

Mani Enties and there common Attributes ,Subclassesand there Distinct Attribute:

<u>Main Entities</u>	<u>Common Attributes</u>	<u>Subclasses</u>	<u>Distinct Attributes</u>
Client	1. First_name 2. Seconed_name 3. Client_id 4. StartDate 5. Email 6. Phone 7. Address 8. Client_type	_Reader _Buyer _Borrower	Reader(reading_level,pre ered_books) Buyer(degree_of_loyalty,preferred_payement Borrower(max_Borrow_limit,due_date)
Orders	1. Total_items 2. Order-date 3. <u>Order_id</u>	_Service_Order: (Reading,Borrow) _Product_Order	Service_Order(book_service_type,return_date) Product_Order(shipping_cost,is_gift)
Payement	1. Payment_Date 2. Payement_id	_Cash _Visa	Cash(amount) Vias(cardholder_name,bank_name)
Book	1. Book_id 2. Author 3. Price 4. Publisher 5. Title	_E_Book _AudioBook _PhysicalBookK	E_Book(file_format) AudioBook(duration) PhysicalBook(Weitht,width,height, is_hardcover)
Category	1. Category_type 2. Description 3. Category_id	_History _Fiction _Sentific	History(time_period) Fiction(fictional_type) Sentific(Scientific_field)
BookStoreAssistant	1. Assistant_id 2. Salary 3. Shift 4. Fname 5. lanme		

Relations hips:

Client=>order :client(place)order

Order=>Book:Order(contain)Book

Book=>Caterory:Book(Belong to)Category

Book=>Bookstore_Assistant:Book(Mange by) BookStore_Assistant

Client=>Payement:Client(Make)Payemnt

Business Case: Ketabk Multiservice Bookstore System:

Ketabk is a multiservice bookstore aiming to provide a comprehensive reading ecosystem that includes physical and digital book sales, borrowing services, and in-store reading facilities. The system revolves around five core entity types—Client, Order, Book, Category, Payment, and Bookstore Assistant—each with key attributes, relationships, and specialized roles to support Ketabk's blended service model.

Business Role:

Clients are the core users of Ketabk. Whether they walk in to read, buy, or borrow, they are registered in the system with their personal and behavioral data. By classifying clients into Reader, Buyer, and Borrower, Ketabk can offer tailored services such as personalized book suggestions, loyalty rewards, or reminders for return deadlines. Orders manage both book sales and services. Buyers use Product_Order to purchase books (with shipping or gifting options), while Borrowers or in-store Readers use Service_Order to access reading services. This dual-track order system supports Ketabk's unique multiservice approach. Books are at the center of Ketabk's operations. With multiple formats (physical, digital, and audio), Ketabk accommodates diverse reader preferences. Bookstore Assistants are assigned to manage specific books—ensuring shelving, digital access, or customer support is handled efficiently. Categories structure the book inventory, enabling better navigation and personalized recommendations. For instance, a Reader interested in historical novels from the 19th century can be guided to relevant History books with matching time_period values. All paid orders are tracked through the payment system. The subclassing into Cash and Visa ensures flexibility and accuracy in financial records, and allows Ketabk to monitor trends in preferred payment methods (used especially in loyalty scoring for Buyers).

Goal of the Ketabk Library System:

The goal of the Ketabk library system is to track and manage clients with different needs—whether they come to read, borrow, or buy books. The system is designed to handle various types of clients (readers, borrowers, and buyers) and support multiple book formats and services. It provides the bookstore with a quick and organized way to record all client services, regardless of the service type. By linking client actions to book data and service types, the system ensures accurate tracking of:

- Borrowing and return dates
- Reading service usage
- Purchase history and payments

This enables Ketabk to deliver a smooth customer experience and gain insights into **View_all & Join** .
client

preferences and behaviors

The VIEW view_all is designed to display a detailed summary of clients who are classified as borrowers. Specifically, it combines information from multiple related tables

(Client, Borrower, Orders, Service_Order, and Book) to give a complete view of borrowing services. and then using join to link tables.

SQLQuery10.sql - MARINA-KAMAL.MultiService_BookStore (MARINA-KAMAL\popfa (63)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

MultiService_BookStore

Marina-Kamal.Multi...kStore - Diagram 1* Marina-Kamal.Multi...kStore - Diagram 0* SQLQuery10.sql - KAMAL\popfa (63)

```

CREATE VIEW view_all AS
SELECT
    c.client_id,
    c.first_name,
    c.second_name,
    c.email,
    br.max_borrow_limit,
    br.due_date,so.order_id, so.book_service_type,so.return_date, b.book_id,b.title, b.author, b.price
FROM
    Client c
INNER JOIN
    Borrower br ON c.client_id = br.client_id
INNER JOIN
    Orders o ON c.client_id = o.client_id
INNER JOIN
    Service_Order so ON o.order_id = so.order_id
INNER JOIN
    Book b ON o.order_id = b.order_id
WHERE
    c.client_id IN (1, 3); -- to filter and choose just the client who are borrower

