**National University of Computer & Emerging Sciences**

**Karachi Campus**



**GUI based Library Management System (LMS)**

**Programming Fundamentals**

**Section: J**

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Project Proposal

* **Introduction**

The proposed project is a Library Management System (LMS) developed in the C programming language with a graphical user interface (GUI) using the Win32 API. The system will use text files for persistent data storage. The LMS is designed to simplify library operations such as account creation, login, book borrowing, returning, and managing fines.   
A unique feature of this system is the introduction of membership tiers (Classic, Gold, Premium), each offering different privileges, such as the maximum number of books that can be borrowed at a time, reduced fines for overdue books, and other benefits. This makes the system more realistic and flexible compared to traditional models

* **Existing System**

Currently, many small libraries rely on either manual record-keeping or basic digital systems. Manual methods are slow, prone to errors, and inefficient for handling overdue books or fines. Existing digital systems often use heavy database management systems (like MySQL or Oracle) that may be too complex or costly for smaller institutions. Moreover, most systems lack customizable membership tiers that give users different benefits and responsibilities.

* **Problem Statement**

The existing systems have several limitations:  
- Manual processes make it difficult to handle fines and track overdue books.  
- No concept of user tiers, so all users have the same borrowing and fine policies.  
- Difficulties for administrators in monitoring overall activity.  
- Systems using large databases are not suitable for smaller, low-resource institutions.

* **Proposed Solution**

The proposed LMS will address these issues by:  
- Offering a GUI-based, user-friendly application built with Win32.  
- Using text files for persistent storage, avoiding the complexity of databases.  
- Introducing three membership tiers (Classic, Gold, Premium), each with specific borrowing limits and fine policies.  
- Implementing a fine calculation system:  
 - When a user returns a book, the system will check if the return date is past the due date.  
 - If overdue, the system will calculate fines based on the user’s tier and assign the appropriate amount.  
 - Users will also have a dedicated function to view and pay fines.  
- Enabling admins to monitor overdue books and fines, as well as manage book entries and user accounts.

* **Salient Features**

- User Account Creation and Login  
- Borrow and Return Books  
- Membership Tiers: Classic, Gold, Premium (with different borrowing limits and fine rates)  
- Fine Management:  
 - Automatic fine calculation on overdue returns  
 - Option for users to view and pay fines  
- Logout functionality  
- Admin privileges for:  
 - Adding new books  
 - Viewing all borrowed books  
 - Viewing overdue books and fines  
- Persistent storage using text files  
- Clean and simple GUI using Win32 API

* **Tools & Technologies**

- **Programming Language:** C  
- **GUI Framework:** Win32 API  
- **Storage:** Text Files (Flat File System)  
- **Operating System:** Windows