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Principles of Databases

Online Book Store

Preliminary Conceptual Design Report

I. Project Description

This project seeks to implement a basic book store database that would be utilized by an online book store company. This book store database would allow for basic functionality and design that would be associated with purchasing books online from a book store. This initial report is to document the basic design and intent of the functionality in order to better refine the design and to help arrive at the ultimate intent of this project, to learn the database design process in a proficient manner.

A. General Database Description

The database shall allow for a storage of customers of the book store. Each customer will have pertinent information stored as attributes. Each customer shall be able to have multiple shipping addresses for delivery of the books but each customer shall only be allowed one billing address. The database shall also allow for each customer to store their payment methods, which consists of credit cards. The customer shall be able to purchase a book, which can be described by information specific to the book(e.g. title, pages, version, etc), author, publisher, and genre. This book purchase will be part of an order which will entail the necessary purchase information, shipping information, and be related to an order status. Finally a customer will be able to access all orders they have placed in an order history.

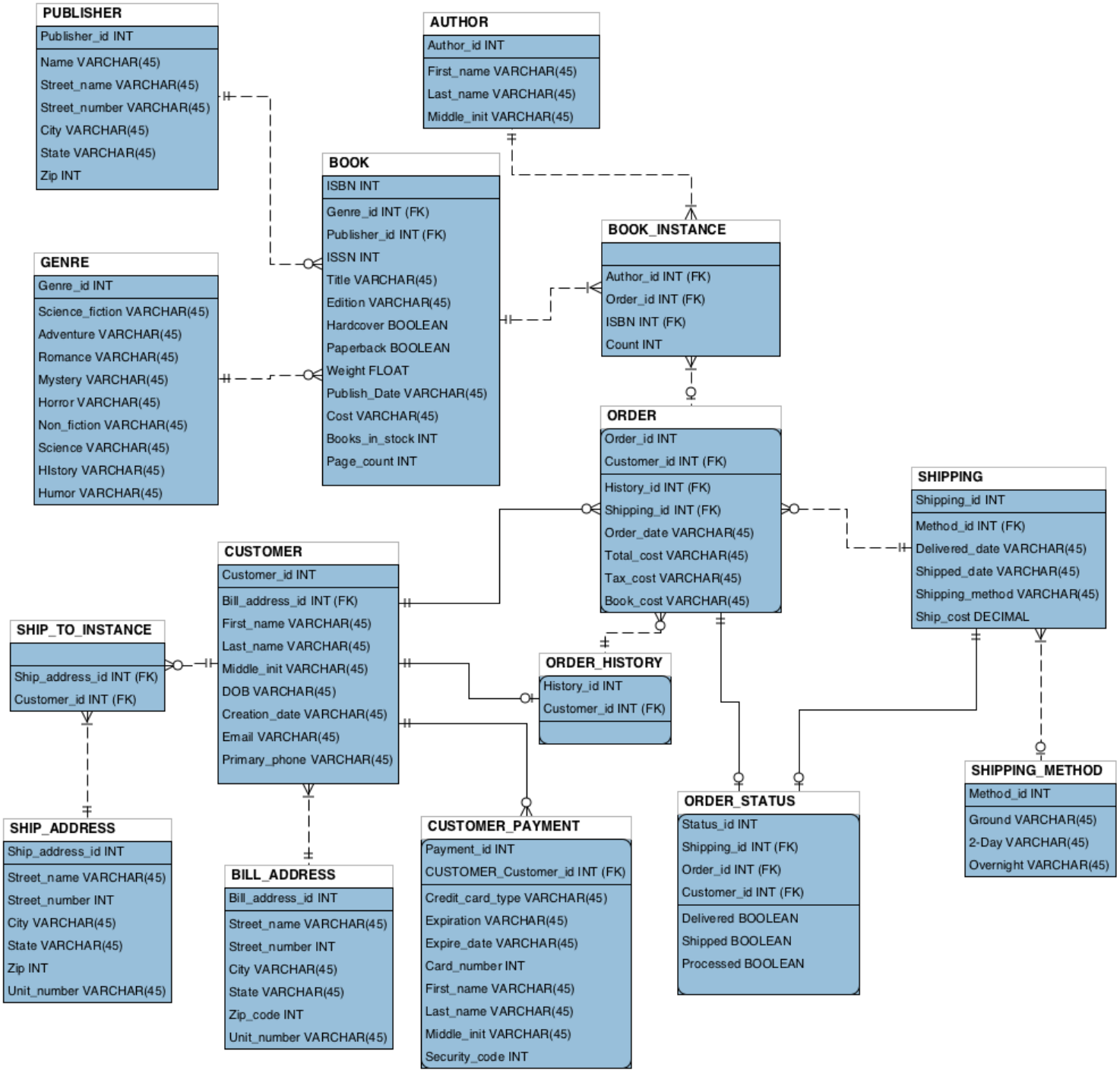
B. Database Entities Description

1. CUSTOMER - Entity that represents a customer at a contact level. Then all the attributes of this entity are mostly related to contact information.
2. BILL_ADDRESS - Entity to hold the bill address information for a customer. A customer may only have one associated bill address but multiple customers may have the same bill address.
3. SHIP_ADDRESS - Entity to hold the shipping information related to a customer. A customer may have multiple shipping addresses and a shipping address may be associated to multiple customers.
4. SHIP_TO_INSTANCE - Intersection entity to resolve the many-to-many relationship between CUSTOMER and SHIP_ADDRESS.
5. CUSTOMER_PAYMENT - Entity to hold payment information for a customer. Payment information is specific to a customer instance and a customer may

have many instances of a payment method. This database design limits payment method to credit cards.

6. BOOK - Entity to hold information for each book instance. Attributes are related to descriptors of the book, including cost and weight. Additionally this entity maintains a count of how many books are in stock.
7. GENRE - A reference entity to provide the genre of a book. It is restricted for a book to associated with on genre, the primary genre that would describe the book best. A book must have a genre and genres are a static list of choices.
