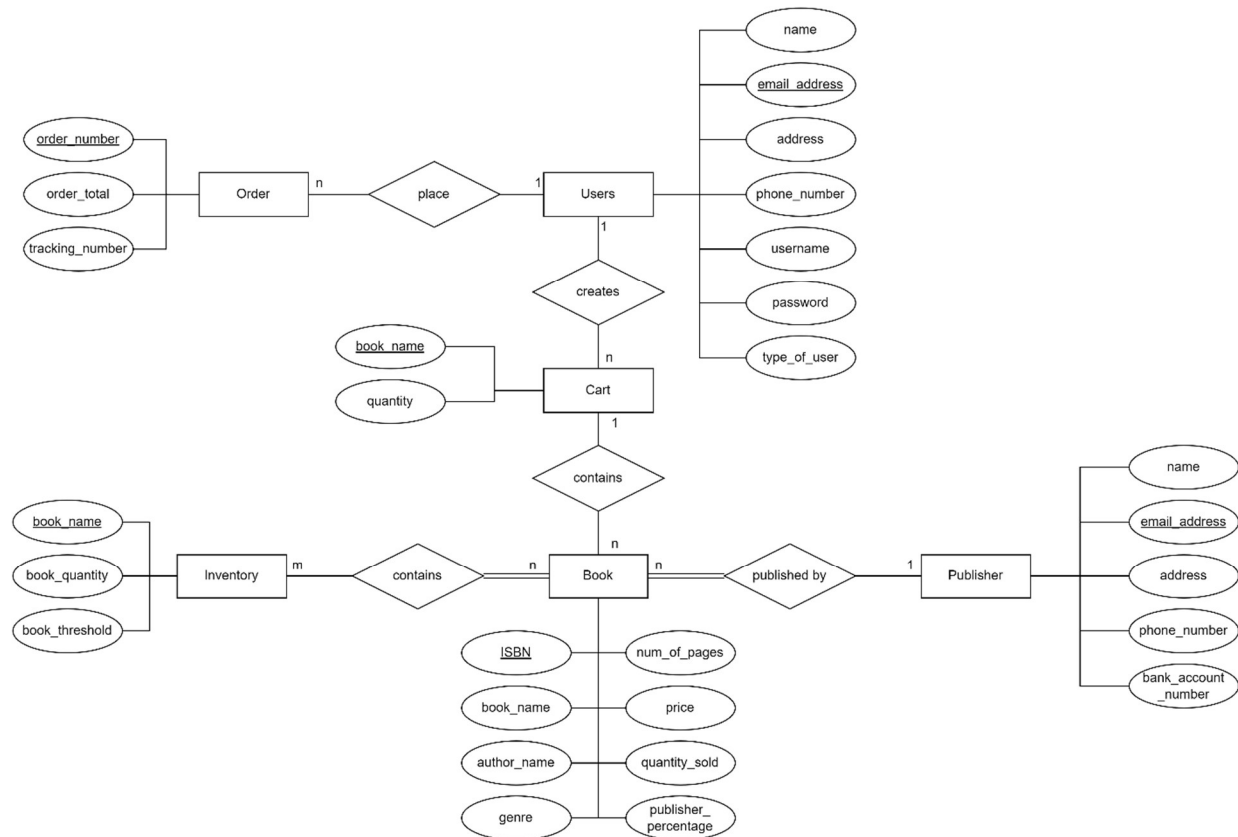# Online Bookstore (Look Inna Book)
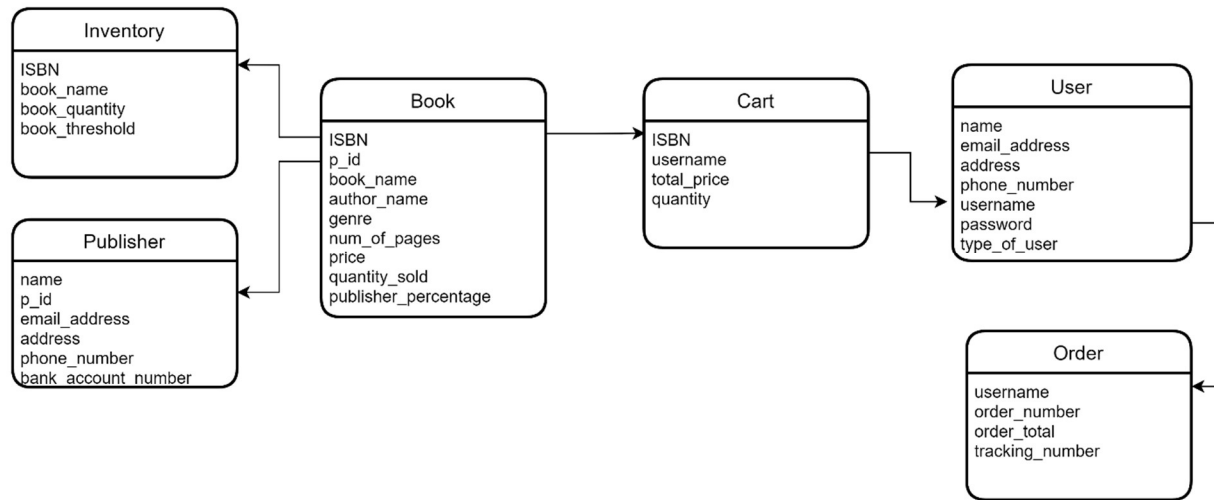
Conceptual Design

