

MARKS**CO2: / 50****CO3: / 50****CO4: / 25**

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**Centre of Mathematical & Science,
UMPSA
BCI2033 Database Systems
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Group No: 13

Lab Section: 01G

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Project Title: Library Management System
(Wisdom Warehouse)

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PART 1: PROPOSAL OF DATABASE SYSTEM

INTRODUCTION OF PROJECT DOMAIN (BACKGROUND)

In the rapidly evolving landscape of the digital era, the conventional appeal of physical libraries has waned owing to the intricacies inherent in their operational protocols. The labyrinthine processes associated with book borrowing, fine settlements, and navigating vast collections have proven to be not only time-consuming but, at times, deterrents to patronage. In cognizance of these challenges, our innovative initiative, Wisdom Warehouse, endeavours to institute a sophisticated and contemporary library management system. The primary objective is to reinvigorate the library experience by addressing the shifting preferences and expectations of a modern user base.

Wisdom Warehouse places paramount importance on simplifying the book borrowing process. It introduces an intuitive interface that empowers patrons to seamlessly peruse the catalogue, ascertain book availability, and efficiently complete the borrowing transaction. This streamlined approach aims to mitigate temporal inconveniences and elevate the overall user experience.

A standout feature of Wisdom Warehouse lies in its provision for patrons to settle fines through an online platform. This eliminates the necessity for physical visits to the library for the resolution of fines pertaining to overdue books or other library services. The introduction of an online fine payment system further reduces impediments to accessing library resources.

Librarians benefit from a centralised and exhaustive database within Wisdom Warehouse. This repository encompasses intricate details about books, authors, genres, and patron records. Such comprehensive data storage facilitates efficient cataloguing, expeditious tracking of book availability, and prompt retrieval of information as necessitated by operational exigencies.

A cornerstone of the project is its commitment to user-friendliness, manifested in an interface designed for intuitive navigation. This design ethos ensures that even individuals unacquainted with conventional library systems can seamlessly explore and exploit the platform's functionalities to their fullest extent.

In consonance with contemporary predilections for digital content consumption, Wisdom Warehouse harbours a burgeoning digital collection. This expansion into the digital realm affords patrons access to a spectrum of resources, including e-books, audiobooks, and various digital assets, augmenting the library's repertoire with a modern and diversified appeal.

The library management system integrates sophisticated data analytics tools to empower librarians with actionable insights. Analysis of user behaviour, book popularity trends, and other pertinent metrics equips librarians with the intelligence needed to adapt and tailor library offerings dynamically to meet the evolving needs of the community.

Beyond functioning as a repository of books, Wisdom Warehouse assumes the role of a dynamic community nexus. Integration of events, book clubs, and interactive features serves to foster a sense of communal engagement among library patrons. This approach encourages not only individual exploration but also collective participation, positioning the library as both a social and educational institution.

In summation, Wisdom Warehouse represents a paradigm shift in library management, leveraging technological advancements to deliver a sophisticated, enjoyable, and relevant library experience. Through the amalgamation of traditional richness with contemporary technology, the project aspires to redefine the role of libraries, instil a renewed appreciation for knowledge, and cultivate a vibrant sense of community among its patrons.

SCOPE OF THE PROJECT

1. System Scope

Wisdom Warehouse is an innovative library management system designed to revitalise the traditional library experience, aligning with the expectations of a modern user base. This system aims to streamline operations, enhance user accessibility, and foster community engagement through a blend of intuitive interfaces, online services, and dynamic content offerings.

2. User Scope

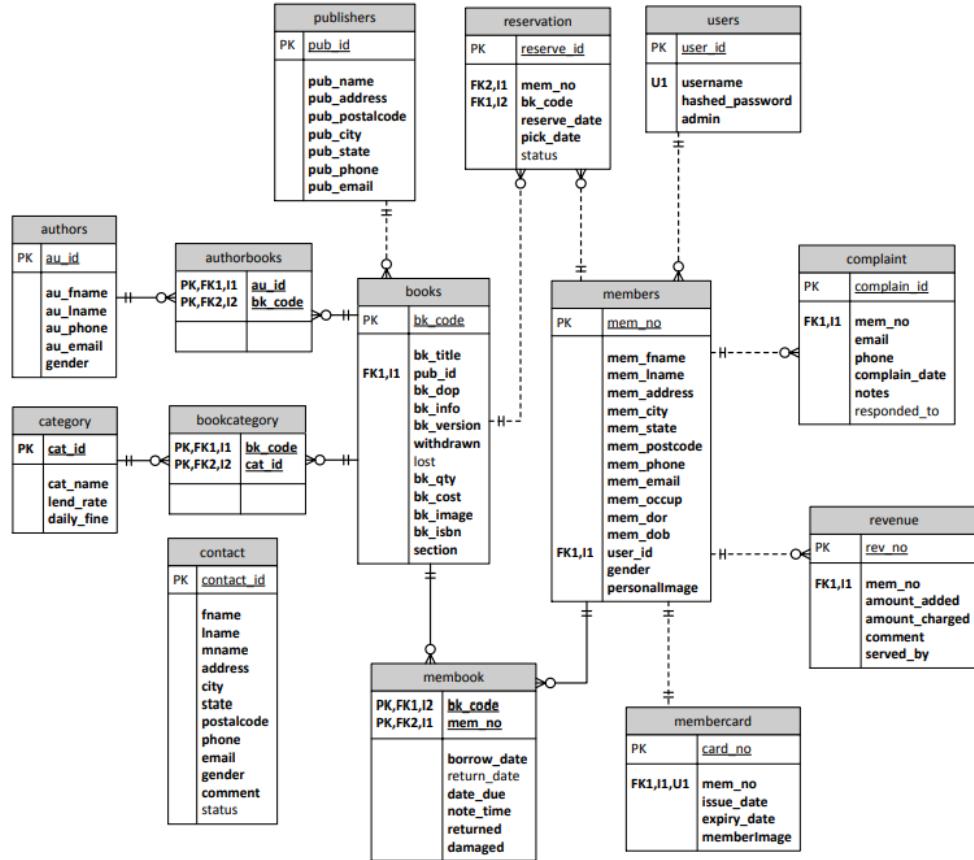
- i) The librarian can manage and record all the borrower information
- ii) The borrower will be well-informed about the due dates
- iii) The borrower has the capability to locate books using the author's name and the titles of the books
- iv) The librarian has the ability to retrieve information about the suppliers of the books.

OBJECTIVES

- 1. To enhance the efficiency accessibility and user experience of a library
- 2. To enhance the library's inventory and keep track of stocks
- 3. To modernise the library management system from traditional system

ANALYSE AND COMPARE TWO CASE STUDY

Case study 1: Library Book Management System



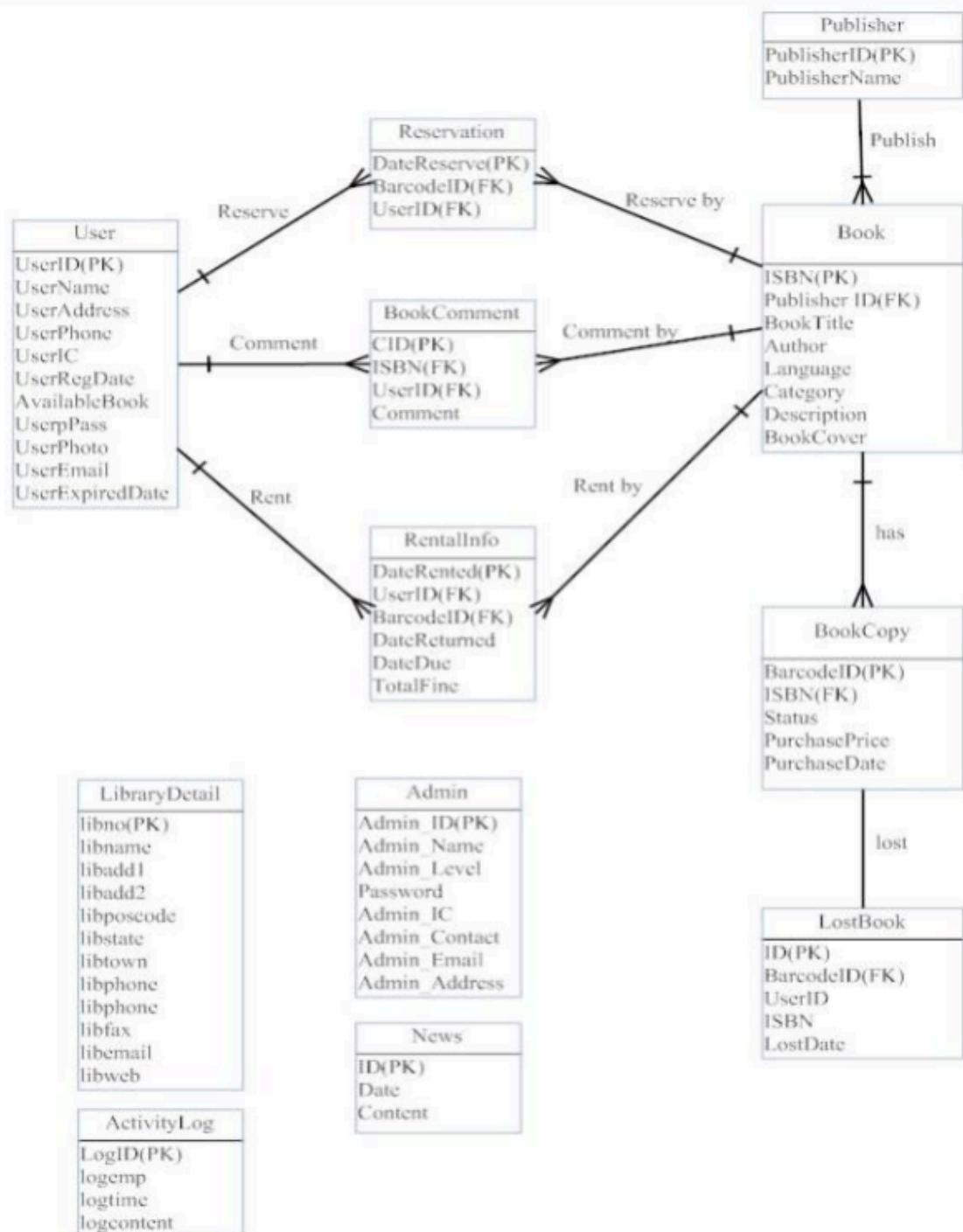
1. Background & Scope of ERD

The ERD above from case study 1 shows an automated online library management system. This management system helps improve the library's outdated system where we would like to get rid of any manual filling up forms and this new system helps the librarians to do their job more efficiently and systematically.

2. Explanation

This system enables both the staff and borrowers/members to be the user. It contains 8 main entities excluding the bridge entities which are books, members, publishers, authors, category, revenue, complaint and user . These data are collected and stored to ensure the smoothness of assessing to the book or to the member of the library.

Case study 2: Library Management System



1. Background & Scope of ERD

This second ERD shows a library management system where it contains both library system and library website. This management system is to eliminate paperwork in the library and be able to record every transaction made.

2. Explanation

This system enables both the librarians and members to be the user. Librarians have access to this system so that they can maintain the book and keep the transaction record made by any borrower while the member has access to the system to enable them to search which book is available and can see the news.