```

Results

	client_id	first_name	second_name	email	max_borrow_limit	due_date	order_id	book_service_type	return_date	book_id	title	author	price
1	1	Saad	Ragab	Saad@example.com	5	2023-12-31	101	Borrow	2023-11-01	5001	Database Fundamentals	Alice Smith	29.99
2	1	Saad	Ragab	Saad@example.com	5	2023-12-31	101	Borrow	2023-11-01	5002	Web Development Audiobook	Bob Johnson	19.99
3	3	Marina	Kamal	Marina@example.com	3	2023-11-30	103	Borrow	2023-11-03	5004	Complete CS Bundle	David Brown	49.99

Query executed successfully.

MARINA-KAMAL (16.0 RTM) MARINA-KAMAL\popfa (63) MultiService_BookStore 00:00:00 3 rows

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Group by:

The group by category_type clause make sure that the results are grouped according to the type of category (Fictional, History, Scientific).

SQLQuery10.sql - MARINA-KAMAL.MultiService_BookStore (MARINA-KAMAL\popfa (63)) - Microsoft SQL Server Management Studio

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MultiService_BookStore Execute

-----Group by-----

```
SELECT
    category_type,
    COUNT(*) AS total_categories,
    MAX(category_id) AS max_category_id
FROM
    Category
GROUP BY
    category_type;
```

110 %

Results Messages

	category_type	total_categories	max_category_id
1	Fictional	1	1
2	History	1	3
3	Scientific	1	2

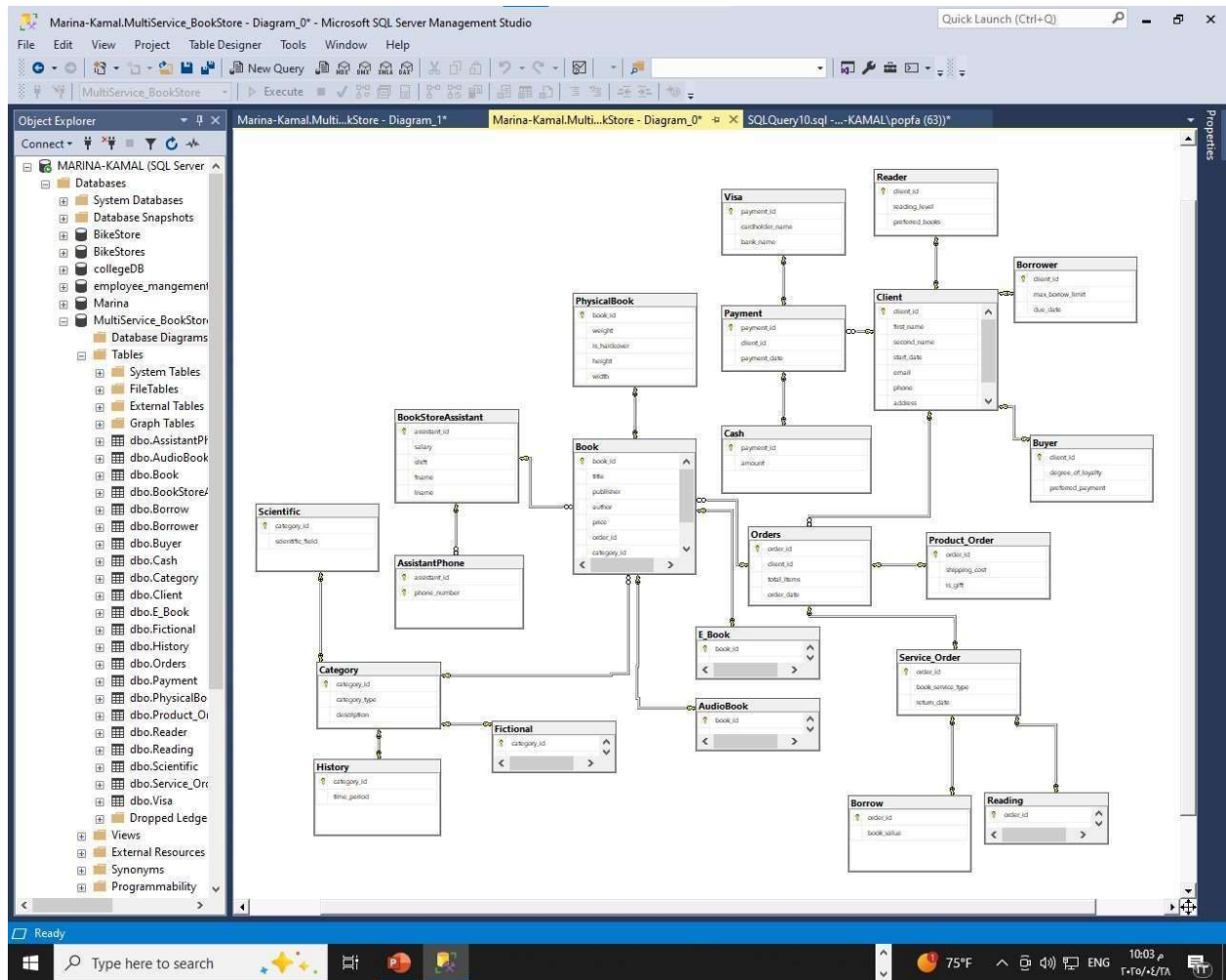
Query executed successfully.

