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.
   Book(ISBN, Title, Publisher(FK), Year, Price, Category)
   Book_Author(ISBN(FK), Author(FK))
   Author(Auth_id(FK))
   Publisher(Pub_id, Name)
   Customer(Cust_id(FK), Phone_no)
   Purchase(Order Number, Customer(FK), Book(FK), Price)
   Person(Id, First_Name, Middle_Name, Last_Name)

2. Based on the requirements given in the project overview, what are the various relationships between entities? (For example, "CUSTOMER entities purchase BOOK entities").
   AUTHOR entity writes a BOOK entity.
   PUBLISHER entity publishes a BOOK entity.
   CUSTOMER entity purchases a PURCHASE entity

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.
   BookStore(Store_num, Store_Loc). This would have relationships with a PURCHASE. It would be useful because it would create the ability to see which stores sell the most books or where certain books are most popular.

   Membership(Email, Password, Member_num). This entity would have a "owns" relationship with the customer entity, and can identify what customers receive membership benefits.

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.
   Select all PURCHASES for a customer.
   Insert a new PURCHASE with a specific CUSTOMER who buys BOOKS.
   Select all BOOKS written by an AUTHOR.
   Select the AUTHOR(s) who wrote a specific book.
   Select all BOOKS published by a PUBLISHER.

   Update a PUBLISHER for a BOOK Select all PURCHASES at a BOOKSTORE for a certain timeframe.
   Select the new price of a BOOK where the CUSTOMER owns a MEMBERSHIP

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.
   All you would need to know is the publisher's name to add it to our database by assigning it a unique id. It is possible to add it without knowing books because a publisher and a book have a 1-N relationship with (0,N) cardinality. So there won't be an issue having a publisher with no books.

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.

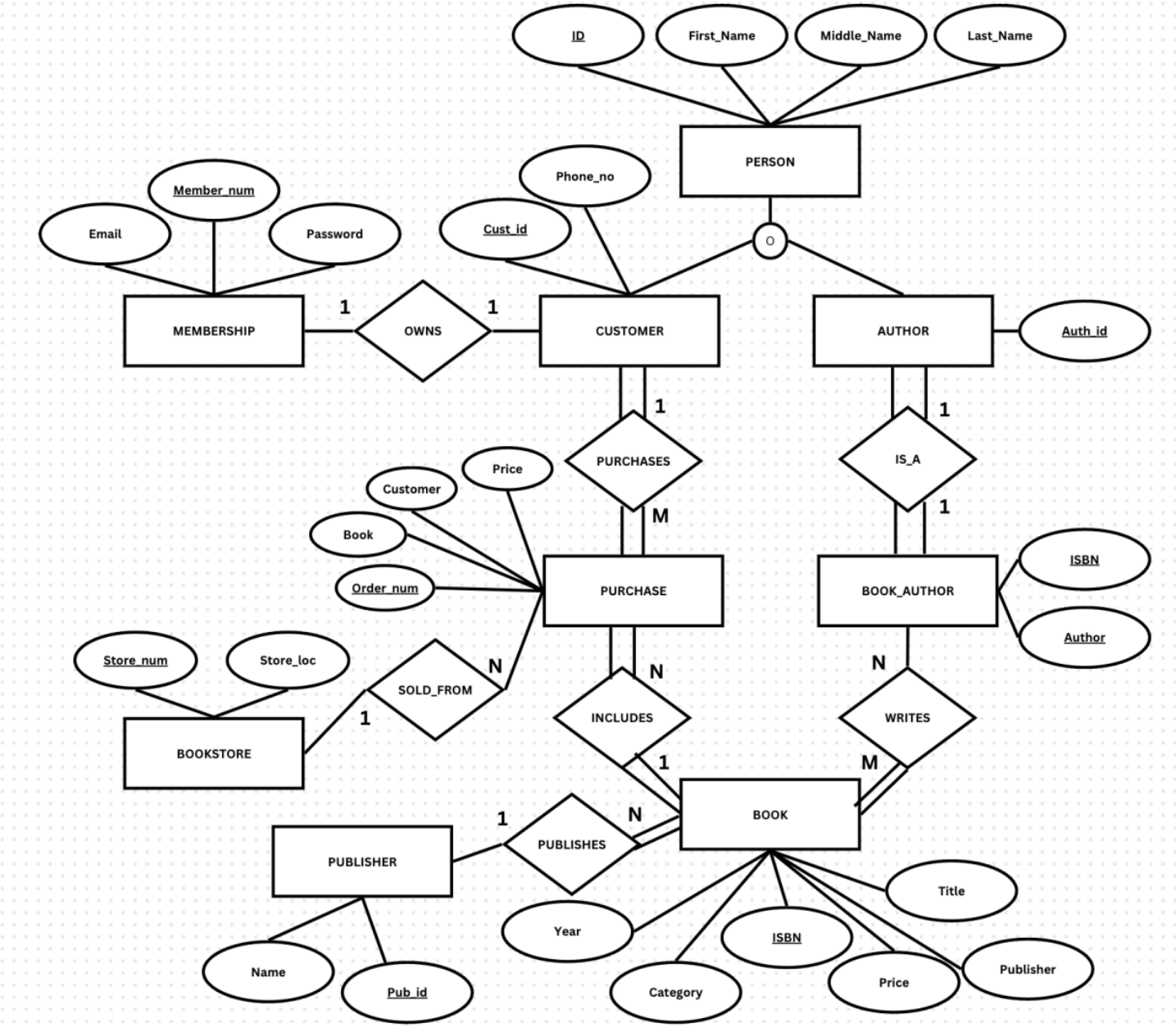
   The price attribute from the BOOK entity would need an update operation so the prices of books can be raised or lowered depending on its current market value.

   The publisher attribute from the BOOK entity would need an update operation since if the book is picked up by a different publisher then the database would need to update the publisher attribute.

   The MEMBERSHIP entity would need an update operation that checks to see if the customer is still a current member, and if not, remove their member_num attribute so the database no longer recognizes their membership.

   The BOOKSTORE entity would need an update operation that changes the store_Loc attribute depending on if the store changes location, and this will make sure that the address of the bookstore is correct.

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.



Feedback: Label the subclasses of PERSON with the proper arrows Not sure why you have AUTHOR IS_A BOOK_AUTHOR. Just need PERSON (subclassed) as AUTHOR, then AUTHOR WRITES BOOK. Don't label foreign keys on this diagram, PURCHASE doesn't need "Customer" because it's expressed in the "PURCHASES" relationship, Book doesn't need Publisher PURCHASE "INCLUDES" BOOK should be M:N relationship, and should have a "quantity" attribute on the relationship so that I can buy 3 copies of the same book Book "Category" should be multivalued (a FICTION and ROMANCE book) Need a way to capture how many books are in each BOOKSTORE with a relationship and a "quantity" attribute between them

How we addressed it: We updated the ER diagram to reflect your suggestions. We also updated all of our entities to reflect the suggestions that you made.