	Case study 1	Case study 2
ENTITIES & ATTRIBUTES & PRIMARY KEYS & FOREIGN KEYS	<ul style="list-style-type: none"> 1. books <ul style="list-style-type: none"> - bk_code (PK) - bk_title - pub_id - bk_dop - bk_info - bk_version - withdrawn - bk_qty - bk_cost - bk_image - bk_isbn - section 2. bookcategory <ul style="list-style-type: none"> - bk_code (PK,FK1) - cat_id (PK,FK2) 3. category <ul style="list-style-type: none"> - cat_id (PK) - cat_name - lend_rate - Daily_fine 4. authorbooks <ul style="list-style-type: none"> - au_id (PK,FK1) - bk_code (PK,FK2) 	<ul style="list-style-type: none"> 1. User <ul style="list-style-type: none"> - UserID(PK) - UserName - UserAdress - UserPhone - UserIC - UserRegDate - AvailableBook - UserpPass - UserPhoto - UserEmail - UserExpiredDate 2. Reservation <ul style="list-style-type: none"> - DateReserve (PK) - BarcodeID (PK) - UserID (FK) 3. BookComment <ul style="list-style-type: none"> - CID (PK) - ISBN (FK) - UserID (FK) - Comment 4. RentalInfo <ul style="list-style-type: none"> - DateRented (PK) - UserID (FK) - BarcodeID (FK) - DateReturned

	<p>5. authors</p> <ul style="list-style-type: none"> - au_id (PK) - au_fname - au_lname - au_phone - au_email gender <p>6. publishers</p> <ul style="list-style-type: none"> - pub_id (PK) - pub_name - pub_address - pub_postalcode - pub_city - pub_state - pub_phone - pub_email <p>7. members</p> <ul style="list-style-type: none"> - mem_no (PK) - mem_fname - mem_lname - mem_address - mem_city - mem_state - mem_postcode - mem_phone - mem_email - mem_occup - mem_dor - mem_dob - user_id(FK1) - gender - personalimage <p>8. membook</p> <ul style="list-style-type: none"> - bk_code (PK,FK1) - mem_no (PK,FK2) - Borrow_date - return_date - date_due - note_time - returned damaged <p>9. membercard</p> <ul style="list-style-type: none"> - card_no (PK) - mem_no (FK1) - isuue_date - expiry_date - memberImage 	<ul style="list-style-type: none"> - DateDue - TotalFine <p>5. Publisher</p> <ul style="list-style-type: none"> - PublisherID (PK) - PublisherName <p>6. Book</p> <ul style="list-style-type: none"> - ISBN (PK) - PublisherID (FK) - BookTitle - Author - Language - Category - Description - BookCover <p>7. BookCopy</p> <ul style="list-style-type: none"> - BarcodeID (PK) - ISBN (FK) - Status - PurchasePrice - PurchaseDate <p>8. LostBook</p> <ul style="list-style-type: none"> - ID (PK) - BarcodeID (PK) - UserID - ISBN - LostDate <p>9. LibraryDetail</p> <ul style="list-style-type: none"> - libno (PK) - libname - lbadd1 - lbadd2 - libposcode - libstate - libtown - libphone - libphone - libfax - libemail - libweb <p>10. ActivityLog</p> <ul style="list-style-type: none"> - LogID (PK) - logemp - logtime
--	--	---

	<p>10. revenue</p> <ul style="list-style-type: none"> - rev_no (PK) - mem_no (FK1) - amount_added - amount_charged - comment - served_by <p>11. complaint</p> <ul style="list-style-type: none"> - complain_id (PK) - mem_no (FK1) - email - phone - complain_date - notes - responded_to <p>12. users</p> <ul style="list-style-type: none"> - user_id (PK) - username - hashed_password - admin <p>13. reservation</p> <ul style="list-style-type: none"> - reserve_id (PK) - bk_code (FK1) - mem_no (FK2) - reserve_date - pick_date - status <p>14. contact</p> <ul style="list-style-type: none"> - contact_id (PK) - fname - lname - mname - address - city - state - postalcode - phone - email - gender - comment - status 	<ul style="list-style-type: none"> - logcontent <p>11. Admin</p> <ul style="list-style-type: none"> - Admin_ID (PK) - Admin_Name - Admin_Level - Password - Admin_IC - Admin_Contact - Admin_Email - Admin_Adress <p>12. News</p> <ul style="list-style-type: none"> - ID (PK) - Date - Content
--	---	---

REFERENCES	Kweingoti, S. B. (2016, March 17). <i>Library Management System</i> . Academia.edu. https://www.academia.edu/23360986/Library_Management_System	Rakesh, V. (2019, March 30). <i>Library Management System I</i> <i>Library Management System</i> . Academia.edu. https://www.academia.edu/38666316/Library_Management_System_I_LIBRARY_MANAGEMENT_SYSTEM
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BUSINESS RULES & RELATIONSHIP

Entity	Relations	Entity	Business Rule
Author PK: AuthorID	1:M	BookCount PK, FK1: Category ID PK, FK2: AuthorID	<ul style="list-style-type: none"> • A author may have zero or many book count
BookCount PK: AuthorID PK: CategoryID	1:1	Author PK,FK: AuthorID	<ul style="list-style-type: none"> • A book count only have one author
BookCategory PK: CategoryID	1;1	BookCount PK, FK1: Category ID PK, FK2: AuthorID	<ul style="list-style-type: none"> • A book category has zero or many book count
BookCount PK: Author ID PK: CategoryID	1:1	BookCategory FK: CategoryID	<ul style="list-style-type: none"> • A book count has only one book category
Author PK: AuthorID	1:M	Book PK: BookID FK: AuthorID	<ul style="list-style-type: none"> • Each author may have one or many book
Book PK: BookID	1:M	Author PK:AuthorID	<ul style="list-style-type: none"> • A book has only one author
BookCategory PK: CategoryID	1:M	Book PK:BookID FK:AuthorID	<ul style="list-style-type: none"> • A book category may have one or many books
Book PK: BookID	1:1	BookCategory PK:CategoryID FK:BookID	<ul style="list-style-type: none"> • A book has only one category
Book PK: BookID	1:1	Borrower PK: BorrowerID FK: BookID	<ul style="list-style-type: none"> • A book can only have one Borrower
Borrower PK: BorrowerID	1:M	Book PK:BookID FK:BorrowerID	<ul style="list-style-type: none"> • A borrower can borrowers only one to three books
Book PK: BookID	1:1	Transaction PK:TransactionID FK:BookID	<ul style="list-style-type: none"> • A book can have only one transaction

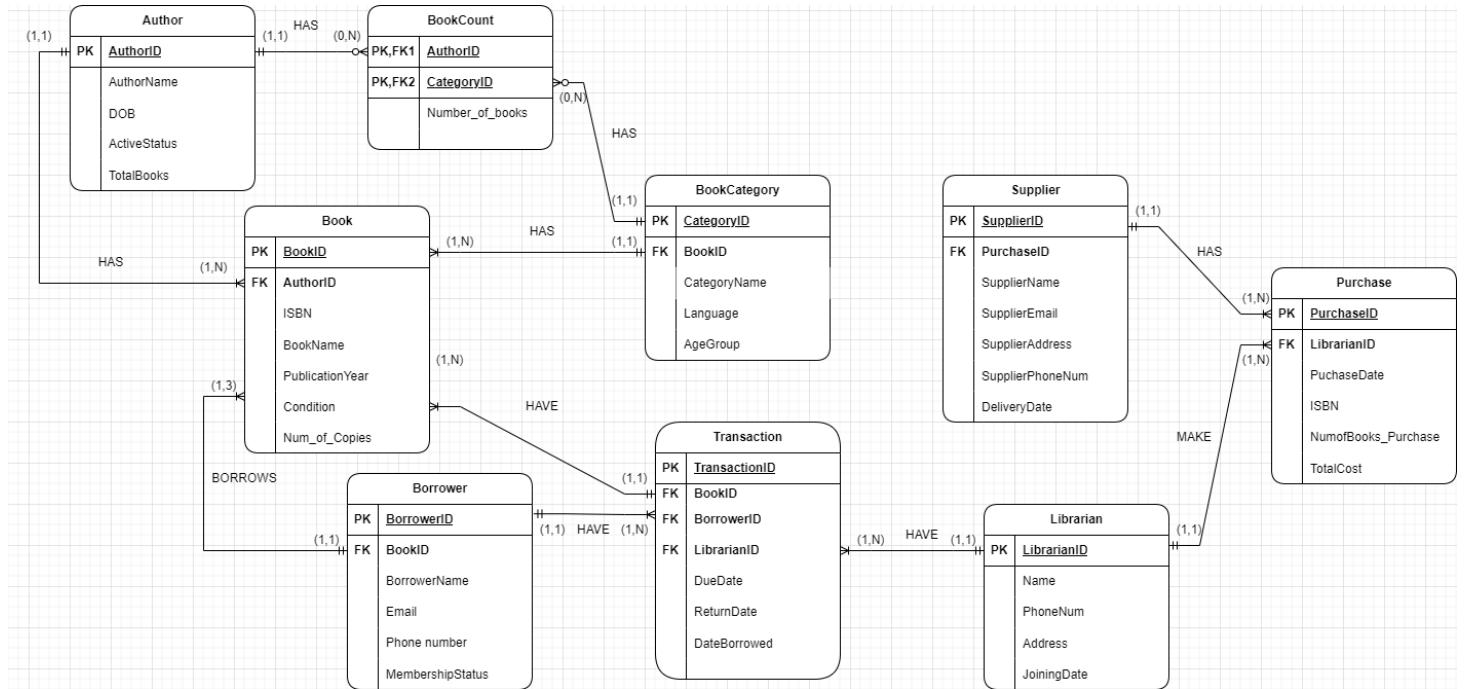
Transaction PK: TransactionID	1:1	Book PK: BookID	<ul style="list-style-type: none"> • A transaction may have one or many books
Borrower PK: BorrowerID	1:M	Transaction PK: TransactionID FK: BorrowerID	<ul style="list-style-type: none"> • A borrower can make one or many transaction
Transaction PK: TransactionID	1:M	Borrower PK: BorrowerID	<ul style="list-style-type: none"> • A transaction can only be made by one borrower only.
Transaction PK: TransactionID	1:1	Librarian PK: LibrarianID	<ul style="list-style-type: none"> • A transaction can only be made by a librarian
Librarian PK: LibrarianID	1:1	Transaction PK: TransactionID	<ul style="list-style-type: none"> • A librarian can make one or many transactions
Librarian PK: LibrarianID	1:1	Purchase PK: PurchaseID	<ul style="list-style-type: none"> • A librarian can make one or many purchase
Purchase PK: PurchaseID	1:1	Librarian PK: LibrarianID	<ul style="list-style-type: none"> • A purchase can only be made by a librarian
Purchase PK: PurchaseID	1:1	Supplier PK: SupplierID	<ul style="list-style-type: none"> • A purchase must be done to a supplier
Supplier PK: SupplierID	1:1	Purchase PK: PurchaseID	<ul style="list-style-type: none"> • A supplier can have one or more purchases

