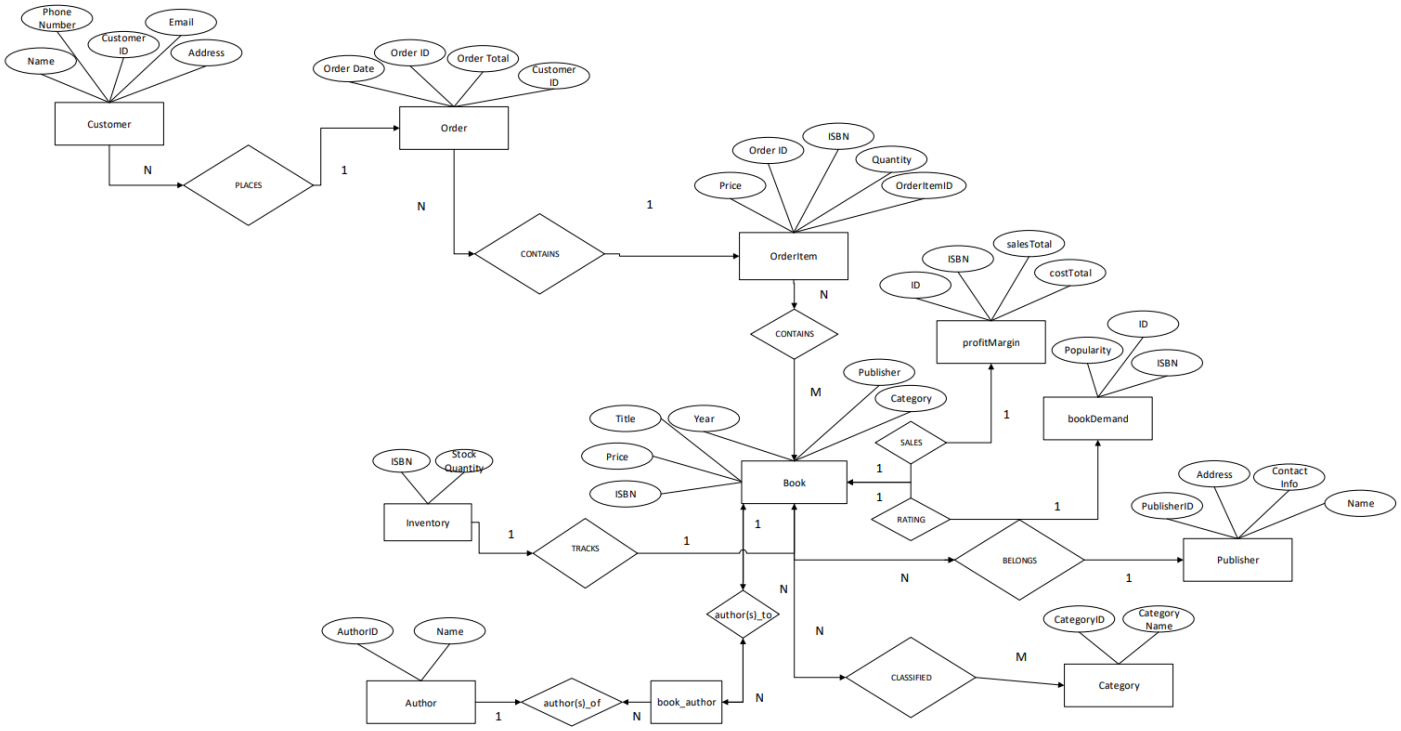
CSE 3241 Project Checkpoint 03 – SQL and More SQL

