**Library Management System**

**Project Overview**

The Library Management System is a comprehensive solution designed to efficiently manage and organize books, customers, and library branches. It keeps track of book issuance, returns, and provides insights into library operations through a relational database schema.

**Features**

* **Book Management:** Track book details, including title, author, genre, and status.
* **Branch Management:** Manage multiple library branches with unique addresses.
* **Employee Management:** Record employee details and their respective branches.
* **Customer Management:** Manage customer information and their book issuance records.
* **Issue and Return Tracking:** Keep track of book issues and returns with dates.

**Database Schema**

**Entities**

* **Book:** Contains information about books in the library.
* **Branch:** Details of different library branches.
* **Employee:** Information about library employees.
* **Customer:** Records of library customers.
* **IssueRecord:** Tracks books issued to customers.
* **ReturnRecord:** Tracks books returned by customers.

**Normalization**

The database schema has been designed with normalization principles to reduce redundancy and improve data integrity. The tables are normalized to the **BCNF (Boyce-Codd Normal Form)**. Here is an overview of the normalization applied:

1. **Book Table:**
   * **Primary Key:** ISBN
   * **Foreign Key:** BranchID (References Branch Table)
2. **Branch Table:**
   * **Primary Key:** BranchID
3. **Employee Table:**
   * **Primary Key:** EmployeeID
   * **Foreign Key:** BranchID (References Branch Table)
4. **Customer Table:**
   * **Primary Key:** CustomerID
   * **Foreign Key:** BranchID (References Branch Table)
5. **IssueRecord Table:**
   * **Primary Key:** IssueID
   * **Foreign Key:** CustomerID (References Customer Table)
   * **Foreign Key:** BookISBN (References Book Table)
6. **ReturnRecord Table:**
   * **Primary Key:** ReturnID
   * **Foreign Key:** CustomerID (References Customer Table)
   * **Foreign Key:** BookISBN (References Book Table)

**Normalization Details**

* **1NF (First Normal Form):** All tables are in 1NF, with each column containing atomic (indivisible) values.
* **2NF (Second Normal Form):** All tables are in 2NF, with no partial dependency on any part of the primary key.
* **3NF (Third Normal Form):** All tables are in 3NF, ensuring that non-key attributes are not dependent on other non-key attributes.
* **BCNF (Boyce-Codd Normal Form):** The schema is in BCNF, where every determinant is a candidate key, addressing any anomalies that might not be covered by 3NF.