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Coursework Case Study

Requirements Definition of LibraryLink: A Multi-Subsystem Digital Library Management Platform

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# Introduction

With the rapid advancement of cloud computing and mobile technologies, a new generation of **digital library management systems** can be developed to provide integrated support for both physical and digital resources, while automating core library operations.

A software company, **InfoSoft Ltd**, has decided to develop a system called **LibraryLink**, which is a multi-subsystem platform designed to modernise how libraries serve their members. The system aims to streamline borrowing, catalogue management, staff administration, and technical operations while improving user accessibility and security.

This document defines the functional requirements of the system. The remainder of the document is organised as follows. Section 2 describes the targeted user types. Section 3 outlines the key design features. Sections 4 provide the functional requirements grouped by user type.

# Types of Targeted Users

The main types of users of the system will be:

1. *Library Members – Individuals who borrow, reserve, and access resources.*
2. *Librarians – Staff who issue/return books, manage reservations, and support members.*
3. *Catalogue Managers – Staff who maintain and update the collection metadata.*
4. *Administrators – Staff who manage accounts, rules, and reporting.*
5. *System Operators – IT staff responsible for system operation, backups, and security.*

# Key Design Features

The *LibraryLink* system consists of the following subsystems, all connected to services running on the cloud:

1. *LibraryLink-Member*: A subsystem for library members to register, browse, borrow, reserve, and pay fines.
2. *LibraryLink-Librarian*: A subsystem for librarians to manage issues, returns, overdue items, and assist members.
3. *LibraryLink-Catalogue*: A subsystem for catalogue managers to add, categorise, update, and archive resources.
4. *LibraryLink-Admin*: A subsystem for administrators to configure rules, manage accounts, and produce reports.
5. *LibraryLink-Ops*: A subsystem for system operators to maintain uptime, conduct backups, and ensure security.

# Specification of Functional Requirements

## Requirements of Library Members

**FR-LM-1: Register as Member**. The system should allow individuals to register, storing details such as name, address, email, phone, and login credentials.

**FR-LM-2: Search and Browse Catalogue.** The system should enable members to search for books and resources by title, author, ISBN, year or category.

**FR-LM-3: Borrow and Reserve Items.** The system should support borrowing available items and reserving unavailable ones.

**FR-LM-4: Renew and Return Items.** The system should allow renewals (if permitted) and show return deadlines.

**FR-LM-5: Pay Fines and Fees.** The system should process overdue fines and membership fees via secure payment.

## Requirements of Librarians

**FR-LB-1: Issue Books**. The system should enable librarians to issue books by verifying member and book IDs.

**FR-LB-2: Manage Returns.** The system should update availability upon return and record the book's condition.

**FR-LB-3: Handle Overdue Notifications.** The system should generate and send overdue notices to members.

**FR-LB-4: Assist with Catalogue Search.** The system should support librarians in assisting members with resource searches.

**FR-LB-5: Handle Overdue Notifications.** The system should notify members when reserved items become available.

## Requirements of Catalogue Managers

**FR-CM-1: Add New Resources.** The system should support adding new physical and digital items, including metadata (title, author, year, ISBN, and category).

**FR-CM-2: Update Resource Details.** The system should allow modification of resource metadata such as title, author, and categories.

**FR-CM-3: Categorise Resources.** The system should classify resources by subject, format, or tags.

**FR-CM-4: Manage Digital Content.** The system should allow uploading, updating, and removing digital files.

## Requirements of Administrators

**FR-AD-1: Manage User Accounts**. The system should allow administrators to create, update, or delete staff and member accounts.

**FR-AD-2: Define Borrowing Rules.** The system should configure policies such as maximum loans, renewal limits, and fines.

**FR-AD-3: Generate Reports.** The system should produce reports on usage trends, borrowing statistics, and overdue rates.

**FR-AD-4: Assign Roles and Permissions.** The system should define access rights for different staff roles.

## Requirements of System Operators

**FR-SO-1: Manage Security and Access.** The system should enforce role-based access control and apply updates.

**FR-SO-2: Backup and Recovery.** The system should perform automated daily backups and enable quick recovery.

**FR-SO-3: Apply Updates and Patches.** The system should support software updates, bug fixes, and patches.