



Institute of Technology of  
Cambodia



Department of Telecommunication  
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## Report

Topic

# “Library Management system”

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## I. Introduction

In this report, we present an overview of the Library Management System developed for GTR department. This system aims to streamline the management of books, customer, and transactions within the university library. The efficient organization of library resources and user interactions is crucial for enhancing the overall experience of students, faculty, and staff.

## II. system overview

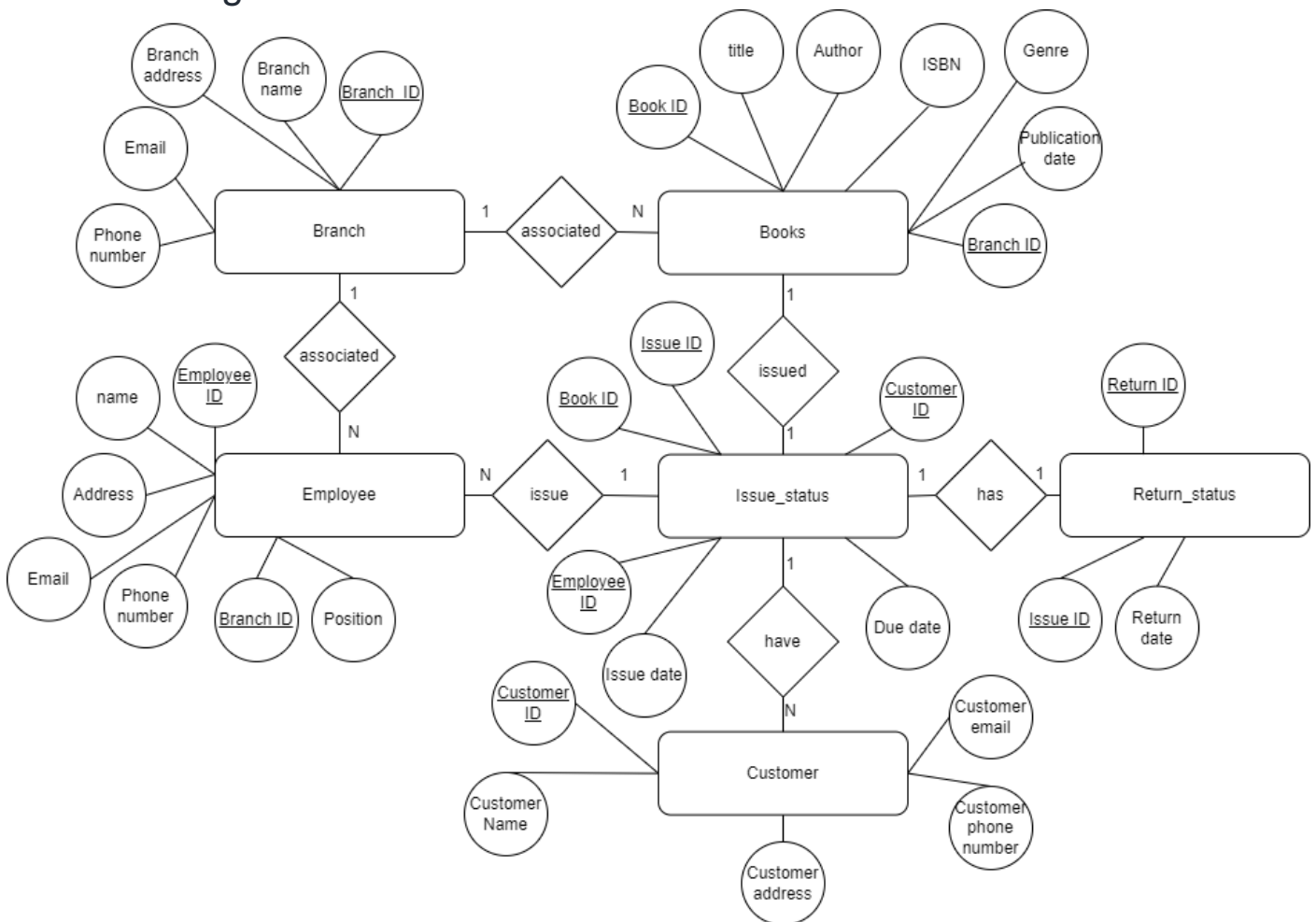
The Library Management System provides essential functionalities for managing books, customer, and issue status. It facilitates seamless borrowing, returning, and tracking of books, while also ensuring accurate inventory management and member engagement.

