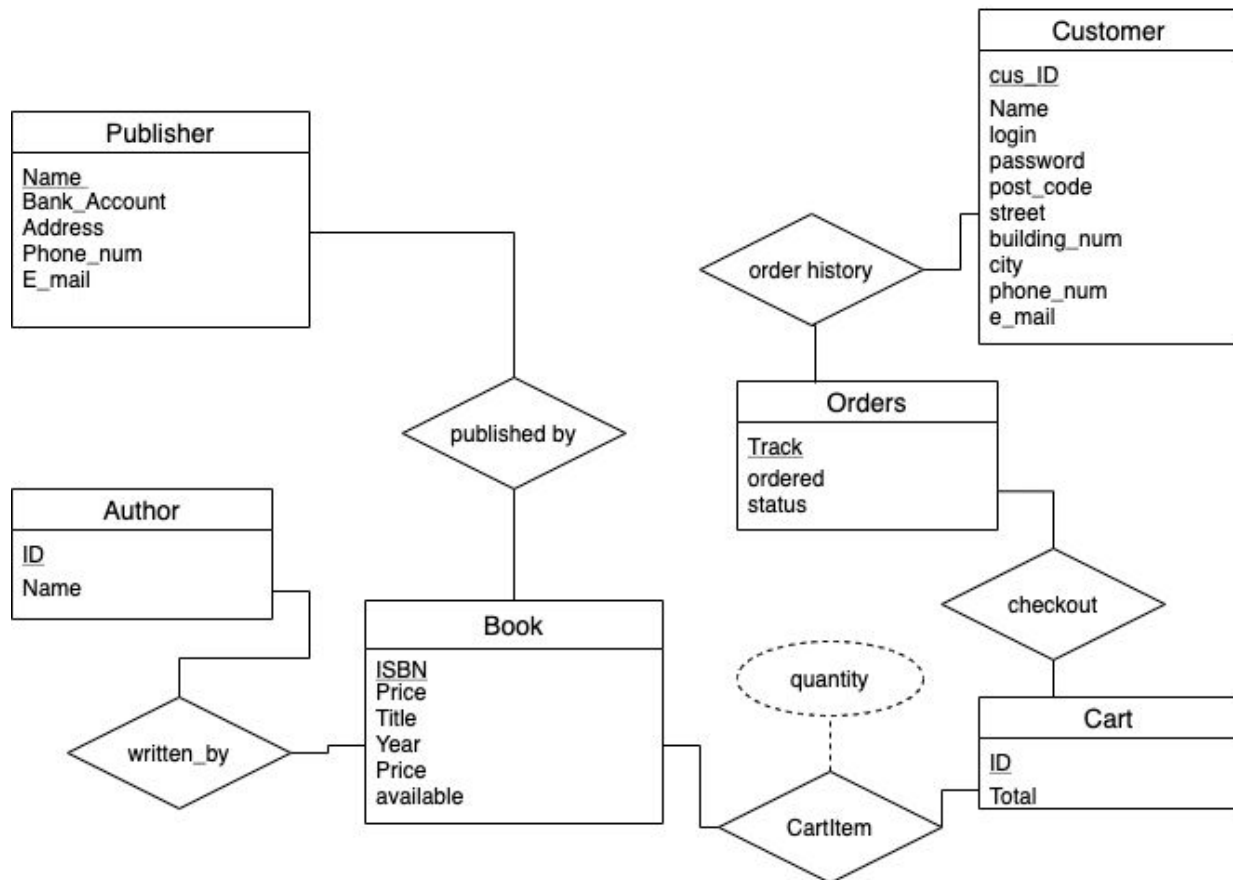# COMP3005 Project (Winter 2020)

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Conceptual Design

ER-Diagram

Reduction to Relation Schemas

Publisher (<u>Name</u> , Bank_Account ,Address ,Phone_num , E-mail)
published_by(<u>Name, ISBN</u>)
Author (<u>ID</u> , Name)
written_by(<u>ID, ISBN</u>)
Book (<u>ISBN</u>, Pub_Name , authorID , price , title, year, available)
Customer (<u>cus_ID</u>, name, login, password, post_code, street, building_num, city , phone_num, e_mail)
Cart (<u>ID</u> , Total)
CartItem (<u>ID</u> ,ISBN, Cart_ID , quantity)
Orders (<u>track</u>, ID, cus_ID ,ordered, date, status)
checkout(<u>ID</u>, <u>Track</u>)
Order_history(<u>Track</u>, <u>cus_ID</u>)