MARINA-KAMAL (16.0 RTM) | MARINA-KAMAL\popfa (63) | MultiService_BookStore | 00:00:00 | 3 rows

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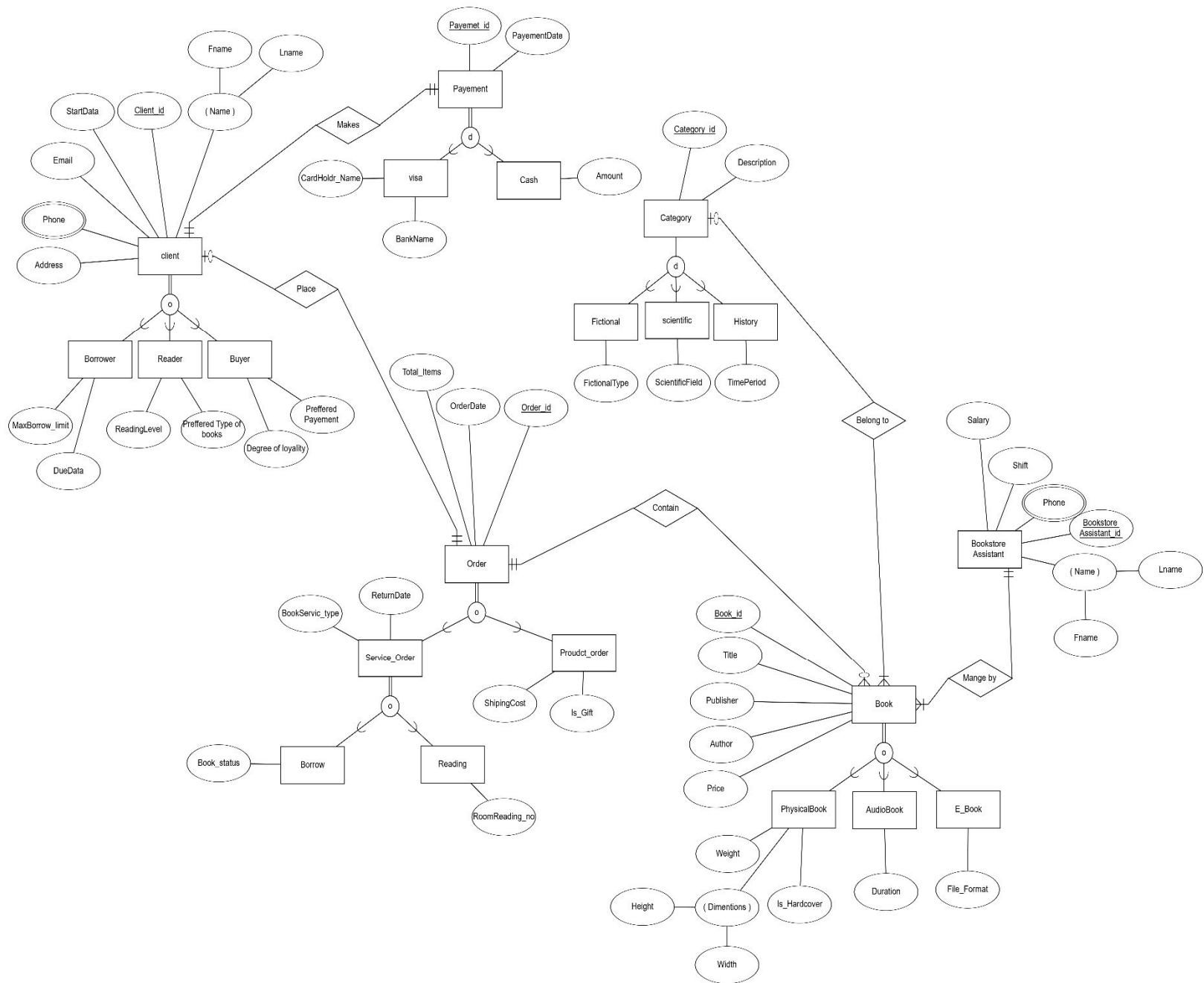
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DatabaseDiagram(Schema):



Mapping

EERD



ERD