## III. Information and Feature

There are a lot of information and feature that can get from our database, such as

- Employee information, including name, email, phone, address, and position
- Customer information, including name, email, phone, and address
- Book information, including title, author, publication date, genre, and ISBN
- Branch information, including name, address, phone, and email
- Issue status, including book ID, customer ID, employee ID, issue date, and due date
- Return status, including issue ID, return date, and late fee

## IV. ERD Diagram



## V. Actual data and SQL queries

To have actual data we need to INSERT into each table in the database. Thus, we need to write some code in the database tools. Below is the code that use for insert data.

```
INSERT INTO Branch (branch_name, branch_address, branch_phone, branch_email)
VALUES ('Moon Library', 'Crater 1, Moon', '+1234567890', 'moonlibrary@email.com');

INSERT INTO Employee (employee_name, employee_email, employee_phone, employee_address, branch_id, POSITION)
VALUES ('John Doe', 'johndoe@email.com', '+1234567890', 'Moon Street 1, Moon', 1, 'Manager'),
      ('Jane Smith', 'janesmith@email.com', '+2345678901', 'Moon Street 2, Moon', 1, 'Librarian')
      ('Charlie Green', 'charliegreen@email.com', '+5678901234', 'Moon Street 5, Moon', 1, 'Librarian');

INSERT INTO Customer (customer_name, customer_email, customer_phone, customer_address)
VALUES ('Michael Scott', 'michaelscott@email.com', '+1234567890', 'Moon Street 6, Moon'),
      ('Dwight Schrute', 'dwightschrute@email.com', '+4567890123', 'Moon Street 9, Moon')
      ('Angela Martin', 'angelamartin@email.com', '+5678901234', 'Moon Street 10, Moon');

INSERT INTO Books (title, author, publication_date, genre, branch_id, ISBN)
VALUES ('Moon Adventures', 'Arthur Moon', '2023-01-01', 'Science Fiction', 1, 1000000001),
      ('Galactic Odyssey', 'Galaxia Space', '2023-04-01', 'Mystery', 1, 1000000004)
      ('Stellar Stories', 'Stella Comet', '2023-05-01', 'Romance', 1, 1000000005);

INSERT INTO Issue_Status (book_id, customer_id, employee_id, issue_date, due_date)
VALUES (1, 1, 1, '2023-06-01', '2023-06-15'),
      (4, 4, 4, '2023-06-04', '2023-06-18')
      (5, 5, 5, '2023-06-05', '2023-06-19');

INSERT INTO Return_Status (issue_id, return_date, late_fee)
VALUES (1, '2023-06-15', 0.00),
      (4, '2023-06-18', 0.00)
      (5, '2023-06-20', 10.00);
```

After that, we need to extract data from database by using database tools to ensure each record is correct and reach to our requirement. Below is the extraction from the database.

- To get a list of all employees and their positions:  
SELECT employee\_name, position FROM Employee;

employee_name	position
John Doe	Manager
Jane Smith	Librarian
Alice Johnson	Assistant
Bob Brown	Manager
Charlie Green	Librarian

- To get a list of all customers and their addresses:  
SELECT customer\_name, customer\_address FROM Customer;

customer_name	customer_address
Michael Scott	Moon Street 6, Moon
Pam Beesly	Moon Street 7, Moon
Jim Halpert	Moon Street 8, Moon
Dwight Schrute	Moon Street 9, Moon
Angela Martin	Moon Street 10, Moon

- To get a list of all books and their genres:  
SELECT title, genre FROM Books;

title	genre
Moon Adventures	Science Fiction
Lunar Chronicles	Fantasy
Cosmic Tales	Adventure
Galactic Odyssey	Mystery
Stellar Stories	Romance

- To get a list of all branches and their phone numbers:  
SELECT branch\_name, branch\_phone FROM Branch;

branch_name	branch_phone
Moon Library	+1234567890

- To get a list of all issued books and their due dates:  
SELECT Books.title, Customer.customer\_name, Issue\_Status.due\_date FROM Books  
INNER JOIN Issue\_Status ON Books.book\_id = Issue\_Status.book\_id  
INNER JOIN Customer ON Issue\_Status.customer\_id = Customer.customer\_id;

title	customer_name	due_date
Moon Adventures	Michael Scott	2023-06-15
Lunar Chronicles	Pam Beesly	2023-06-16
Cosmic Tales	Jim Halpert	2023-06-17
Galactic Odyssey	Dwight Schrute	2023-06-18
Stellar Stories	Angela Martin	2023-06-19

- To get a list of all returned books and their late fees:  
SELECT Books.title, Customer.customer\_name, Return\_Status.return\_date, Return\_Status.late\_fee  
FROM Books  
INNER JOIN Issue\_Status ON Books.book\_id = Issue\_Status.book\_id  
INNER JOIN Customer ON Issue\_Status.customer\_id = Customer.customer\_id  
INNER JOIN Return\_Status ON Issue\_Status.issue\_id = Return\_Status.issue\_id;

title	customer_name	return_date	late_fee
Moon Adventures	Michael Scott	2023-06-15	0.00
Lunar Chronicles	Pam Beesly	2023-06-16	0.00
Cosmic Tales	Jim Halpert	2023-06-18	5.00
Galactic Odyssey	Dwight Schrute	2023-06-18	0.00
Stellar Stories	Angela Martin	2023-06-20	10.00