Normalization of Relation Schemas

<u>Non- trivial Functional Dependencies</u>

Book:

       {ISBN → Pub_Name , authorID , price , title, year, available}

Publisher:

       {Name → Bank_Account ,Address ,Phone_num , E-mail}

Author:

       {ID → Name}

Written_by:

       No functional dependencies

Customer:

       {cus_ID → name, login, password, post_code, street, building_num, city , phone_num, e_mail}

Cart:

       {ID → Total}

CartItem:

       {ID → ISBN, Cart_ID , quantity}

Orders:

       {track → ID, cus_ID ,ordered, date, status}

published_by:

       No functional dependencies

checkout:

       No functional dependencies

Order_history:

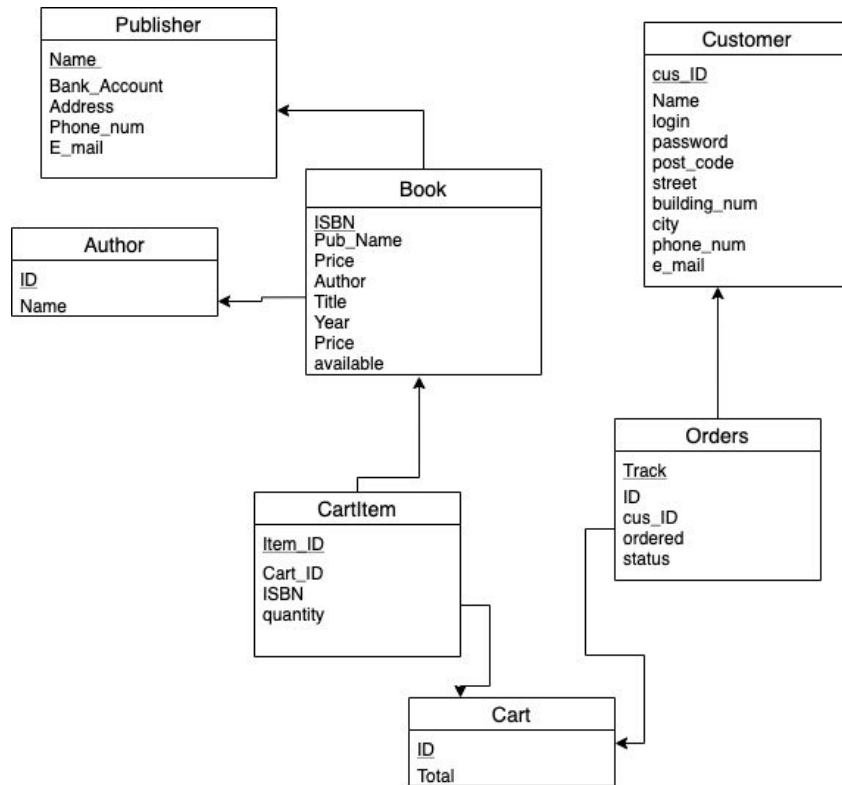   No functional dependencies

<u>Normalization</u>

In book ISBN is the candidate key, with F+ able to divided into 2 rules (rule $\alpha \rightarrow \beta$).

1. That α has the candidate key, ISBN, then β would contain the whole schema attributes
2. α doesn't have the candidate key then $\beta = \alpha$.

Since the non-trivial functional dependency contains the candidate key only, then the relation is in BCNF. The relations with no functional dependencies only have trivial functional dependencies which means that they are already in BCNF.

Database Schema Diagram

Publisher
Name
Bank_Account
Address
Phone_num
E_mail

Author
ID
Name

Book
ISBN
Pub_Name
Price
Author
Title
Year
Price
available

Customer
cus_ID
Name
login
password
post_code
street
building_num
city
phone_num
e_mail