REQUIRED ENTITIES AND ATTRIBUTES

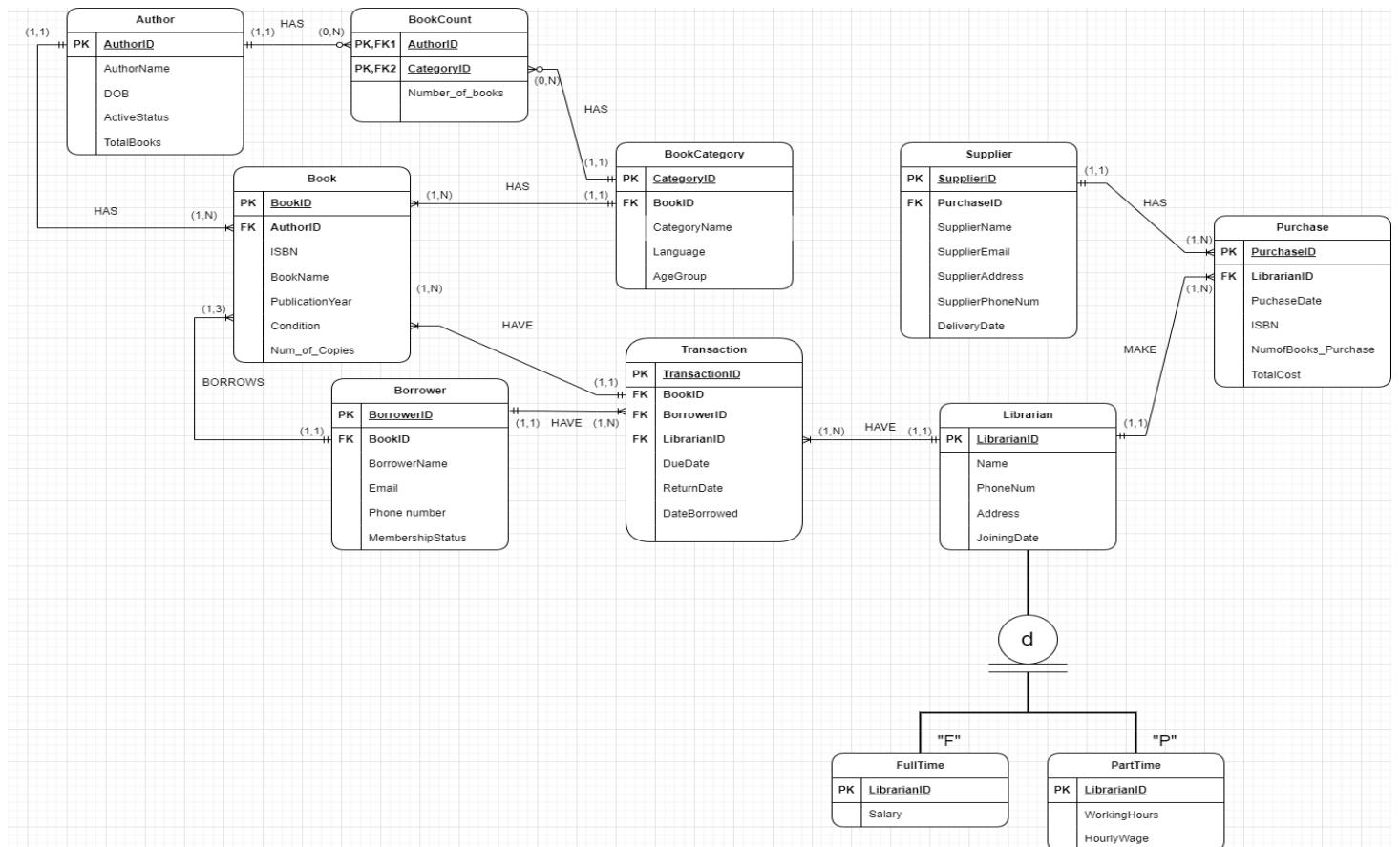
No.	Entity	Attributes	Primary Key
1.	Books	BookID AuthorID ISBN BookName PublicationYear conditionBook Num_of_copies	BookID
2.	Borrower	BorrowerID BookID BorrowerName Email PhoneNum, MembershipStat	BorrowerID
3.	Librarian	LibrarianID Name PhoneNum Address JoinningDate	LibrarianID
4.	purchases	PurchaseID LibrarianID PurchaseDate ISBN_new NumBooks_Purchase TotalCost	PurchaseID
5.	Supplier	SupplierID PurchaseID SupplierName SupplierEmail SupplierAddress SupplierPhoneNum DeliveryDate	SupplierID
6.	Author	AuthorId AuthorName DOB ActiveStatus TotalBooks	AuthorId

7.	Transactions	TransactionID BorrowerID LibrarianID dueDate DateBorrowed ReturnDate	TransactionID
8.	BookCategory	CategoryID BookID CategoryName Languages AgeGroup	CategoryID
9.	BookCount	AuthorID CategoryID Num_of_Books	AuthorID CategoryID

ENTITY RELATIONSHIP DIAGRAM



EXTENDED ENTITY RELATIONSHIP DIAGRAM



PART 2: SQL & NORMALISATION

DEPENDENCIES

Primary Key

TransactionID, BookID, BorrowerID, LibrarianID, PurchaseID, SupplierID, CategoryID, AuthorID

Partial Dependencies

BookID→AuthorID, CategoryID, BorrowerID
PurchaseID→SupplierID, LibrarianID

Transitive Dependencies

AuthorID→BookCount, Number_of_books

1NF

Transaction(TransactionID, BookID, BorrowerID, LibrarianID, PurchaseID, SupplierID,
CategoryID, AuthorID, DueDate, ReturnDate, DateBorrowed, Name, Address, PhoneNum,
JoiningDate, BorrowerName, Email, Phone_Number, MembershipStatus, ISBN, BookName,
PublicationYear, Condition, Num_of_Copies, AuthorName, DOB, ActiveStatus, TotalBooks,
Number_of_Books, CategoryName, Language, AgeGroup, SupplierName, SupplierEmail,
SupplierAdress, SupplierPhoneNum, DeliveryDate, PurchaseDate, ISBN,
NumofBooks_Purchase, TotalCost)

2NF

Transaction(TransactionID, BookID, BorrowerID, LibrarianID, DueDate, ReturnDate,
BorrowedDate)
Book(BookID, AuthorID, CategoryID, BorrowerID, ISBN, BookName, PublicationYear,
Condition, Num_of_Copies, AuthorName, DOB, ActiveStatus, TotalBooks, CategoryName,
Language, AgeGroup, BorrowerName, Email, Phone_Number, MembershipStatus)
Purchase(PurchaseID, LibrarianID, SupplierID, PurchaseDate, ISBN,
NumofBooks_Purchase, TotalCost, Name, PhoneNum, Address, JoiningDate, SupplierName,
SupplierEmail, SupplierAddress, SupplierPhoneNum, DeliveryDate)

3NF

Transaction(TransactionID, BookID, BorrowerID, LibrarianID, DueDate, ReturnDate, BorrowedDate)
Book(BookID, AuthorID, ISBN, BookName, PublicationYear, Condition, Num_of_Copies)
Borrower(BorrowerID, BookID, BorrowerName, Email, Phone_Number, MembershipStatus)
Author(AuthorID, AuthorName, DOB, ActiveStatus, TotalBooks)
Category(CategoryID, BookID, CategoryName, Language, AgeGroup)
BookCount(AuthorID, CategoryID, Number_of_Books)
Librarian(LibrarianID, Name, PhoneNum, Address, JoiningDate)
Purchase(PurchaseID, LibrarianID, PurchaseDate, ISBN, NumofBooks_Purchase, TotalCost)
Supplier(SupplierID, PurchaseID, SupplierName, SupplierEmail, SupplierAddress, SupplierPhoneNum, DeliveryDate)

SQL

Create Database

```
create database Library;  
use Library;
```

```
1 •  create database Library;  
2 •  use Library;  
3
```

Create Table Books

```
create table Books  
(  
BookID varchar (20) not null primary key,  
AuthorID varchar (20) not null,  
ISBN varchar(50) not null,  
BookName varchar(200) not null,  
PublicationYear int not null,  
conditionBook varchar(50) not null,  
Num_of_copies int not null  
);
```

```
4 •  create table Books  
5   ⊖ (  
6     BookID varchar (20) not null primary key,  
7     AuthorID varchar (20) not null,  
8     ISBN varchar(50) not null,  
9     BookName varchar(200) not null,  
10    PublicationYear int not null,  
11    conditionBook varchar(50) not null,  
12    Num_of_copies int not null  
13   );
```

Create Table Borrower

```
create table Borrower  
(  
BorrowerID varchar(20)not null primary key,  
BookID varchar(20) not null,  
BorrowerName varchar(200) not null,  
Email varchar(150) not null,  
PhoneNum varchar(25) not null,  
MembershipStat varchar(50) not null,  
foreign key (BookID) references Books(BookID)  
);
```

```

48 •   create table Borrower
49   (
50     BorrowerID varchar(20)not null primary key,
51     BookID varchar(20) not null,
52     BorrowerName varchar(200) not null,
53     Email varchar(150) not null,
54     PhoneNum varchar(25) not null,
55     MembershipStat varchar(50) not null,
56     foreign key (BookID) references Books(BookID)
57   );

```

Create Table Librarian

```

create table Librarian
(
    LibrarianID varchar(20) not null primary key,
    Name varchar(30) not null,
    PhoneNum varchar(30) not null,
    Address varchar(200) not null,
    JoinningDate date not null
);

```

```

71 •   create table Librarian
72   (
73     LibrarianID varchar(20) not null primary key,
74     Name varchar(30) not null,
75     PhoneNum varchar(30) not null,
76     Address varchar(200) not null,
77     JoinningDate date not null
78   );

```

Create Table Purchases

```

create table purchases
(
    PurchaseID varchar(20) not null primary key,
    LibrarianID varchar(20) not null,
    PurchaseDate date not null,
    ISBN_new varchar (30) not null,
    NumBooks_Purchase int not null,
    TotalCost float not null,
    foreign key (LibrarianID) references Librarian(LibrarianID)
);

```

```

92 •   create table purchases
93   (
94     PurchaseID varchar(20) not null primary key,
95     LibrarianID varchar(20) not null,
96     PurchaseDate date not null,
97     ISBN_new varchar (30) not null,
98     NumBooks_Purchase int not null,
99     TotalCost float not null,
100    foreign key (LibrarianID) references Librarian(LibrarianID)
101   );

```

Create Table Supplier

```
create table Supplier
(
SupplierID varchar(20)not null primary key,
PurchaseID varchar(20) not null,
SupplierName varchar(200) not null,
SupplierEmail varchar(150) not null,
SupplierAddress varchar(150) not null,
SupplierPhoneNum varchar(20) not null,
DeliveryDate date not null,
foreign key (PurchaseID) references purchases(PurchaseID)
);
```

```
115 •   create table Supplier
116   (
117     SupplierID varchar(20)not null primary key,
118     PurchaseID varchar(20) not null,
119     SupplierName varchar(200) not null,
120     SupplierEmail varchar(150) not null,
121     SupplierAddress varchar(150) not null,
122     SupplierPhoneNum varchar(20) not null,
123     DeliveryDate date not null,
124     foreign key (PurchaseID) references purchases(PurchaseID)
125   );
```

Create Table Author

```
create table Author
(
AuthorId varchar(20) not null primary key,
AuthorName varchar(40) not null,
DOB date not null,
ActiveStatus varchar(20) not null,
TotalBooks int not null
);
```

```
139 •   create table Author
140   (
141     AuthorId varchar(20) not null primary key,
142     AuthorName varchar(40) not null,
143     DOB date not null,
144     ActiveStatus varchar(20) not null,
145     TotalBooks int not null
146   );
```

Create Table BookCategory

```
create table BookCategory
(
CategoryID varchar (20) not null,
BookID varchar (20) not null,
CategoryName varchar (15) not null ,
Languages varchar (20) not null ,
AgeGroup varchar (20) not null,
foreign key (BookID) references Books(BookID)
);
```

```
192 •  create table BookCategory
193   (
194     CategoryID varchar (20) not null ,
195     BookID varchar (20) not null ,
196     CategoryName varchar (15) not null ,
197     Languages varchar (20) not null ,
198     AgeGroup varchar (20) not null ,
199     foreign key (BookID) references Books(BookID)
200   );
```

Create Table BookCount

```
create table BookCount
(
AuthorID varchar(20) not null,
CategoryID varchar(20) not null,
Num_of_Books int not null,
constraint BookCountID primary key (AuthorID,CategoryID)
);
```

```
234 •  create table BookCount
235   (
236     AuthorID varchar(20) not null,
237     CategoryID varchar(20) not null,
238     Num_of_Books int not null,
239     constraint BookCountID primary key (AuthorID,CategoryID)
240   );
```

Create Table Transactions

```
create table Transactions
(
    TransactionID varchar (15) not null primary key,
    BorrowerID varchar (20) not null ,
    LibrarianID varchar (20)not null,
    dueDate date not null,
    DateBorrowed date not null,
    ReturnDate date ,
    foreign key (BorrowerID) references Borrower(BorrowerID),
    foreign key (LibrarianID) references Librarian(LibrarianID)
);
```

```
169 •   create table Transactions
170   (
171     TransactionID varchar (15) not null primary key,
172     BorrowerID varchar (20) not null ,
173     LibrarianID varchar (20)not null,
174     dueDate date not null,
175     DateBorrowed date not null,
176     ReturnDate date ,
177     foreign key (BorrowerID) references Borrower(BorrowerID),
178     foreign key (LibrarianID) references Librarian(LibrarianID)
179   );
```