8. PUBLISHER - Entity to hold the publisher information of a book. All books must have a publisher.
9. AUTHOR - Entity to hold information of authors. Authors can author zero to multiple books and a book can have 1 to many authors.
10. BOOK_INSTANCE - Intersection entity to resolve the many-to-many relationship between BOOK and AUTHOR. Additionally this entity will allow for multiple issues of the same book to be purchased.
11. ORDER - An entity to hold the order information for a book purchase related to a customer. This is mostly related to cost and dates related to the order. An ORDER can have multiple BOOK_INSTANCES.
12. SHIPPING - Entity to hold shipping information relative to an ORDER. This would entail the shipping cost, the pertinent shipping dates, and method of delivery.
13. SHIPPING_METHOD - A reference entity to hold information specific to a shipping method. These static values are ground, 2-day, and overnight.
14. ORDER_STATUS - Entity to hold the information about the status of an order, including whether it was processed, shipped, or delivered. Each ORDER is related to one ORDER_STATUS but allows for the situation where an ORDER_STATUS wasn't generated yet.
15. ORDER_HISTORY - Entity to hold all ORDER entities relative to customer.

II. Entity Relationship Diagram



III. Selection of Proposed Functionality

A. Queries

1. Select all books of certain genre
2. Find all books of a certain genre with a certain cost constraint
3. Find all books that have zero stock
4. Find all books by a certain author
5. Find all orders that have not been shipped
6. View all books of a certain genre in a user's order history

B. Reports

1. Order status for a certain order
2. Order history for a certain user showing a list of all order histories
3. All books that have zero inventory

IV. Project Implementation

The DBMS that I will be using for project implementation is mySQL Workbench. I have been using this for the design process. I have not had much time to really learn this tool and I hope to be able to understand it better in the future, but in order to do so I feel I need to find a good tutorial on mySQL workbench. If not this aspect of the project might become a very large time investment that will be hard to scope.

V. Project Plan and Status

I have recently finished mapping out what entities and relationships compose my database and produced an entity relationship diagram. However I do expect and hope there will be feedback from the review time to refine my design and fix any errors.

Moving forward I will begin to fill out the various sections of the database design document that was provided in class. Additionally I will begin to start researching how to use mySQL workbench further to be able to implement the conceptual design. The challenge, as has been thus far, will be to find time to do so.