CartItem
Item_ID
Cart_ID
ISBN
quantity

Orders
Track
ID
cus_ID
ordered
status

Cart
ID
Total

Implementation

This project was coded in Intellij and the database implemented in postgres. The application interface is a command line interface. I have an object called database which does all the queries and the bookstore does all the menu displays and gets user input.

```
~~~~~~~~~~~~~~~~~~~
   Main Menu
~~~~~~~~~~~~~~~~~~~
Choose one of the following:
Leave Store(0),Account Info(1), Search for Book(2), View Cart(3), Checkout(4),Track Order(5),
Manger Settings(6)
2
~~~~~~~~~~~~~~~~~~~
   Search Menu
~~~~~~~~~~~~~~~~~~~
Search by:
 Author(1), Title(2), ISBN(3),Publisher(4),Year(5)
2
Enter in Search Key:
the
Searching...........
     1. The Hunger Games
     2. The Great Gatsby
     3. The Fault in Our Stars
     4. The Hobbit or There and Back Again
     5. The Catcher in the Rye
     6. To the Boys Ive Love Before
Select a Book or search again(0):
6
Title: To the Boys Ive Love Before
Author: Jenny Han
Price: 20.99
ISBN: 9781442426702
Publisher: Simon & Schuster Books for Young Readers
Year: 2014
Add book in cart?(y/n)
y
To the Boys Ive Love Before added to cart.
```

Searching and adding a book into cart.

```
     Main Menu
~~~~~~~~~~~~~~~~~~~~~~
Choose one of the following:
Leave Store(0),Account Info(1), Search for Book(2), View Cart(3), Checkout(4),Track Order(5),
Manger Settings(6)
3
Cart:
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
  $11.99     Cross Fire
  $20.99     To the Boys Ive Love Before
= $32.0
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
     Main Menu
~~~~~~~~~~~~~~~~~~~~~~
Choose one of the following:
Leave Store(0),Account Info(1), Search for Book(2), View Cart(3), Checkout(4),Track Order(5),
Manger Settings(6)
4
Please login to checkout.
login:wuw
password:1234
Welcome Back, Amy Penuela!
Please enter shipping address
2748  Shaughnessy St BC
Cart:
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
  $11.99     Cross Fire
  $20.99     To the Boys Ive Love Before
= $32.0
Your order number and tracking number is: 6
```

Viewing Cart and checking out

```
     Main Menu
~~~~~~~~~~~~~~~~~~~~~~
Choose one of the following:
Leave Store(0),Account Info(1), Search for Book(2), View Cart(3), Checkout(4),Track Order(5),
Manger Settings(6)
5
Please enter in track number:
6
Tracking order.................
Tracking number: 6
Shipped to: 2748  Shaughnessy St BC
Ordered on: 2020-04-13
Status: PROCESSING
~~~~~~~~~~~~~~~~~~~~~~~~~
```

Tracking order

```
~~~~~~~~~~~~~~~~~~~~
    Main Menu
~~~~~~~~~~~~~~~~~~~~
Choose one of the following:
Leave Store(0),Account Info(1), Search for Book(2), View Cart(3), Checkout(4),Track Order(5),
Manger Settings(6)
6
Please enter password:
0000
~~~~~~~~~~~~~~~~~~~~
    Owner Menu
~~~~~~~~~~~~~~~~~~~~
Choose one of the following:
Return to main menu(0),Add book(1),Add publisher(2), View sales(3)
1
Enter ISNB:
9780007491568
year:
1953
price:
18.99
quantity:
15
Book title:
Fahrenheit 451
Author Name:
Ray Bradbury
publisher:
Harper Voyager
New book added.
```

Adding a new book.

```
~~~~~~~~~~~~~~~~~~~~
    Owner Menu
~~~~~~~~~~~~~~~~~~~~
Choose one of the following:
Return to main menu(0),Add book(1),Add publisher(2), View sales(3)
3
    Sales Reports
+++++++++++++++++++++++++++++++++++++++++++++
    Book sales by title
Title                      Author                    Publisher                  Copies sold
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
The Hunger Games           Suzanne Collins           Scholastic Press           3
Mockingjay                 Suzanne Collins           Scholastic Press           2
Catching Fire              Suzanne Collins           Scholastic Press           2
The Catcher in the Rye     J.D. Salinger             Little, Brown              2
I, Alex Cross              James Patterson           Little, Brown              2
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
    Book sales by author
Author                     Books
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Suzanne Collins            4
Suzanne Collins            3
James Patterson            2
J.D. Salinger              2
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
    Owner Menu
~~~~~~~~~~~~~~~~~~~~~
Choose one of the following:
Return to main menu(0),Add book(1),Add publisher(2), View sales(3)
```

Displaying Sales

GitHub Repository

https://github.com/amypenuela/COMP-3005