INSERT DATA

INSERT BOOKS

INSERT INTO Books VALUES

```
('BK001','A006','978-1-234567-91-3','Echoes of Tomorrow','2019','Excellent','4'),
('BK002','A002','951-4-567890-10-1','The Gruffalo','2017','Fair','3'),
('BK003','A003','978-0-111111-11-1','Whispers of the Heart','2018','Good','2'),
('BK004','A004','977-1-222222-22-4','The Cat in the Hat','2020','Excellent','2'),
('BK005','A002','978-4-567890-12-5','Eternal Tides','2022','Good','3'),
('BK006','A006','978-1-234567-89-0','Whispers in the Wind','2015','Good','5'),
('BK007','A005','979-6-678901-21-0','Anak Yang Berani','2017','Fair','3'),
('BK008','A008','978-7-890123-45-6','The Quantum Paradox','2021','Excellent','4'),
('BK009','A006','978-1-234567-93-7','Celestial Chronicles','2022','Excellent','1'),
('BK010','A001','978-2-345678-90-1','Ripples of Time','2016','Fair','5'),
('BK011','A010','978-3-456789-01-2','Whispers of the Moon','2017','Good','4'),
('BK012','A001','978-2-345678-92-5','Eternal Reflections','2020','Excellent','3'),
('BK013','A010','978-3-456789-04-3','Beyond the Stars','2023','Excellent','1'),
('BK014','A010','978-3-456789-02-9','Shadows Across Time','2019','Good','3'),
('BK015','A003','978-0-111111-13-5','Eternal Echoes','2021','Good','2'),
('BK016','A007','993-4-555555-51-3','Monyet dan Gajah Yang Baik Hati','2018','Fair','3'),
```

('BK017','A008','978-3-444444-41-2','Whispers of the Past','2017','Fair','2'),
 ('BK018','A008','978-3-444444-43-6','Eternal Chronicles','2021','Good','2'),
 ('BK019','A009','918-7-888888-82-9','Nada Cinta Sementara','2020','Good','3'),
 ('BK020','A009','918-7-888888-81-2','Kampung Girl','2018','Good','2'),
 ('BK021','A011','945-1-234567-94-5','The Magical Garden Adventure','2022','Good','3'),
 ('BK022','A012','998-3-456789-01-2','Hikayat Zara dan Bunga-Bunga
Ajaib','2021','Good','3'),
 ('BK023','A012','998-3-456789-06-7','Zain dan Kisah-Kisah Haiwan
Peliharaan','2023','EXCELLENT','2'),
 ('BK024','A013','978-4-567890-15-0','Senandung Malam','2020','Good','2'),
 ('BK025','A013','968-4-567890-10-1','Dunia Yang Hilang','2018','Fair','4'),
 ('BK026','A014','948-5-678901-25-8','Cinta di Tepi Pantai','2019','Fair','3'),
 ('BK027','A015','998-6-789012-30-7','Langit Senja','2016','Fair','4'),
 ('BK028','A015','998-6-789012-35-2','Cinta Senakal Dia','2018','Fair','4'),
 ('BK029','A016','938-7-890123-40-2','Detik','2020','Good','2'),
 ('BK030','A017','928-8-901234-55-4','Sedetik Cinta','2020','Good','3');

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16 • INSERT INTO Books VALUES
17   ('BK001', 'A006', '978-1-234567-91-3', 'Echoes of Tomorrow', '2019', 'Excellent', '4'),
18   ('BK002', 'A002', '951-4-567890-10-1', 'The Gruffalo', '2017', 'Fair', '3'),
19   ('BK003', 'A003', '978-0-111111-11-1', 'Whispers of the Heart', '2018', 'Good', '2'),
20   ('BK004', 'A004', '977-1-222222-22-4', 'The Cat in the Hat', '2020', 'Excellent', '2'),
21   ('BK005', 'A002', '978-4-567890-12-5', 'Eternal Tides', '2022', 'Good', '3'),
22   ('BK006', 'A006', '978-1-234567-89-0', 'Whispers in the Wind', '2015', 'Good', '5'),
23   ('BK007', 'A005', '979-6-678901-21-0', 'Anak Yang Berani', '2017', 'Fair', '3'),
24   ('BK008', 'A008', '978-7-890123-45-6', 'The Quantum Paradox', '2021', 'Excellent', '4'),
25   ('BK009', 'A006', '978-1-234567-93-7', 'Celestial Chronicles', '2022', 'Excellent', '1'),
26   ('BK010', 'A001', '978-2-345678-90-1', 'Ripples of Time', '2016', 'Fair', '5'),
27   ('BK011', 'A010', '978-3-456789-01-2', 'Whispers of the Moon', '2017', 'Good', '4'),
28   ('BK012', 'A001', '978-2-345678-92-5', 'Eternal Reflections', '2020', 'Excellent', '3'),
29   ('BK013', 'A010', '978-3-456789-04-3', 'Beyond the Stars', '2023', 'Excellent', '1'),
30   ('BK014', 'A010', '978-3-456789-02-9', 'Shadows Across Time', '2019', 'Good', '3'),
31   ('BK015', 'A003', '978-0-111111-13-5', 'Eternal Echoes', '2021', 'Good', '2'),
32   ('BK016', 'A007', '993-4-555555-51-3', 'Monyet dan Gajah Yang Baik Hati', '2018', 'Fair', '3'),
33   ('BK017', 'A008', '978-3-444444-41-2', 'Whispers of the Past', '2017', 'Fair', '2'),
34   ('BK018', 'A008', '978-3-444444-43-6', 'Eternal Chronicles', '2021', 'Good', '2'),
35   ('BK019', 'A009', '918-7-888888-82-9', 'Nada Cinta Sementara', '2020', 'Good', '3'),
36   ('BK020', 'A009', '918-7-888888-81-2', 'Kampung Girl', '2018', 'Good', '2'),

37   ('BK021', 'A011', '945-1-234567-94-5', 'The Magical Garden Adventure', '2022', 'Good', '3'),
38   ('BK022', 'A012', '998-3-456789-01-2', 'Hikayat Zara dan Bunga-Bunga Ajaib', '2021', 'Good', '3'),
39   ('BK023', 'A012', '998-3-456789-06-7', 'Zain dan Kisah-Kisah Haiwan Peliharaan', '2023', 'EXCELLENT', '2'),
40   ('BK024', 'A013', '978-4-567890-15-0', 'Senandung Malam', '2020', 'Good', '2'),
41   ('BK025', 'A013', '968-4-567890-10-1', 'Dunia Yang Hilang', '2018', 'Fair', '4'),
42   ('BK026', 'A014', '948-5-678901-25-8', 'Cinta di Tepi Pantai', '2019', 'Fair', '3'),
43   ('BK027', 'A015', '998-6-789012-30-7', 'Langit Senja', '2016', 'Fair', '4'),
44   ('BK028', 'A015', '998-6-789012-35-2', 'Cinta Senakal Dia', '2018', 'Fair', '4'),
45   ('BK029', 'A016', '938-7-890123-40-2', 'Detik', '2020', 'Good', '2'),
46   ('BK030', 'A017', '928-8-901234-55-4', 'Sedetik Cinta', '2020', 'Good', '3');
  
```

INSERT BORROWER

INSERT INTO Borrower VALUES

```
('B001', 'BK001', 'John Doe', 'john.doe@email.com', '60-15578549', 'Members'),  
('B002', 'BK002', 'Jane Smith', 'jane.smith@email.com', '60-12388754', 'Non-Members'),  
('B003', 'BK014', 'Bob Johnson', 'bob.johnson@email.com', '60-18997658', 'Members'),  
('B004', 'BK004', 'Alice Williams', 'alice.williams@email.com', '60-14776543',  
'Non-Members'),  
('B005', 'BK005', 'Charlie Brown', 'charlie.brown@email.com', '60-19994562', 'Members'),  
('B006', 'BK028', 'Husna Shafiqah', 'husna@email.com', '60-19857327', 'Non-Members'),  
('B007', 'BK007', 'IMAAN BALQIS', 'imaanBalqis@email.com', '60-12985776', 'Members'),  
('B008', 'BK015', 'Grace Lee', 'grace.lee@email.com', '60-18997652', 'Non-Members'),  
('B009', 'BK009', 'Henry Jones', 'henry.jones@email.com', '60-13770642', 'Members'),  
('B010', 'BK016', 'Ivy Chen', 'ivy.chen@email.com', '60-12877963', 'Non-Members');
```

```
59 • INSERT INTO Borrower VALUES  
60 ('B001', 'BK001', 'John Doe', 'john.doe@email.com', '60-15578549', 'Members'),  
61 ('B002', 'BK002', 'Jane Smith', 'jane.smith@email.com', '60-12388754', 'Non-Members'),  
62 ('B003', 'BK014', 'Bob Johnson', 'bob.johnson@email.com', '60-18997658', 'Members'),  
63 ('B004', 'BK004', 'Alice Williams', 'alice.williams@email.com', '60-14776543', 'Non-Members'),  
64 ('B005', 'BK005', 'Charlie Brown', 'charlie.brown@email.com', '60-19994562', 'Members'),  
65 ('B006', 'BK028', 'Husna Shafiqah', 'husna@email.com', '60-19857327', 'Non-Members'),  
66 ('B007', 'BK007', 'IMAAN BALQIS', 'imaanBalqis@email.com', '60-12985776', 'Members'),  
67 ('B008', 'BK015', 'Grace Lee', 'grace.lee@email.com', '60-18997652', 'Non-Members'),  
68 ('B009', 'BK009', 'Henry Jones', 'henry.jones@email.com', '60-13770642', 'Members'),  
69 ('B010', 'BK016', 'Ivy Chen', 'ivy.chen@email.com', '60-12877963', 'Non-Members');  
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INSERT LIBRARIAN

INSERT INTO Librarian values

```
('L001','AMIRA AZIZ','019-3574872','LOT 7, TAMAN PERDANA, KUANTAN,  
PAHANG','2022-01-04'),  
('L002','MAISARAH NORDIN','018-3947635','NO 23, TAMAN DELEK, INDERA  
MAHKOTA, PAHANG','2021-10-01'),  
('L003','WAHIDA NADIN','012-8476359','LOT 1, TAMAN MAHKOTA  
HEIGHTS,GAMBANG, PAHANG','2023-04-01'),  
('L004','NADHIRAH MUIZZUDIN','016-4983720','LOT 14,TAMAN PERDANA, SRI  
JAYA, PAHANG','2022-03-01'),  
('L005','HAYYAT HAFIZI','011-8394763','LOT 6, TAMAN TAS, KUANTAN,  
PAHANG','2023-04-05'),  
('L006','QUE HAYDAR','018-9473562','LOT 5, TAMAN TAS, GAMBANG,  
PAHANG','2022-01-01'),  
('L007','MUAZZ RYZAL','012-7480937','NO 12, KAMPUNG PINGGIRIAN, KUANTAN,  
PAHANG','2021-01-01'),  
('L008','FAIZUL HUSSEIN','019-8367826','NO 66, KAMPUNG PERAMU, KUANTAN,  
PAHANG','2021-02-01'),
```