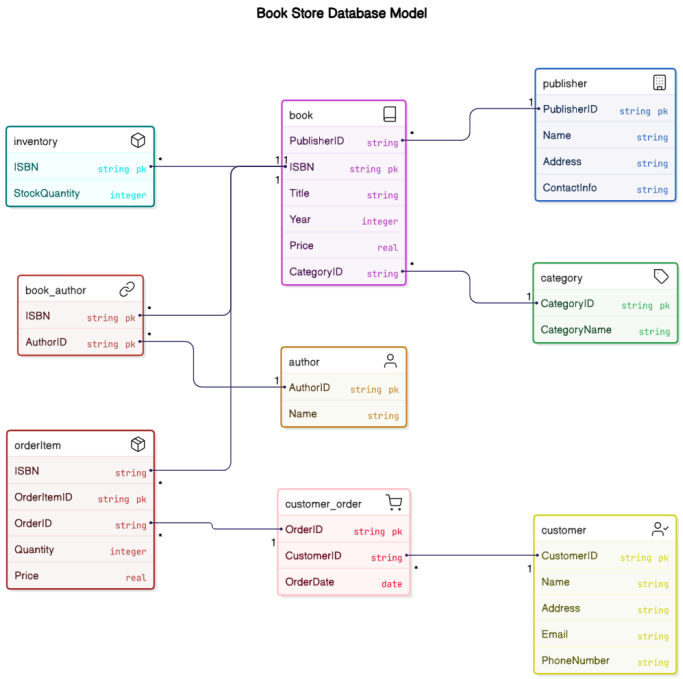
Names: Christian Coulibaly, Elijah Paulman, Kyle Roessle, Rohan Navaneetha	**Date**: 2/12/25

Submitted to the Carmen Dropbox

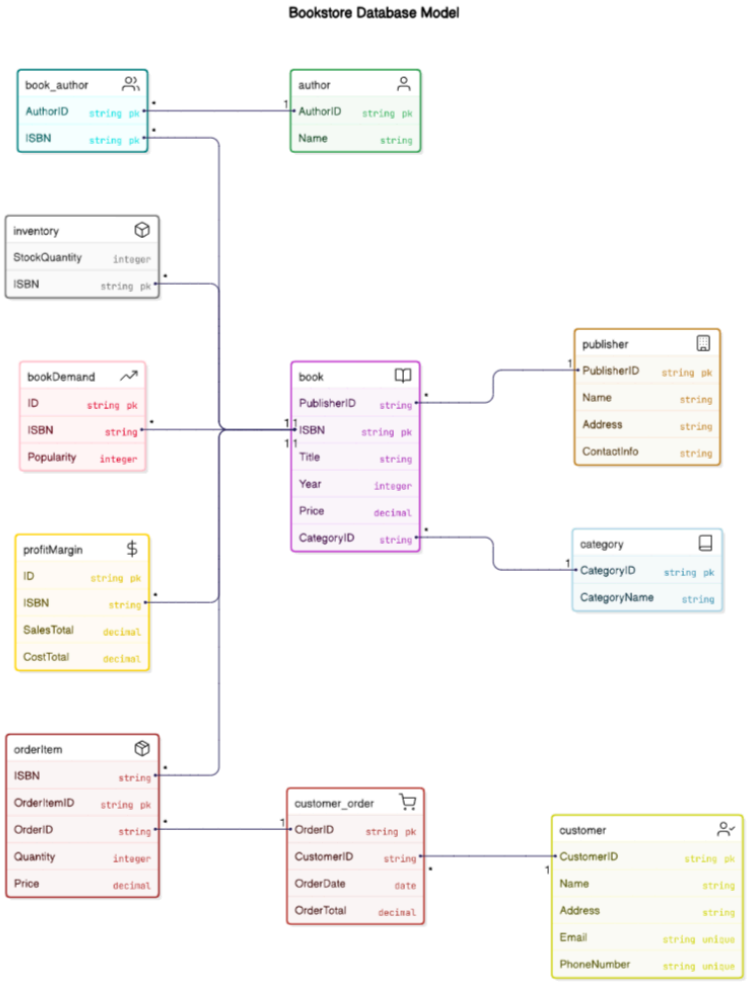
1. Provide a current version of your ER Diagram and Relational Model as per Project Checkpoint 02. **If you were instructed to change the model for Project Checkpoint 02, make sure you use the revised versions of your models**

   **Models updated as of checkpoint 3 to include book_authors cross table for books with multiple authors*





Schema based on project requirements only, not including "extra entities"



Schema including "extra entities"

2. Given your relational schema, create a text file containing the SQL code to create your database schema. Use this SQL to create a database in SQLite. Populate this database with the data provided for the project as well as 20 sample records for each table that does not contain data provided in the original project documents.

