in the object declaration statement. Create four objects and pass values in such a way that the entire four constructors are executed one by one. Write appropriate messages in constructor and destructor so that execution of the program is understood.

2. Write a C++ program to declare a **person** class with few private data members. Accept data through constructor and pass an object to constructor and carry out ***copy constructor***. Display contents of both the objects.

3. Write a C++ program to declare a class Rectangle with length and breadth as private members. Write a ***constructor with default arguments***. Create a function to calculate area of rectangle with default arguments from constructor for one object and by passing new values to the constructor for another object. Display contents of all the objects and area of the corresponding objects.

4. Define a class **Play** in C++ with the following specifications:
   Private members of class Play
   - Playcode integer
   - PlayTitle 25 character
   - Duration float
   - Noofscenes integer

   Public member function of class Play
   - A constructor function to initialize Duration as 45 and Noofscenes as 5.
   - Newplay() function to accept values for Playcode and PlayTitle.
   - Moreinfo() function to assign the values of Duration and Noofscenes with the help of corresponding values passed as parameters to this function.
   - Showplay() function to display all the data members on the screen.

5. Write a C++ program to create a class called Rational for performing arithmetic with fractions, use integer variables to represent the private data of the class – the numerator and the denominator. Provide a constructor that enables an object of this class to be initialized when it is declared. The constructor should contain default values in case no initializes are provided and should store the fraction in reduced form. E.g., the fraction 2/4 would be stored in the object as 1 in the numerator and 2 in the denominator. Provide public member functions that perform the following task.
   - Adding two rational numbers and the result should be in reduced form.
   - Subtracting two rational numbers and the result should be in reduced form.
   - Multiplying two rational numbers and the result should be in reduced form.
   - Dividing two rational numbers and the result should be in reduced form.
   - printing Rational numbers in the form a/b(a-numerator, b- denominator)

6. Create a class called Employee that includes three pieces of information as data members—a first name (type string), a last name (type string) and a monthly salary (type float) —to represent Rupees. Your class should have a constructor that initializes the three data members. Provide a *set* and a *get* function for each data member. If the monthly salary is not positive, set it to 0.Create two Employee objects and display each object's *yearly* salary. Then give each Employee a 10 percent raise and display each Employee's yearly salary again.