Assumptions

- One user can place many orders.
- Encapsulated both the customer and the owner under the "Users" entity since they can both place orders.
- A publisher can publish multiple books and one book is associated with one publisher.

Reduction to Relation Schemas

Inventory
ISBN
book_name
book_quantity
book_threshold

Book
ISBN
p_id
book_name
author_name
genre
num_of_pages
price
quantity_sold
publisher_percentage

Cart
ISBN
username
total_price
quantity

User
name
email_address
address
phone_number
username
password
type_of_user

Publisher
name
p_id
email_address
address
phone_number
bank_account_number

Order
username
order_number
order_total
tracking_number

Primary Keys

Book: ISBN

Cart: ISBN

Users: username

Order: username

Publisher: p_id

Inventory: ISBN

Normalization of Relation Schemas

User
$F = \{$ username $\rightarrow$ name, email_address, address, phone_number, password, type_of_user$\}$

Compute (username)$^+$
- username satisfies BCNF as it has all the attributes.

Cart
$F = \{$ ISBN, username $\rightarrow$ total_price, quantity$\}$

Since ISBN and username point to all attributes, it satisfies BCNF.

order
$F = \{$ username $\rightarrow$ order_number,
order_number $\rightarrow$ order_total, tracking_number$\}$

(username)$^+$ = order_number, order_total, tracking_number, username

(ordernumber)$^+$ = order_total, tracking_number

username satisfies BCNF but order_number does not.
Breakdown order_number.

The resulting relations are

R_1 = username, order_number
R_2 = order_number, order_total, tracking_number

Publisher

$F = \{P\_id, email) \rightarrow$ name, address, phone_number,
                    bank_account_number $\}$

$(P\_id, email)^+ = P\_id, email$, name, address,
                    phone_number, bank_account_number

Satisfies   BCNF

Inventory

$F = \{$ ISBN $\rightarrow$ book_name, book_quantity, book_threshold$\}$

$(ISBN)^+ =$ ISBN, book_name, book_quantity,
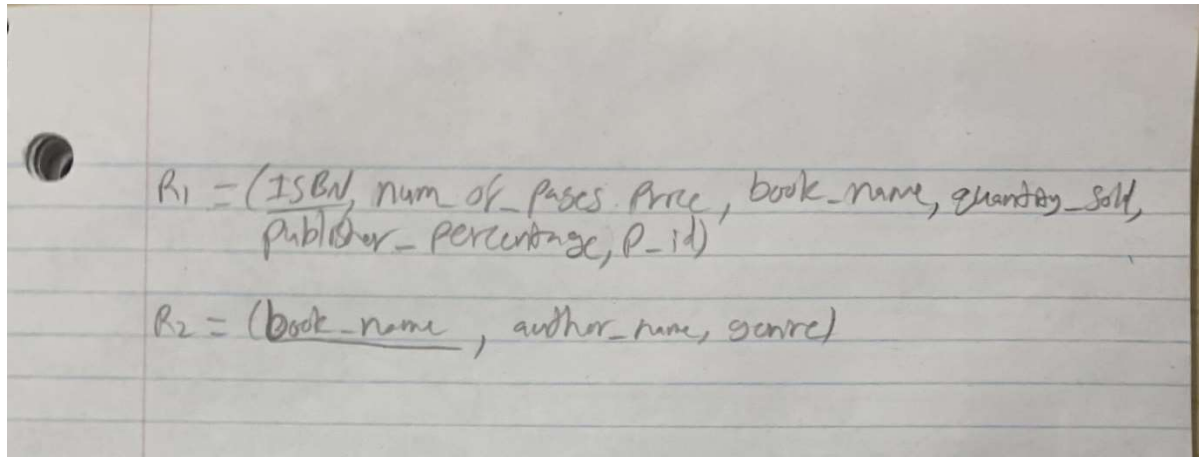   book_threshold

