Institute of technology of Cambodia

Department GIC

Project Report:

Library Borrowing and Book Tracking System

I4-GIC-Group C

Name	ID:	Score:
THOU LAIHENG	e20220843	……….
RIN NAIRITH	e20221557	……….

Software Engineer

Lecturer: Mr. ROEUN Pacharoth (TP)

Academic: 2025 – 2026

Table of content

1. Introduction

1.1. Project Purpose

- **Core Objective:** To modernize and streamline the administrative operations of a traditional library using a secure, web-based software application.
- **Key Goals:**
    - Efficiently manage the library's physical inventory of books.
    - Establish a reliable and traceable workflow for book borrowing and returning.
    - Implement an automated mechanism for identifying overdue books and associated loan issues.
    - Ensure system security and proper usage through strong role-based access control.

1.2. Project Overview

- **Primary Functions:**
    - **Book Inventory Management:** Creation, viewing, updating, and deletion of all book records.
    - **Borrowing/Returning Workflow:** Tracking books checked out by members and registering their return status.
    - **Overdue Detection:** Automated flagging and reporting of books that have exceeded their loan period.
    - **User Roles:** Two distinct access levels: **Librarian** (full management access) and **Member** (borrowing and personal history access).
- **Target Users:** Library staff (Librarians) and library patrons (Members).
- **Technology Stack (Proposed):** Likely utilizing a Java-based backend (e.g., Spring Boot), a relational database for persistence, and Thymeleaf for dynamic frontend rendering.

2. Responsibility Assignment

To ensure effective development and timely delivery of the system, the project is divided into five core functional areas, with a designated lead for each:

Role	Responsibility Area	Key Deliverables	Team member
1. Security and Authentication Lead	User Login and Roles	- Implementing Spring Security (or equivalent) for user authentication. - Defining and enforcing role-based access control (Member/Librarian) across all pages and functionalities. - Managing user session state.	Laiheng

2. Main Entity CRUD Lead	Core Book Entity Management	- Developing CRUD (Create, Read, Update, Delete) functionality for the primary Book entity. - Handling book search, filtering, and inventory updates. -This is the central entity of the system.	Nairith
3. Secondary Module CRUD Lead	Borrowing/Users/Overdue Modules	-Developing CRUD for secondary entities like Members/Users and Borrowing/Loan Records. - Implementing the borrowing/returning logic and the overdue detection mechanism (calculating due dates and flagging late returns).	Nairith
4. Frontend/Thymeleaf Lead	User Interface and Access Control	-Designing and implementing all HTML templates using Thymeleaf. -Ensuring a cohesive and responsive user interface. -Integrating access control logic on the frontend to display elements relevant to the authenticated user's role.	Laiheng
5. Database Lead	Data Persistence and Structure	- Designing the complete database schema (e.g., tables for Books, Users, Loans). -Writing the SQL/JPA entities and managing database connections and migrations (e.g., using Flyway or Liquibase). - Ensuring data integrity and performance.	Laiheng & Nairith