('L009','LUQMAN HAKIMI','017-6839982','LOT 9, TAMAN INDAH, GAMBANG, PAHANG','2020-01-07'),
 ('L010','DINI FAIZUDIN','012-8964739','NO 4, KAMPUNG TOK, GAMBANG, PAHANG','2020-03-01');

```

80 • INSERT INTO Librarian values
81   ('L001','AMIRA AZIZ','019-3574872','LOT 7, TAMAN PERDANA, KUANTAN, PAHANG','2022-01-04'),
82   ('L002','MAISARAH NORDIN','018-3947635','NO 23, TAMAN DELEK, INDERA MAHKOTA, PAHANG','2021-10-01'),
83   ('L003','WAHIDA NADIN','012-8476359','LOT 1, TAMAN MAHKOTA HEIGHTS,GAMBANG, PAHANG','2023-04-01'),
84   ('L004','NADHIRAH MUIZZUDIN','016-4983720','LOT 14,TAMAN PERDANA, SRI JAYA, PAHANG','2022-03-01'),
85   ('L005','HAYYAT HAFIZI','011-8394763','LOT 6, TAMAN TAS, KUANTAN, PAHANG','2023-04-05'),
86   ('L006','QUE HAYDAR','018-9473562','LOT 5, TAMAN TAS, GAMBANG, PAHANG','2022-01-01'),
87   ('L007','MUAZZ RYZAL','012-7480937','NO 12, KAMPUNG PINGGIRIAN, KUANTAN, PAHANG','2021-01-01'),
88   ('L008','FAIZUL HUSSEIN','019-8367826','NO 66, KAMPUNG PERAMU, KUANTAN, PAHANG','2021-02-01'),
89   ('L009','LUQMAN HAKIMI','017-6839982','LOT 9, TAMAN INDAH, GAMBANG, PAHANG','2020-01-07'),
90   ('L010','DINI FAIZUDIN','012-8964739','NO 4, KAMPUNG TOK, GAMBANG, PAHANG','2020-03-01');

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INSERT PURCHASES

INSERT INTO purchases VALUES
 ('P001','L001','2022-10-22','978-2-345678-92-5','3','150.20'),
 ('P002','L002','2022-11-30','978-1-222222-22-4','2','120.10'),
 ('P003','L003','2022-11-25','978-4-567890-12-5','3','200.30'),
 ('P004','L004','2022-12-01','978-7-890123-45-6','3','175.00'),
 ('P005','L005','2022-11-30','978-1-234567-93-7','1','65.90'),
 ('P006','L006','2022-12-30','978-0-111111-13-5','2','110.30'),
 ('P007','L007','2022-12-01','978-3-444444-43-6','2','125.50'),
 ('P008','L008','2023-01-03','978-7-888888-82-9','3','180.30'),
 ('P009','L009','2022-12-10','978-2-345678-90-1','2','98.90'),
 ('P010','L010','2022-12-25','978-1-234567-91-3','1','35.30');

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103 • INSERT INTO purchases VALUES
104   ('P001','L001','2022-10-22','978-2-345678-92-5','3','150.20'),
105   ('P002','L002','2022-11-30','978-1-222222-22-4','2','120.10'),
106   ('P003','L003','2022-11-25','978-4-567890-12-5','3','200.30'),
107   ('P004','L004','2022-12-01','978-7-890123-45-6','3','175.00'),
108   ('P005','L005','2022-11-30','978-1-234567-93-7','1','65.90'),
109   ('P006','L006','2022-12-30','978-0-111111-13-5','2','110.30'),
110   ('P007','L007','2022-12-01','978-3-444444-43-6','2','125.50'),
111   ('P008','L008','2023-01-03','978-7-888888-82-9','3','180.30'),
112   ('P009','L009','2022-12-10','978-2-345678-90-1','2','98.90'),
113   ('P010','L010','2022-12-25','978-1-234567-91-3','1','35.30');

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INSERT SUPPLIER

INSERT INTO Supplier VALUES

('S001', 'P001', 'Mehraj Book Distributors', 'mehraj@mail.com', '10, Pandan Jaya,Selangor', '03-98276431', '2020-11-10'),
('S002', 'P002', 'Book Chanel', 'bookChanel@mail.com', '45, Jalan Nilam 1/2, Shah Alam, Selangor', '03-4377 8094', '2021-01-15'),
('S003', 'P003', 'MH Book Distributors', 'MHBook@mail.com', 'Jalan BP 6/7,Puchong, Selangor', '03-87619943', '2023-01-20'),
('S004', 'P004', 'IBS BUKU SDN BHD', 'IbsBuku@mail.com', 'Unit B3-06 Jalan Kemajuan,Petaling Jaya, Selangor', '03-99865541', '2021-12-01'),
('S005', 'P005', 'Edukid Distributors Sdn Bhd', 'efgsuppliers@mail.com', 'Jalan Mahagoni 9 Ligamas,Batang Kali, Selangor', '03-22389176', '2023-04-03'),
('S006', 'P006', 'Union Book Suppliers', 'unionBook@mail.com', 'Jln Haji Manan,Kluang, Johor', '03-33879421', '2022-01-05'),
('S007', 'P007', 'Pujaan Distributors', 'pujaan@mail.com', 'Medan Mewah,Muadzam Shah, Pahang', '03-98768873', '2021-12-10'),
('S008', 'P008', 'Chiang Suppliers', 'chiang@mail.com', 'Jalan Kesidang 3/6, Melaka', '03-11786287', '2021-02-15'),
('S009', 'P009', 'Taurus Suppliers', 'taurusuppliers@mail.com', 'Jalan PBS 14/4,Seri Kembangan, Selangor', '03-99076198', '2020-04-20'),
('S010', 'P010', 'JKL Suppliers', 'jklsuppliers@mail.com', 'Jalan Keluli 15/16,Shah Alam, Selangor', '03-77654109', '2022-10-25');

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127 • INSERT INTO Supplier VALUES
128 ('S001', 'P001', 'Mehraj Book Distributors', 'mehraj@mail.com', '10, Pandan Jaya,Selangor', '03-98276431', '2020-11-10'),
129 ('S002', 'P002', 'Book Chanel', 'bookChanel@mail.com', '45, Jalan Nilam 1/2, Shah Alam, Selangor', '03-4377 8094', '2021-01-15'),
130 ('S003', 'P003', 'MH Book Distributors', 'MHBook@mail.com', 'Jalan BP 6/7,Puchong, Selangor', '03-87619943', '2023-01-20'),
131 ('S004', 'P004', 'IBS BUKU SDN BHD', 'IbsBuku@mail.com', 'Unit B3-06 Jalan Kemajuan,Petaling Jaya, Selangor', '03-99865541', '2021-12-01'),
132 ('S005', 'P005', 'Edukid Distributors Sdn Bhd', 'efgsuppliers@mail.com', 'Jalan Mahagoni 9 Ligamas,Batang Kali, Selangor', '03-22389176', '2023-04-03'),
133 ('S006', 'P006', 'Union Book Suppliers', 'unionBook@mail.com', 'Jln Haji Manan,Kluang, Johor', '03-33879421', '2022-01-05'),
134 ('S007', 'P007', 'Pujaan Distributors', 'pujaan@mail.com', 'Medan Mewah,Muadzam Shah, Pahang', '03-98768873', '2021-12-10'),
135 ('S008', 'P008', 'Chiang Suppliers', 'chiang@mail.com', 'Jalan Kesidang 3/6, Melaka', '03-11786287', '2021-02-15'),
136 ('S009', 'P009', 'Taurus Suppliers', 'taurusuppliers@mail.com', 'Jalan PBS 14/4,Seri Kembangan, Selangor', '03-99076198', '2020-04-20'),
137 ('S010', 'P010', 'JKL Suppliers', 'jklsuppliers@mail.com', 'Jalan Keluli 15/16,Shah Alam, Selangor', '03-77654109', '2022-10-25');
```

INSERT AUTHOR

INSERT INTO Author VALUES

('A001','JONATHAN M.ANDERSON','1983-02-14','Still writing','7'),
('A002','JULIA DONALDSON','1963-09-03','Retired','21'),
('A003','ALEXANDRA M.TAYLOR','1997-02-12','Still writing','6'),
('A004','DR SESUSS','1989-10-01','Still writing','15'),
('A005','MURAD ARSHAD','1972-09-14','Retired','10'),
('A006','JENNIFER A.THOMPSON','1956-07-15','Retired','23'),
('A007','MUSTARA GANTI','1998-04-03','Still writing','8'),
('A008','MADISON R.BROOKS','1982-03-12','Still writing','14'),
('A009','AULIA IMAN','1993-10-07','Still writing','3'),

