Project 1: Library Management System – Internship Project

1. Project Title: Library Management System

2. Objective:

Develop a system to manage books in a library efficiently.

- Allow users (librarians/students) to:
- Add new books
- View available books
- Borrow and return books
- Maintain updated book records
- Reduce manual work and quickly check book availability.

3. Technologies Used:

- Programming Language: Java (Core Java)
- Tools/IDE: JDK, Notepad++ / VS Code / IntelliJ IDEA

Concepts Used:

- OOP (Classes, Objects, Methods)
- ArrayList for dynamic storage
- Loops and conditional statements for menu navigation and logic

4. Modules with Explanation:

Book Module:

- Stores book details such as ID, title, author, and availability status.
- Ensures proper identification and tracking of each book.

Library Module:

- Manages the collection of books.
- Handles operations like adding new books, borrowing, and returning books.
- Maintains accurate records of available and borrowed books.

Main Module:

- Provides a menu-driven interface for user interaction.
- Allows users to select options such as Add Book, Borrow Book, Return Book, and View Books.
- Controls the flow of the program and calls other modules as needed.

5. Key Features:

- Auto-generated unique Book IDs.
- Menu-driven interface for easy usage.
- Real-time update of book availability status.
- Quick search and view of available books.
- Efficient tracking of borrowed and returned books.

6. Advantages:

- Reduces manual work and errors.
- Quick and easy book tracking and management.
- Provides organized and updated records for the library.

7. Limitations:

- Basic console-based system (no graphical interface).
- Limited authentication for users.
- Manual file handling required for data persistence if database not used.

8. Future Enhancements:

- Implement a GUI interface using JavaFX or Swing.
- Integrate with a database like MySQL for permanent storage.
- Add category-wise book management (Science, Fiction, etc.).
- Include notifications for due books.
- Add barcode/QR code scanning for faster borrowing and returning.