Satisfies   BCNF

Book

$F = \{$ book_name $\rightarrow$ author_name, genre,
        ISBN $\rightarrow$ book_name, P_id, num_of_pages,
            price, quantity_sold, publisher_percentage $\}$
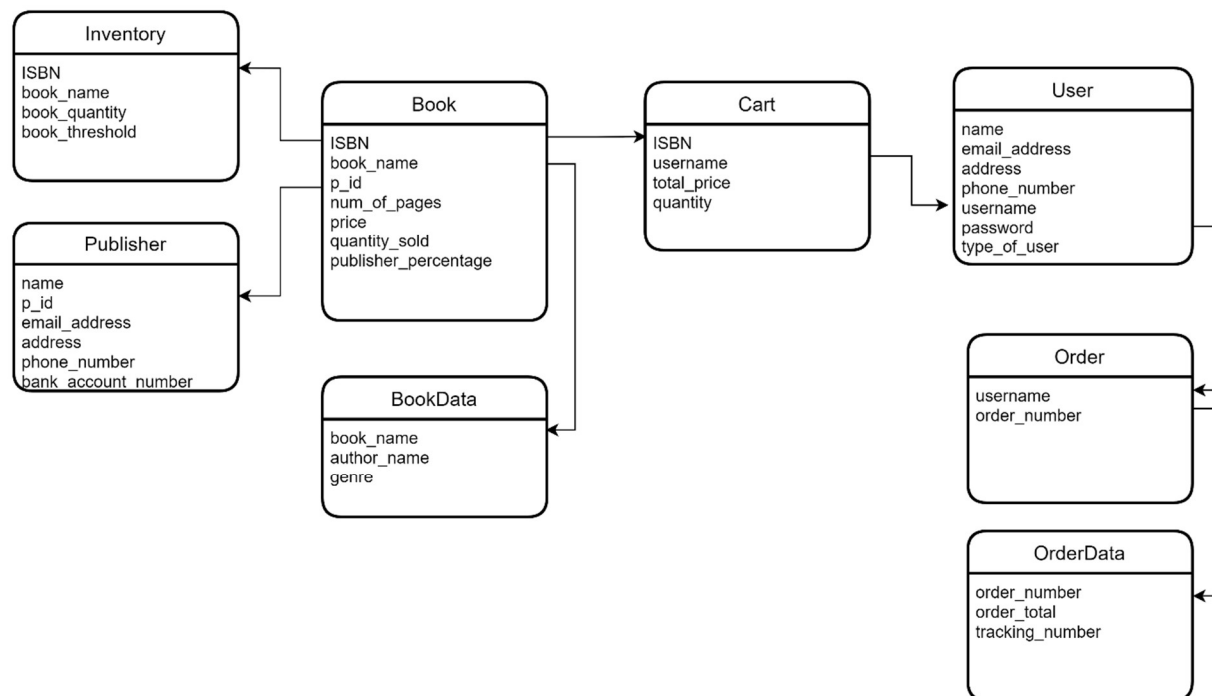
$(book\_name)^+ =$ author_name, book_name, genre

doesn't   satisfy   BCNF

$(ISBN)^+ =$ author_name, genre, book_name, P_id,
            num_of_pages, price, quantity_sold, publisher_per

$R_1 = ($ISBN, num of pages. Price, book_name, quantity_sold, publisher_percentage, p_id$)$

$R_2 = ($book_name, author_name, genre$)$

Database Schema Diagram

Inventory

ISBN
book_name
book_quantity
book_threshold

Book

ISBN
book_name
p_id
num_of_pages
price
quantity_sold
publisher_percentage

Cart

ISBN
username
total_price
quantity

User

name
email_address
address
phone_number
username
password
type_of_user

Publisher

name
p_id
email_address
address
phone_number
bank_account_number

BookData

book_name
author_name
genre

Order

username
order_number

OrderData

order_number
order_total
tracking_number

Primary Keys

Book: ISBN

BookData: book_name

Cart: ISBN, username

Users: username, email_address

Order: username

OrderData: order_number

Publisher: p_id

Inventory: ISBN

GitHub Repository

The SQL and project files are present in the following GitHub repository link:
https://github.com/saadeid-sys/COMP3005Project