('A010','OLIVIA R.MITCHELL','1990-03-17','Still writing','6'),
 ('A011','LILY M.THOMPSON','1990-05-28','Still writing','8'),
 ('A012','AMIRAH ZAINAB RAHMAN','1978-05-24','Still writing','10'),
 ('A013','FARIDAH ABDULLAH','1989-12-08','Still writing','20'),
 ('A014','MOHD AZLAN YUSOF','1997-10-02','Still writing','15'),
 ('A015','HIDAYAH NYR YUSOF','1970-02-01','Retired','15'),
 ('A016','MUDZAFAR BAHARUDDIN','1985-08-01','Still writing','10'),
 ('A017','ELISYA ALLISA','1980-02-03','Retired','10');

```
148 •  INSERT INTO Author VALUES
149      ('A001', 'JONATHAN M.ANDERSON', '1983-02-14', 'Still writing', '7'),
150      ('A002', 'JULIA DONALDSON', '1963-09-03', 'Retired', '21'),
151      ('A003', 'ALEXANDRA M.TAYLOR', '1997-02-12', 'Still writing', '6'),
152      ('A004', 'DR SESUSS', '1989-10-01', 'Still writing', '15'),
153      ('A005', 'MURAD ARSHAD', '1972-09-14', 'Retired', '10'),
154      ('A006', 'JENNIFER A.THOMPSON', '1956-07-15', 'Retired', '23'),
155      ('A007', 'MUSTARA GANTI', '1998-04-03', 'Still writing', '8'),
156      ('A008', 'MADISON R.BROOKS', '1982-03-12', 'Still writing', '14'),
157      ('A009', 'AULIA IMAN', '1993-10-07', 'Still writing', '3'),
158      ('A010', 'OLIVIA R.MITCHELL', '1990-03-17', 'Still writing', '6'),
159      ('A011', 'LILY M.THOMPSON', '1990-05-28', 'Still writing', '8'),
160      ('A012', 'AMIRAH ZAINAB RAHMAN', '1978-05-24', 'Still writing', '10'),
161      ('A013', 'FARIDAH ABDULLAH', '1989-12-08', 'Still writing', '20'),
162      ('A014', 'MOHD AZLAN YUSOF', '1997-10-02', 'Still writing', '15'),
163      ('A015', 'HIDAYAH NYR YUSOF', '1970-02-01', 'Retired', '15'),
164      ('A016', 'MUDZAFAR BAHARUDDIN', '1985-08-01', 'Still writing', '10'),
165      ('A017', 'ELISYA ALLISA', '1980-02-03', 'Retired', '10');
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INSERT TRANSACTION

insert into Transactions values

('T001', 'B001', 'L001', '2021-02-01', '2021-01-02', '2021-01-21'),
 ('T002', 'B002', 'L002', '2021-08-01', '2021-07-02', '2021-07-25'),
 ('T003', 'B003', 'L003', '2021-10-08', '2021-09-07', '2021-09-28'),
 ('T004', 'B004', 'L004', '2021-12-18', '2021-11-17', '2021-11-30'),
 ('T005', 'B005', 'L005', '2021-03-06', '2021-02-05', '2021-03-05'),
 ('T006', 'B006', 'L006', '2022-10-17', '2022-09-16', '2022-09-25'),
 ('T007', 'B007', 'L007', '2022-07-18', '2022-06-17', '2022-06-29'),
 ('T008', 'B008', 'L008', '2023-04-06', '2023-03-05', '2023-03-30'),
 ('T009', 'B009', 'L009', '2024-01-26', '2023-12-25', null),
 ('T010', 'B010', 'L010', '2024-01-23', '2023-12-22',null);

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181 •    insert into Transactions values
182     ('T001', 'B001', 'L001', '2021-02-01', '2021-01-02', '2021-01-21'),
183     ('T002', 'B002', 'L002', '2021-08-01', '2021-07-02', '2021-07-25'),
184     ('T003', 'B003', 'L003', '2021-10-08', '2021-09-07', '2021-09-28'),
185     ('T004', 'B004', 'L004', '2021-12-18', '2021-11-17', '2021-11-30'),
186     ('T005', 'B005', 'L005', '2021-03-06', '2021-02-05', '2021-03-05'),
187     ('T006', 'B006', 'L006', '2022-10-17', '2022-09-16', '2022-09-25'),
188     ('T007', 'B007', 'L007', '2022-07-18', '2022-06-17', '2022-06-29'),
189     ('T008', 'B008', 'L008', '2023-04-06', '2023-03-05', '2023-03-30'),
190     ('T009', 'B009', 'L009', '2024-01-26', '2023-12-25', null),
191     ('T010', 'B010', 'L010', '2024-01-23', '2023-12-22',null);

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INSERT BOOKCATEGORY

insert into BookCategory values
 ('C007', 'BK001', 'Poetry', 'English', 'Adults'),
 ('C006', 'BK002', 'Adventure', 'English', 'Kids'),
 ('C002', 'BK003', 'Fiction', 'English', 'Adults'),
 ('C006', 'BK004', 'Adventure', 'English', 'Kids'),
 ('C002', 'BK005', 'Fiction', 'English', 'Adults'),
 ('C001', 'BK006', 'Romance', 'English', 'Adults'),
 ('C004', 'BK007', 'Fantasy', 'Bahasa Melayu', 'Kids'),
 ('C005', 'BK008', 'Sci-Fi', 'English', 'Adults'),
 ('C001', 'BK009', 'Romance', 'English', 'Adults'),
 ('C002', 'BK010', 'Fiction', 'English', 'Adults'),
 ('C001', 'BK011', 'Romance', 'English', 'Adults'),
 ('C003', 'BK012', 'Mystery', 'English', 'Adults'),
 ('C006', 'BK013', 'Adventure', 'English', 'Adults'),
 ('C003', 'BK014', 'Mystery', 'English', 'Adults'),
 ('C002', 'BK015', 'Fiction', 'English', 'Adults'),
 ('C004', 'BK016', 'Fantasy', 'Bahasa Melayu', 'Kids'),
 ('C001', 'BK017', 'Romance', 'English', 'Adults'),
 ('C007', 'BK018', 'Poetry', 'English', 'Adults'),
 ('C001', 'BK019', 'Romance', 'Bahasa Melayu', 'Adults'),
 ('C001', 'BK020', 'Romance', 'Bahasa Melayu', 'Adults'),
 ('C006', 'BK021', 'Adventure', 'English', 'Kids'),
 ('C003', 'BK022', 'Mystery', 'Bahasa Melayu', 'Kids'),
 ('C002', 'BK023', 'Fantasy', 'Bahasa Melayu', 'Kids'),
 ('C003', 'BK024', 'Mystery', 'Bahasa Melayu', 'Adults'),
 ('C005', 'BK025', 'Sci-Fi', 'Bahasa Melayu', 'Adults'),
 ('C001', 'BK026', 'Romance', 'Bahasa Melayu', 'Adults'),
 ('C006', 'BK027', 'Adventure', 'Bahasa Melayu', 'Adults'),
 ('C004', 'BK028', 'Fantasy', 'Bahasa Melayu', 'Adults'),
 ('C002', 'BK029', 'Fiction', 'Bahasa Melayu', 'Adults'),
 ('C007', 'BK030', 'Poetry', 'Bahasa Melayu', 'Adults');

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202 • insert into BookCategory values
203     ('C007', 'BK001', 'Poetry', 'English', 'Adults'),
204     ('C006', 'BK002', 'Adventure', 'English', 'Kids'),
205     ('C002', 'BK003', 'Fiction', 'English', 'Adults'),
206     ('C006', 'BK004', 'Adventure', 'English', 'Kids'),
207     ('C002', 'BK005', 'Fiction', 'English', 'Adults'),
208     ('C001', 'BK006', 'Romance', 'English', 'Adults'),
209     ('C004', 'BK007', 'Fantasy', 'Bahasa Melayu', 'Kids'),
210     ('C005', 'BK008', 'Sci-Fi', 'English', 'Adults'),
211     ('C001', 'BK009', 'Romance', 'English', 'Adults'),
212     ('C002', 'BK010', 'Fiction', 'English', 'Adults'),
213     ('C001', 'BK011', 'Romance', 'English', 'Adults'),
214     ('C003', 'BK012', 'Mystery', 'English', 'Adults'),
215     ('C006', 'BK013', 'Adventure', 'English', 'Adults'),
216     ('C003', 'BK014', 'Mystery', 'English', 'Adults'),
217     ('C002', 'BK015', 'Fiction', 'English', 'Adults'),
218     ('C004', 'BK016', 'Fantasy', 'Bahasa Melayu', 'Kids'),
219     ('C001', 'BK017', 'Romance', 'English', 'Adults'),
220     ('C007', 'BK018', 'Poetry', 'English', 'Adults'),
221     ('C001', 'BK019', 'Romance', 'Bahasa Melayu', 'Adults'),
222     ('C001', 'BK020', 'Romance', 'Bahasa Melayu', 'Adults'),
223     ('C006', 'BK021', 'Adventure', 'English', 'Kids'),
224     ('C003', 'BK022', 'Mystery', 'Bahasa Melayu', 'Kids'),
225     ('C002', 'BK023', 'Fantasy', 'Bahasa Melayu', 'Kids'),
226     ('C003', 'BK024', 'Mystery', 'Bahasa Melayu', 'Adults'),
227     ('C005', 'BK025', 'Sci-Fi', 'Bahasa Melayu', 'Adults'),
228     ('C001', 'BK026', 'Romance', 'Bahasa Melayu', 'Adults'),
229     ('C006', 'BK027', 'Adventure', 'Bahasa Melayu', 'Adults'),
230     ('C004', 'BK028', 'Fantasy', 'Bahasa Melayu', 'Adults'),
231     ('C002', 'BK029', 'Fiction', 'Bahasa Melayu', 'Adults'),
232     ('C007', 'BK030', 'Poetry', 'Bahasa Melayu', 'Adults');

```

INSERT BOOKCOUNT

insert into BookCount values
 ('A001','C002','1'),
 ('A001','C003','1'),
 ('A002','C006','1'),
 ('A003','C002','2'),
 ('A004','C006','1'),
 ('A005','C002','1'),
 ('A005','C007','1'),
 ('A006','C001','2'),
 ('A006','C007','1'),
 ('A007','C004','1'),
 ('A008','C005','1'),

```
('A008','C001','1'),
('A008','C007','1'),
('A009','C001','2'),
('A010','C006','1'),
('A010','C003','1'),
('A011','C001','1'),
('A011','C006','1'),
('A012','C003','1'),
('A012','C002','1'),
('A013','C003','1'),
('A013','C005','1'),
('A014','C001','1'),
('A015','C006','1'),
('A015','C004','1'),
('A016','C002','1'),
('A017','C007','1');
```

```
242 •      insert into BookCount values
243      ('A001','C002','1'),
244      ('A001','C003','1'),
245      ('A002','C006','1'),
246      ('A003','C002','2'),
247      ('A004','C006','1'),
248      ('A005','C002','1'),
249      ('A005','C007','1'),
250      ('A006','C001','2'),
251      ('A006','C007','1'),
252      ('A007','C004','1'),
253      ('A008','C005','1'),
254      ('A008','C001','1'),
255      ('A008','C007','1'),
256      ('A009','C001','2'),
257      ('A010','C006','1'),
258      ('A010','C003','1'),
259      ('A011','C001','1'),
260      ('A011','C006','1'),
261      ('A012','C003','1'),
262      ('A012','C002','1'),
263      ('A013','C003','1'),
264      ('A013','C005','1'),
265      ('A014','C001','1'),
266      ('A015','C006','1'),
267      ('A015','C004','1'),
268      ('A016','C002','1'),
269      ('A017','C007','1');
```

PRINT CONTENT (using select * from)

Print Books

Select * from Books;

	BookID	AuthorID	ISBN	BookName	PublicationYear	conditionBook	Num_of_copies
	BK010	A001	978-2-345678-90-1	Ripples of Time	2016	Fair	5
	BK011	A010	978-3-456789-01-2	Whispers of the Moon	2017	Good	4
	BK012	A001	978-2-345678-92-5	Eternal Reflections	2020	Excellent	3
	BK013	A010	978-3-456789-04-3	Beyond the Stars	2023	Excellent	1
	BK014	A010	978-3-456789-02-9	Shadows Across Time	2019	Good	3
	BK015	A003	978-0-111111-13-5	Eternal Echoes	2021	Good	2
	BK016	A007	993-4-555555-51-3	Monyet dan Gajah Ya...	2018	Fair	3
	BK017	A008	978-3-444444-41-2	Whispers of the Past	2017	Fair	2
	BK018	A008	978-3-444444-43-6	Eternal Chronicles	2021	Good	2
	BK019	A009	918-7-888888-82-9	Nada Cinta Semalam	2020	Good	3
	BK020	A009	918-7-888888-81-2	Kampung Girl	2018	Good	2
	BK021	A011	945-1-234567-94-5	The Magical Garden A...	2022	Good	3
	BK022	A012	998-3-456789-01-2	Hikayat Zara dan Bun...	2021	Good	3
	BK023	A012	998-3-456789-06-7	Zain dan Kisah-Kisah ...	2023	EXCELLENT	2
	BK024	A013	978-4-567890-15-0	Senandung Malam	2020	Good	2
	BK025	A013	968-4-567890-10-1	Dunia Yang Hilang	2018	Fair	4
	BK026	A014	948-5-678901-25-8	Cinta di Tepi Pantai	2019	Fair	3
	BK027	A015	998-6-789012-30-7	Langit Senja	2016	Fair	4
	BK028	A015	998-6-789012-35-2	Cinta Senakal Dia	2018	Fair	4
	BK029	A016	938-7-890123-40-2	Detik	2020	Good	2
	BK030	A017	928-8-901234-55-4	Sedetik Cinta	2020	Good	3

Print Borrower

Select * from Borrower;

	BorrowerID	BookID	BorrowerName	Email	PhoneNum	MembershipStat
▶	B001	BK001	John Doe	john.doe@email.com	60-15578549	Members
	B002	BK002	Jane Smith	jane.smith@email.com	60-12388754	Non-Members
	B003	BK014	Bob Johnson	bob.johnson@email.com	60-18997658	Members
	B004	BK004	Alice Williams	alice.williams@email.com	60-14776543	Non-Members
	B005	BK005	Charlie Brown	charlie.brown@email.com	60-19994562	Members
	B006	BK028	Husna Shafiqah	husna@email.com	60-19857327	Non-Members
	B007	BK007	IMAAAN BALQIS	imaanBalqis@email.com	60-12985776	Members
	B008	BK015	Grace Lee	grace.lee@email.com	60-18997652	Non-Members
	B009	BK009	Henry Jones	henry.jones@email.com	60-13770642	Members
	B010	BK016	Ivy Chen	ivy.chen@email.com	60-12877963	Non-Members

Print Librarian

Select * from Librarian;

	LibrarianID	Name	PhoneNum	Address	JoinningDate
▶	L001	AMIRA AZIZ	019-3574872	LOT 7, TAMAN PERDANA, KUANTAN, PAHANG	2022-01-04
	L002	MAISARAH NORDIN	018-3947635	NO 23, TAMAN DELEK, IDERA MAHKOTA, PAH...	2021-10-01
	L003	WAHIDA NADIN	012-8476359	LOT 1, TAMAN MAHKOTA HEIGHTS,GAMBANG, ...	2023-04-01
	L004	NADHIRAH MUIZZUDIN	016-4983720	LOT 14,TAMAN PERDANA, SRI JAYA, PAHANG	2022-03-01
	L005	HAYYAT HAFIZI	011-8394763	LOT 6, TAMAN TAS, KUANTAN, PAHANG	2023-04-05
	L006	QUE HAYDAR	018-9473562	LOT 5, TAMAN TAS, GAMBANG, PAHANG	2022-01-01
	L007	MUAZZ RYZAL	012-7480937	NO 12, KAMPUNG PINGGIRIAN, KUANTAN, PAH...	2021-01-01
	L008	FAIZUL HUSSEIN	019-8367826	NO 66, KAMPUNG PERAMU, KUANTAN, PAHANG	2021-02-01
	L009	LUQMAN HAKIMI	017-6839982	LOT 9, TAMAN INDAH, GAMBANG, PAHANG	2020-01-07
	L010	DINI FAIZUDIN	012-8964739	NO 4, KAMPUNG TOK, GAMBANG, PAHANG	2020-03-01