   Create:
   https://docs.google.com/document/d/1L4Z6vmGY7esnXuA7PH_MLcIauoFEM_xpJyskIa_a5Yk/edit?usp=sharing
   Insert:
   https://docs.google.com/document/d/1yM4o6QJViD3EQKmSVzwfQMEKMXHYBOdqp3NrDEKZ3AE/edit?usp=sharing

3. Given your relational schema, provide the SQL to perform the following queries. If your schema cannot provide answers to these queries, revise your ER Model and your relational schema to contain the appropriate information for these queries. These queries should be provided in a plain text file named "WorksheetTwoSimpleQueries.txt":
   a. Find the titles of all books by Pratchett that cost less than $10

   b. Give all the titles and their dates of purchase made by a single customer (you choose how to designate the customer)

   c. Find the titles and ISBNs for all books with less than 5 copies in stock

   d. Give all the customers who purchased a book by Pratchett and the titles of Pratchett books they purchased

   e. Find the total number of books purchased by a single customer (you choose how to designate the customer)

   f. Find the customer who has purchased the most books and the total number of books they have purchased

   WorksheetTwoSimpleQueries.txt
   https://drive.google.com/file/d/17AAaDty8KdPFywSIyp8HfzbD-ehA9Uxu/view?usp=sharing

4. For Project Checkpoint 02, you were asked to come up with three additional interesting queries that your database can provide. Give what those queries are supposed to retrieve in plain English, as relational algebra and then as SQL. Your queries should include joins and at least one should include an aggregate function, and they should be the same as the queries you outlined for Worksheet 02. If you were instructed to fix the queries in Checkpoint 02, make sure you use the fixed queries here. These queries should be provided in a plain text file named "WorksheetTwoExtraQueries.txt".

   WorksheetTwoExtraQueries:
   https://drive.google.com/file/d/1YyKwYsXHCO1BwpyYSzLiGf_Yp0tqRSNB/view?usp=sharing

5. Given your relational schema, provide the SQL for the following more advanced queries. These queries may require you to use techniques such as nesting, aggregation using having clauses, and other techniques . If your database schema does not contain the information to answer to these queries, revise your ER Model and your relational schema to contain the appropriate information for these queries. **Note that if your database does contain the information but in non-aggregated form, you should NOT revise your model but instead figure out how to aggregate it for the query!** These queries should be provided in a plain text file named "WorksheetTwoAdvancedQueries.txt".

   a. Provide a list of customer names, along with the total dollar amount each customer has spent.

   b. Provide a list of customer names and e-mail addresses for customers who have spent more than the average customer.

   c. Provide a list of the titles in the database and associated total copies sold to customers, sorted from the title that has sold the most individual copies to the title that has sold the least.

   d. Provide a list of the titles in the database and associated dollar totals for copies sold to customers, sorted from the title that has sold the highest dollar amount to the title that has sold the smallest.

   e. Find the most popular author in the database (i.e. the one who has sold the most books)

   f. Find the most profitable author in the database for this store (i.e. the one who has brought in the most money)

   g. Provide a list of customer information for customers who purchased anything written by the most profitable author in the database.

   h. Provide the list of authors who wrote the books purchased by the customers who have spent more than the average customer.

   WorksheetTwoAdvancedQueries:
   https://drive.google.com/file/d/1s92YwxS_ynP_I1qEYbHs5jyLr7lih90N/view?usp=sharing

Once you have completed all of the questions for Part Two, create a ZIP archive containing the binary SQLite file and the three text files and submit this to the Carmen Dropbox. **Make sure your queries work against your database and provide your expected output before you submit them!**