**Stage 3. Capstone Project Database Layer Design**

* **Defining unique entities.**
* 1. User:

- Attributes: id, name, lastName, email, password, age, role, bookmarkers

- Represents a registered user in the system.

* 2. Book:

- Attributes: id, name, title, author, price

- Represents a book available for sale.

* 3. Order:

- Attributes: id, user, products, totalAmount, orderDate

- Represents an order placed by a user, including the books purchased, the total amount, and the order date.

* 4. Bookmarker:

- Attributes: id, name, location, users

- Represents a saved books by user.

* 5. Admin:

- Attributes: id, name, lastName, email, password, role

- Represents an admin in the system.

* **Identifying the type of entities (key, weak, and associative).**
* User: Key Entity - The User entity appears to be a key entity as it represents a primary entity within the system. Users have unique identifiers, such as email addresses, which can be used as keys.
* Book: Key Entity - The Book entity is also a key entity as it represents a primary entity in the system. Each book has a unique identifier such as book ID, which can be used as a key.
* Order: Associative Entity - The Order entity appears to be an associative entity that establishes a relationship between users and books. It represents the concept of an order placed by a user for a particular book. It typically contains information such as the order ID, order date, quantity, and any additional order-specific details.
* Bookmarker: Weak Entity - The Bookmarker entity is weak entity because it will be always depending on user.
* Admin: Key Entity - The Admin entity is a key entity as it represents a specific role or user type within the system. Administrators typically have unique identifiers or usernames, allowing them to access administrative functionalities or perform privileged operations.
* **Identifying the relationships between entities.**
* User - Book:
  + One-to-Many: A user can have multiple books (e.g., a user can own or have access to multiple books).
  + Many-to-Many: A user can read or interact with multiple books, and a book can be read or interacted with by multiple users.
* User - Order:
  + One-to-Many: A user can place multiple orders.
  + One-to-One: A user can have a single active order at a time.
* User - Bookmarker:
  + One-to-Many: A user can have multiple bookmarks (e.g., bookmarking multiple pages or sections of a book)
  + Many-to-Many: Multiple users can bookmark the same book or page.
* User - Admin:
  + One-to-One: A user can have an admin role or be an administrator.
* Book - Order:
  + One-to-Many: A book can be a part of multiple orders (e.g., multiple users ordering the same book).
* **Identifying the attributes (key, weak key, derived, multivalued).**
  + 1. User:

- Key Attribute: userId (unique identifier for a user)

- Derived Attribute: age (calculated from the user's date of birth)

- Multivalued Attribute: emailAddresses (a user can have multiple email addresses)

* + 2. Book:

- Key Attribute: bookId (unique identifier for a book)

- Weak Key Attribute: isbn (unique identifier for a book within a specific edition or version)

* + 3. Order:

- Key Attribute: orderId (unique identifier for an order)

- Derived Attribute: orderDate (automatically generated timestamp for when the order is placed)

* + 4. Bookmarker:

- Key Attribute: bookmarkId (unique identifier for a bookmark)

- Weak Key Attribute: savedUser (the number saved books by User)

* + 5. Admin:

- Key Attribute: adminId (unique identifier for an admin user)

- Derived Attribute: role (determines the administrative role or level of access)