# ***LAB TASKS 10***

1. you're developing a multimedia application that processes different types of media files. The application has classes for various media types such as images, videos, and audio files. You've implemented a MediaFile class as the base class for all media types. Now, you need to implement a MediaConverter class that can access and manipulate the private members of the MediaFile class to perform conversion operations. Implement the MediaFile class and the MediaConverter class in C++. Define MediaFile as the base class with private members representing metadata like file name and size. Implement MediaConverter as a friend class of MediaFile that can access and modify the private members of MediaFile. Provide a method in MediaConverter to convert the file format of a MediaFile object. Explain the necessity and benefits of using friend classes in this scenario.

2. You are developing a simple messaging application where users can send messages to each other. Implement a class Message to represent a message, and a class User to represent a user. You want to implement a function sendMessage that allows one user to send a message to another user, accessing their private members.

3. Your task is to implement operator overloading for the + operator in the Furniture class. When two Furniture objects are added using the + operator, the result should be a new Furniture object representing a combined item, with the name being a concatenation of the names of the two items being added, the price being the sum of their prices, and the quantity being the minimum of their quantities. Imagine you have implemented the Furniture class with the required functionalities, including operator overloading for the + operator. Now, consider the following scenario: You have two Furniture objects: Chair: Name: "Wooden Chair" Price: $50 Quantity: 10 Table: Name: "Glass Table" Price: $100 Quantity: 5 You need to perform the addition operation using the + operator on these two objects and store the result in a new Furniture object. Provide the following details about the resulting Furniture object after the addition: Name: Price: Quantity: Explain the behavior of the operator overloading implementation in this scenario. What happens to the original objects after the addition operation?

4. You are developing a class String to represent a dynamic string. The class contains a dynamically allocated character array to store the string data. You need to implement the assignment operator (operator=) to allow one String object to be assigned to another, performing a deep copy of the string data.