Print purchases

Select * from purchases;

	PurchaseID	LibrarianID	PurchaseDate	ISBN_new	NumBooks_Purchase	TotalCost
▶	P001	L001	2022-10-22	978-2-345678-92-5	3	150.2
	P002	L002	2022-11-30	978-1-222222-22-4	2	120.1
	P003	L003	2022-11-25	978-4-567890-12-5	3	200.3
	P004	L004	2022-12-01	978-7-890123-45-6	3	175
	P005	L005	2022-11-30	978-1-234567-93-7	1	65.9
	P006	L006	2022-12-30	978-0-111111-13-5	2	110.3
	P007	L007	2022-12-01	978-3-444444-43-6	2	125.5
	P008	L008	2023-01-03	978-7-888888-82-9	3	180.3
	P009	L009	2022-12-10	978-2-345678-90-1	2	98.9
	P010	L010	2022-12-25	978-1-234567-91-3	1	35.3

Print Supplier

Select * from supplier;

	SupplierID	PurchaseID	SupplierName	SupplierEmail	SupplierAddress	SupplierPhoneNum	DeliveryDate
▶	S001	P001	Mehraj Book Distributors	mehraj@mail.com	10, Pandan Jaya,Selangor	03-98276431	2020-11-10
	S002	P002	Book Chanel	bookChanel@mail.com	45, Jalan Nilam 1/2, Shah Alam, Selangor	03-4377 8094	2021-01-15
	S003	P003	MH Book Distributors	MHBook@mail.com	Jalan BP 6/7,Puchong, Selangor	03-87619943	2023-01-20
	S004	P004	IBS BUKU SDN BHD	IbsBuku@mail.com	Unit B3-06 Jalan Kemajuan,Petaling Jaya, Selangor	03-99865541	2021-12-01
	S005	P005	Edukid Distributors Sdn Bhd	efgsuppliers@mail.com	Jalan Mahagoni 9 Ligamas,Batang Kali, Selangor	03-22389176	2023-04-03
	S006	P006	Union Book Suppliers	unionBook@mail.com	Jln Haji Manan,Kluang, Johor	03-33879421	2022-01-05
	S007	P007	Pujaan Distributors	pujaan@mail.com	Medan Mewah,Muadzam Shah, Pahang	03-98768873	2021-12-10
	S008	P008	Chiang Suppliers	chiang@mail.com	Jalan Kesisang 3/6, Melaka	03-11786287	2021-02-15
	S009	P009	Taurus Suppliers	taurusuppliers@mail.com	Jalan PBS 14/4,Seri Kembaran, Selangor	03-99076198	2020-04-20
	S010	P010	JKL Suppliers	jksuppliers@mail.com	Jalan Keluli 15/16,Shah Alam, Selangor	03-77654109	2022-10-25

Print Author

Select * from Author;

	AuthorId	AuthorName	DOB	ActiveStatus	TotalBooks
	A003	ALEXANDRA M.TAYLOR	1997-02-12	Still writing	6
	A004	DR SESUSS	1989-10-01	Still writing	15
	A005	MURAD ARSHAD	1972-09-14	Retired	10
	A006	JENNIFER A.THOMPSON	1956-07-15	Retired	23
	A007	MUSTARA GANTI	1998-04-03	Still writing	8
	A008	MADISON R.BROOKS	1982-03-12	Still writing	14
	A009	AULIA IMAN	1993-10-07	Still writing	3
	A010	OLIVIA R.MITCHELL	1990-03-17	Still writing	6
	A011	LILY M.THOMPSON	1990-05-28	Still writing	8
	A012	AMIRAH ZAINAB RAHMAN	1978-05-24	Still writing	10
	A013	FARIDAH ABDULLAH	1989-12-08	Still writing	20
	A014	MOHD AZLAN YUSOF	1997-10-02	Still writing	15
	A015	HIDAYAH NYR YUSOF	1970-02-01	Retired	15
	A016	MUDZAFAR BAHARUDDIN	1985-08-01	Still writing	10
	A017	ELISYA ALLISA	1980-02-03	Retired	10

Print Transactions

Select * from Transactions;

	TransactionID	BorrowerID	LibrarianID	dueDate	DateBorrowed	ReturnDate
▶	T001	B001	L001	2021-02-01	2021-01-02	2021-01-21
	T002	B002	L002	2021-08-01	2021-07-02	2021-07-25
	T003	B003	L003	2021-10-08	2021-09-07	2021-09-28
	T004	B004	L004	2021-12-18	2021-11-17	2021-11-30
	T005	B005	L005	2021-03-06	2021-02-05	2021-03-05
	T006	B006	L006	2022-10-17	2022-09-16	2022-09-25
	T007	B007	L007	2022-07-18	2022-06-17	2022-06-29
	T008	B008	L008	2023-04-06	2023-03-05	2023-03-30
	T009	B009	L009	2024-01-26	2023-12-25	NULL
	T010	B010	L010	2024-01-23	2023-12-22	NULL

Print BookCategory

Select * from BookCategory;

	CategoryID	BookID	CategoryName	Languages	AgeGroup
▶	C007	BK001	Poetry	English	Adults
	C006	BK002	Adventure	English	Kids
	C002	BK003	Fiction	English	Adults
	C006	BK004	Adventure	English	Kids
	C002	BK005	Fiction	English	Adults
	C001	BK006	Romance	English	Adults
	C004	BK007	Fantasy	Bahasa Melayu	Kids
	C005	BK008	Sci-Fi	English	Adults
	C001	BK009	Romance	English	Adults
	C002	BK010	Fiction	English	Adults
	C001	BK011	Romance	English	Adults
	C003	BK012	Mystery	English	Adults
	C006	BK013	Adventure	English	Adults
	C003	BK014	Mystery	English	Adults
	C002	BK015	Fiction	English	Adults
	C004	BK016	Fantasy	Bahasa Melayu	Kids
	C001	BK017	Romance	English	Adults
	C007	BK018	Poetry	English	Adults
	C001	BK019	Romance	Bahasa Melayu	Adults
	C001	BK020	Romance	Bahasa Melayu	Adults
	C006	BK021	Adventure	English	Kids
	C003	BK022	Mystery	Bahasa Melayu	Kids
	C002	BK023	Fantasy	Bahasa Melayu	Kids
	C003	BK024	Mystery	Bahasa Melayu	Adults
	C005	BK025	Sci-Fi	Bahasa Melayu	Adults
	C001	BK026	Romance	Bahasa Melayu	Adults
	C006	BK027	Adventure	Bahasa Melayu	Adults
	C004	BK028	Fantasy	Bahasa Melayu	Adults
	C002	BK029	Fiction	Bahasa Melayu	Adults
	C007	BK030	Poetry	Bahasa Melayu	Adults

Print BookCount

```
select * from BookCount;
```

	AuthorID	CategoryID	Num_of_Books
▶	A001	C002	1
	A001	C003	1
	A002	C006	1
	A003	C002	2
	A004	C006	1
	A005	C002	1
	A005	C007	1
	A006	C001	2
	A006	C007	1
	A007	C004	1
	A008	C001	1
	A008	C005	1
	A008	C007	1
	A009	C001	2
	A010	C003	1
	A010	C006	1
	A011	C001	1
	A011	C006	1
	A012	C002	1
	A012	C003	1
	A013	C003	1
	A013	C005	1
	A014	C001	1
	A015	C004	1
	A015	C006	1
	A016	C002	1
	A017	C007	1

SQL COMMAND (DML)

→ UPDATE

1. Update the phone number of a borrower that has a borrower ID ‘B001’ to 60-17994281

update borrower

```
set PhoneNum= '60-17994281' where BorrowerID='b001';
```

select * from borrower; (to show table that is updated)

	BorrowerID	BookID	BorrowerName	Email	PhoneNum	MembershipStat
▶	B001	BK001	John Doe	john.doe@email.com	60-17994281	Members
	B002	BK002	Jane Smith	jane.smith@email.com	60-12388754	Non-Members
	B003	BK014	Bob Johnson	bob.johnson@email.com	60-18997658	Members
	B004	BK004	Alice Williams	alice.williams@email.com	60-14776543	Non-Members
	B005	BK005	Charlie Brown	charlie.brown@email.com	60-19994562	Members
	B006	BK028	Husna Shafiqah	husna@email.com	60-19857327	Non-Members
	B007	BK007	IMAAN BALQIS	imaanBalqis@email.com	60-12985776	Members
	B008	BK015	Grace Lee	grace.lee@email.com	60-18997652	Non-Members
	B009	BK009	Henry Jones	henry.jones@email.com	60-13770642	Members
	B010	BK016	Ivy Chen	ivy.chen@email.com	60-12877963	Non-Members

2. Update return date of the book for transaction ‘T009’ to 6 January 2024 and ‘T010’ to 2 January 2024

update Transactions

```
set ReturnDate='2024-01-06' where TransactionID='T009';
```

update Transactions

```
set ReturnDate='2024-01-02' where TransactionID='T010';
```

Select * from Transactions; (to show table that is updated)

	TransactionID	BorrowerID	LibrarianID	dueDate	DateBorrowed	ReturnDate
▶	T001	B001	L001	2021-02-01	2021-01-02	2021-01-21
	T002	B002	L002	2021-08-01	2021-07-02	2021-07-25
	T003	B003	L003	2021-10-08	2021-09-07	2021-09-28
	T004	B004	L004	2021-12-18	2021-11-17	2021-11-30
	T005	B005	L005	2021-03-06	2021-02-05	2021-03-05
	T006	B006	L006	2022-10-17	2022-09-16	2022-09-25
	T007	B007	L007	2022-07-18	2022-06-17	2022-06-29
	T008	B008	L008	2023-04-06	2023-03-05	2023-03-30
	T009	B009	L009	2024-01-26	2023-12-25	2024-01-06
	T010	B010	L010	2024-01-23	2023-12-22	2024-01-02

→ **DELETE**

1. Delete the information of BookID which is “BK001” from the table

delete from Books where BookID = 'BK001';

select*from Books; (to show the table that is updated)

	BookID	AuthorID	ISBN	BookName	PublicationYear	conditionBook	Num_of_copies
▶	BK002	A002	951-4-567890-10-1	The Gruffalo	2017	Fair	3
	BK003	A003	978-0-111111-11-1	Whispers of the Heart	2018	Good	2
	BK004	A004	977-1-222222-22-4	The Cat in the Hat	2020	Excellent	2
	BK005	A002	978-4-567890-12-5	Eternal Tides	2022	Good	3
	BK006	A006	978-1-234567-89-0	Whispers in the Wind	2015	Good	5
	BK007	A005	979-6-678901-21-0	Anak Yang Berani	2017	Fair	3
	BK008	A008	978-7-890123-45-6	The Quantum Paradox	2021	Excellent	4
	BK009	A006	978-1-234567-93-7	Celestial Chronicles	2022	Excellent	1
	BK010	A001	978-2-345678-90-1	Ripples of Time	2016	Fair	5
	BK011	A010	978-3-456789-01-2	Whispers of the Moon	2017	Good	4
	BK012	A001	978-2-345678-92-5	Eternal Reflections	2020	Excellent	3
	BK013	A010	978-3-456789-04-3	Beyond the Stars	2023	Excellent	1
	BK014	A010	978-3-456789-02-9	Shadows Across Time	2019	Good	3
	BK015	A003	978-0-111111-13-5	Eternal Echoes	2021	Good	2

2. Delete the information from Transaction table where the ReturnDate is Null

DELETE FROM Transactions WHERE ReturnDate IS NULL;

select*from Transactions where ReturnDate IS NULL;(to show the table that is updated)

