

CSE 3241 Project Checkpoint 01 – Entities and Relationships

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In a **NEATLY TYPED** document, provide the following:

1. Based on the requirements given in the project overview, list the entities to be modeled in this database. For each entity, provide a list of associated attributes.

Entities and Attributes

a) Books

- i) ISBN
- ii) Title
- iii) Authors(s)
- iv) PublisherName
- v) Year
- vi) Price
- vii) CategoryA
- viii) StockThreshold

b) Publishers

- i) PublisherName
- ii) Email
- iii) Address
- iv) ContactNumber

c) Customers

- i) CustomerID
- ii) Name
- iii) Email
- iv) Address
- v) ContactNumber

d) Purchases

- i) PurchaseID
- ii) CustomerID
- iii) OrderStatus
- iv) PurchaseDate

- v) TotalAmount
- e) Administrators
 - i) AdminID
 - ii) Name
 - iii) Email
 - iv) ContactNumber
- f) Inventory
 - i) ISBN
 - ii) CurrentStock
- g) Reorder
 - i) ReoderID
 - ii) ISBN
 - iii) AdminID
 - iv) ReorderDate
 - v) Quantity
 - vi) TotalAmount
 - vii) Status
- h) PurchaseDetails
 - i) PurchaseDetailsID
 - ii) PurchaseID
 - iii) ISBN
 - iv) Quantity
 - v) PricePerUnit

2) Based on the requirements given in the project overview, what are the various relationships between entities? (For example, “CUSTOMER entities purchase BOOK entities”).

- I. **Customers** make **Purchases**.
- II. **Purchases** have multiple **PurchaseDetails**
- III. **Administrators** make multiple **Reorder**.
- IV. **Books** is published by **Publishers**.
- V. **Administrators** make **Reorders**.
- VI. **Inventory** record **Books**
- VII. **PurchaseDetails** is linked to **Books**.
- VIII. **Inventory** have multiple **Reorders**.

3) Propose at least two additional entities that it would be useful for this database to model beyond the scope of the project requirements. Provide a list of possible attributes for the additional entities and possible relationships they may have with each other and the rest of the entities in the database. Give a brief, one sentence rationale for why adding these entities would be interesting/useful to the stakeholders for this database project.

a) Reviews

- i) Relationships: **Customers** write **Reviews**; **Books** have **Reviews**
- ii) Rationale: adding reviews helps stakeholders understand customers satisfaction and preferences, which can inform inventory decisions and marketing strategies
- iii) Attributes
 - (1) ReviewID
 - (2) CustomerID
 - (3) ISBN
 - (4) Rating
 - (5) ReviewText
 - (6) ReviewDate

b) Promotions

- i) Relationships: **Books** have **Promotions**
- ii) Rationale: Including promotions allows stakeholders to track and manage sales campaigns, which can help boost book sale and improve profitability
- iii) Attributes:
 - (1) PomotionID
 - (2) PromotionName
 - (3) DiscountPercentage
 - (4) StartDate
 - (5) EndDate
 - (6) ISBN

4) Give at least four examples of some informal queries/reports that it might be useful for this database might be used to generate. Include one example for each of the additional entities you proposed in question 3 above.

a) Top-Rated Books

- i) Query: "What are the top5 books with the highest average rating based on customer reviews?"
- ii) Purpose : this reports helps the bookstore identify customer favorites books to highlight in marketing efforts or prioritize in inventory

b) Most Active Customer

- i) Query: "Which customers have written the most reviews in the past year?"
- ii) Purpose: This report identifies highly engaged customers who could be targeted for loyalty programs or special offers.

c) Current Promotions

- i) Query: "What books are currently on promotion, and what are the discount percentages?"
- ii) Purpose: this report helps administrators and customers quickly identify active sales, importing customer satisfaction and boosting sales.

d) Promotion Effectiveness

- i) Query: "Which promotions resulted in the highest increase in sales during the last quarter?"
- ii) Purpose: This report evaluates the impact of sales campaigns, enabling stakeholders to optimize future promotions for better results.

5) Suppose we want to add a new publisher to the database. How would we do that given the entities and relationships you've outlined above? Given your above description, is it possible to add a new publisher to your database without knowing the title of any books they have published? If not, revise your model to allow for publishers to be added as separate entities.

- a) We could insert a record into the Publisher table with the attributes: PublisherName, email, address, contact number.
 - b) Yes. Referential independence between **Books** and **Publishers** only restricts the addition of books, not publishers.
- 6) Determine at least three other informal update operations and describe what entities would need to have attributes altered and how they would need to be changed given your above descriptions. Include one example for each of the additional entities you proposed in question 3 above.
 - a) Updating Customer Reviews
 - i) scenario: a customer edits their review for a book.
 - ii) entities involved: reviews.
 - iii) attributes to be altered: Rating, ReviewText, ReviewDate
 - iv) Reasoning: this operation ensures that the review database reflects accurate and current feedback from customers.
 - b) modifying a promotion
 - i) scenario: an administrator updates the details of a promotion activity (discount percentage or promotion period).
 - ii) entities involved: promotions.
 - iii) attributes to be altered: DiscountPercentage, StartDate, EndDate, PromotionName
 - iv) Reasoning: This operation allows administrators to adapt promotions to business needs, such as inventory considerations and customer demand.
 - c) Adding a New Review by a Customer
 - i) scenario: A customer submits a new review for a book they purchased.
 - ii) entities involved: Reviews
 - iii) attributes to be altered: ReviewID, CustomerID, ISBN, Rating, ReviewText, and ReviewDate.
 - iv) Reasoning: Adding new reviews enhances the database's value by providing updated customer

opinions, which help other customers and the bookstore's decision-making.

d) Adding a new promotion for a book

i) scenario: An administrator launches a new promotion for specific books.

ii) entities involved: Promotions.

iii) Attributes to be altered: PromotionID, PromotionName, DiscountPercentage, StartDate, EndDate, ISBN.

iv) Reasoning: Introducing new promotions can help drive sales for particular books, improve profitability and clear access inventory.

7. Provide an ER diagram for your database. Make sure you include all of the entities and relationships you determined in the questions above ***INCLUDING the entities for question 3 above***, and remember that ***EVERY*** entity in your model needs to connect to another entity in the model via some kind of relationship.