	TransactionID	BorrowerID	LibrarianID	dueDate	DateBorrowed	ReturnDate
▶	T001	B001	L001	2021-12-01	2021-11-02	2021-11-21
	T002	B002	L002	2021-02-01	2021-01-02	2021-02-01
	T003	B003	L003	2021-10-08	2021-09-07	2021-09-28
	T004	B004	L004	2022-12-18	2022-11-17	2022-11-30
	T005	B005	L005	2021-03-06	2021-02-05	2021-03-05
	T006	B006	L006	2022-10-17	2022-09-16	2022-09-25
	T007	B007	L007	2022-07-18	2022-06-17	2022-06-29
	T008	B008	L008	2023-09-06	2023-08-05	NULL
	T009	B009	L009	2023-04-26	2023-03-25	2023-04-11
	T010	B010	L010	2023-05-23	2023-04-22	NULL

	TransactionID	BorrowerID	LibrarianID	dueDate	DateBorrowed	ReturnDate
T001	B001	L001	2021-12-01	2021-11-02	2021-11-21	
T002	B002	L002	2021-02-01	2021-01-02	2021-02-01	
T003	B003	L003	2021-10-08	2021-09-07	2021-09-28	
T004	B004	L004	2022-12-18	2022-11-17	2022-11-30	
T005	B005	L005	2021-03-06	2021-02-05	2021-03-05	
T006	B006	L006	2022-10-17	2022-09-16	2022-09-25	
T007	B007	L007	2022-07-18	2022-06-17	2022-06-29	
T009	B009	L009	2023-04-26	2023-03-25	2023-04-11	

→ WHERE/HAVING/GROUP BY/AND/OR/BETWEEN/ORDER BY

- English language book borrowed by the borrower which displays ID,Name and book title.

```
SELECT B.BorrowerID, B.BorrowerName,BK.BookName
from Borrower B, BookCategory BC, Books BK
where B.BookID = BC.BookID
and B.BookID = BK.BookID
and Languages = 'English';
```

	BorrowerID	BorrowerName	BookName
▶	B001	John Doe	Echoes of Tomorrow
	B002	Jane Smith	The Gruffalo
	B003	Bob Johnson	Shadows Across Time
	B004	Alice Williams	The Cat in the Hat
	B005	Charlie Brown	Eternal Tides
	B008	Grace Lee	Eternal Echoes
	B009	Henry Jones	Celestial Chronicles

- List of librarians sorted by name in ascending order.

```
SELECT LibrarianID,name
from Librarian
order by name ASC;
```

	LibrarianID	name
▶	L001	AMIRA AZIZ
	L010	DINI FAIZUDIN
	L008	FAIZUL HUSSEIN
	L005	HAYYAT HAFIZI
	L009	LUQMAN HAKIMI
	L002	MAISARAH NORDIN
	L007	MUAZZ RYZAL
	L004	NADHIRAH MUIZZUDIN
	L006	QUE HAYDAR
	L003	WAHIDA NADIN

→ AGGREGATE FUNCTION

1. Summation of Total Cost from Purchases

```
SELECT SUM(TotalCost)  
FROM purchases;
```

SUM(TotalCost)
1111.600009918213

2. Average of Total Cost from Purchases

```
SELECT AVG(TotalCost)  
FROM purchases;
```

AVG(TotalCost)
123.5111221313477

3. Total number of authors that are still writing.

```
SELECT COUNT(ActiveStatus)  
FROM Author  
WHERE ActiveStatus = 'Still writing';
```

Result Grid		Filter Rows:	Export:	Wrap Cell Content:
COUNT(ActiveStatus)				
12				

4. Total number of authors that are retired.

```
SELECT COUNT(ActiveStatus)  
FROM Author  
WHERE ActiveStatus = 'Retired';
```

Result Grid		Filter Rows:	Export:	Wrap Cell Content:
COUNT(ActiveStatus)				
5				

→ JOINING TABLES

1. Purchases made by librarians with Supplier name, librarian ID and purchase of date within November 2022 and December 2022.

```
SELECT L.LibrarianID, P.PurchaseDate, S.SupplierName  
from Librarian L, Purchases P, Supplier S  
where L.LibrarianID = P.LibrarianID  
and P.PurchaseID = S.PurchaseID  
and PurchaseDate  
between '2022-11-01' and '2022-12-30';
```

	LibrarianID	PurchaseDate	SupplierName
▶	L002	2022-11-30	Book Chanel
	L003	2022-11-25	MH Book Distributors
	L004	2022-12-01	IBS BUKU SDN BHD
	L005	2022-11-30	Edukid Distributors Sdn Bhd
	L006	2022-12-30	Union Book Suppliers
	L007	2022-12-01	Pujaan Distributors
	L009	2022-12-10	Taurus Suppliers
	L010	2022-12-25	JKL Suppliers

DATA DICTIONARY

PK: Primary Key

FK: Foreign Key

1. Books

FIELD NAME	DESCRIPTION	DATA TYPE	CONSTRAINTS	EXAMPLE
BookID	Book ID	Varchar (20)	PK, Not null	BK001
AuthorID	Author ID	Varchar (20)	Not null	A006
ISBN	ISBN	Varchar (50)	Not null	978-1-234567-91 -3
BookName	Book title	Varchar (200)	Not null	Echoes of Tomorrow
PublicationYear	Publication Year	integer	Not null	2019
conditionBook	Condition of book	Varchar (50)	Not null	Excellent
Num_of_copies	Number copy of the book	integer	Not null	4

2. Borrower

FIELD NAME	DESCRIPTION	DATA TYPE	CONSTRAINTS	EXAMPLE
BorrowerID	Borrower ID	Varchar (20)	PK, Not null	B001
BorrowerName	Borrower name	Varchar (50)	Not null	John Doe
Email	Borrower email	Varchar (150)	Not null	john.doe@email.com
PhoneNum	Borrower phone number	Varchar (25)	Not null	60-15578549
MembershipStat	Membership status	Varchar (50)	Not null	Members
BookID	Book ID	Varchar (20)	FK, Not null	BK001

3. Librarian

FIELD NAME	DESCRIPTION	DATA TYPE	CONSTRAINTS	EXAMPLE
LibrarianID	Librarian ID	Varchar (20)	PK, Not null	L001
Name	Librarian name	Varchar (30)	Not null	AMIRA AZIZ
PhoneNum	Librarian phone number	Varchar (30)	Not null	019-3574872
Address	Address	Varchar (200)	Not null	LOT 7, TAMAN PERDANA, KUANTAN, PAHANG
JoiningDate	Joining date as librarian	Date	Not null	2022-01-04

4. Purchases

FIELD NAME	DESCRIPTION	DATA TYPE	CONSTRAINTS	EXAMPLE
PurchaseID	Purchase ID	Varchar (20)	PK, Not null	P001
LibrarianID	Librarian ID	Varchar (20)	FK, Not null	L001
PurchaseDate	Date of purchase	Date	Not null	2022-10-22
ISBN_new	New ISBN	Varchar (30)	Not null	978-2-345678-92-5
NumBooks_Purchase	Number books of purchase	integer	Not null	3
TotalCost	Total cost	float	Not null	150.20

5. Supplier

FIELD NAME	DESCRIPTION	DATA TYPE	CONSTRAINTS	EXAMPLE
SupplierID	Supplier ID	Varchar (20)	PK, Not null	S001
PurchaseID	Purchase ID	Varchar (20)	FK, Not null	P001
SupplierName	Supplier Name	Varchar (200)	Not null	Mehraj Book Distributors
SupplierEmail	Supplier Email	Varchar (150)	Not null	mehraj@mail.com
SupplierAddress	Supplier address	Varchar (150)	Not null	10, Pandan Jaya, Selangor
SupplierPhoneNum	Supplier phone number	Varchar (20)	Not null	03-98276431
DeliveryDate	Date of delivery	Date	Not null	2020-11-10

6. Author

FIELD NAME	DESCRIPTION	DATA TYPE	CONSTRAINTS	EXAMPLE
Author ID	Author ID	Varchar (20)	PK, Not null	A001
Author Name	Author name	Varchar (40)	Not null	JONATHAN M.ANDERSON
DOB	Date of birth	Date	Not null	1983-02-14
ActiveStatus	Active status	Varchar (20)	Not null	Still writing
TotalBooks	Total of books	Integer	Not null	7

7. Transactions

FIELD NAME	DESCRIPTION	DATA TYPE	CONSTRAINTS	EXAMPLE
TransactionID	Transaction ID	Varchar (15)	PK, Not null	T001
BorrowerID	Borrower ID	Varchar (20)	FK, Not null	B001
LibrarianID	Librarian ID	Varchar (20)	FK, Not null	L001
dueDate	Due date	Date	Not null	2021-02-01
DateBorrowed	Date borrowed	Date	Not null	2021-01-02
ReturnDate	Return date	Date		2021-01-21

8. BookCategory

FIELD NAME	DESCRIPTION	DATA TYPE	CONSTRAINTS	EXAMPLE
CategoryID	Category ID	Varchar (20)	PK, Not null	C007
BookID	Book ID	Varchar (20)	FK, Not null	BK001
CategoryName	Category name	Varchar (15)	Not null	Poetry
Languages	Languages	Varchar (20)	Not null	English
AgeGroup	Age of group	Varchar (20)	Not null	Adults

9. BookCount

FIELD NAME	DESCRIPTION	DATA TYPE	CONSTRAINTS	EXAMPLE
AuthorID	Author ID	Varchar (20)	PK, Not null	A001
CategoryID	Category ID	Varchar (20)	PK, Not null	C003
Num_of_Books	Number of books	Integer	Not null	1

WORK TASK DISTRIBUTION

STUDENT ID	NAME	TASK
SD22002	ALMIRA DAMIA BINTI SYAHNIZAM	<ul style="list-style-type: none"> ● Analyse case study 1 ● 3 Tables (Books, BookCount & purchases) ● Business rules & relationship ● Create ERD & EERD ● SQL
SD22030	TUAN NURSHAFIEKA WAHIDA BINTI TUAN NADIN	<ul style="list-style-type: none"> ● Scope of project ● 2 Tables (Author & Librarian) ● Create ERD ● SQL ● Data Dictionary
SD22025	ABDUL HAZIQ AZIM BIN ABDUL MALIK	<ul style="list-style-type: none"> ● Objectives of project ● Analyse case study 2 ● 2 Tables (BookCategory & Transactions) ● Create ERD ● Dependencies ● SQL
SD22008	MUHAMMAD DANISH AIMAN HARISS BIN ROSLI	<ul style="list-style-type: none"> ● Introduction ● Business rules & relationship ● 2 Tables (Borrower & Supplier) ● Create ERD ● SQL

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Retrieved from: <https://www.w3schools.com/mysql/default.asp>

2. ER Diagram for Library Management System (2023)
Retrieved from:<https://123projectlab.com/er-diagram-for-library-management-system/>

MEETING REPORT (APPENDIX)

1 ST MEETING

Platform	Physical Meeting
Date	27/10/2023
Leader	Almira Damia binti Syahnizam
Activity	<ul style="list-style-type: none">- Decide the topic for our project- Task distribution- Discuss on the project flow and progression 
Attendance	<ul style="list-style-type: none">- Almira Damia Binti Syahnizam- Tuan Nurshafieka Wahida Binti Tuan Nadin- Abdul Haziq Azim Bin Abdul Malik- Muhammad Danish Aiman Hariss Bin Rosli

2ND MEETING

Platform	Physical Meeting
Date	3/1/2024
Leader	Almira Damia binti Syahnizam
Activity	<ul style="list-style-type: none"> - Task distribution for question number 8. - Discussion with Doctor Eric about the project on EERD. 
Attendance	<ul style="list-style-type: none"> - Almira Damia Binti Syahnizam - Tuan Nurshafieka Wahida Binti Tuan Nadin - Abdul Haziq Azim Bin Abdul Malik - Muhammad Danish Aiman Hariss Bin Rosli