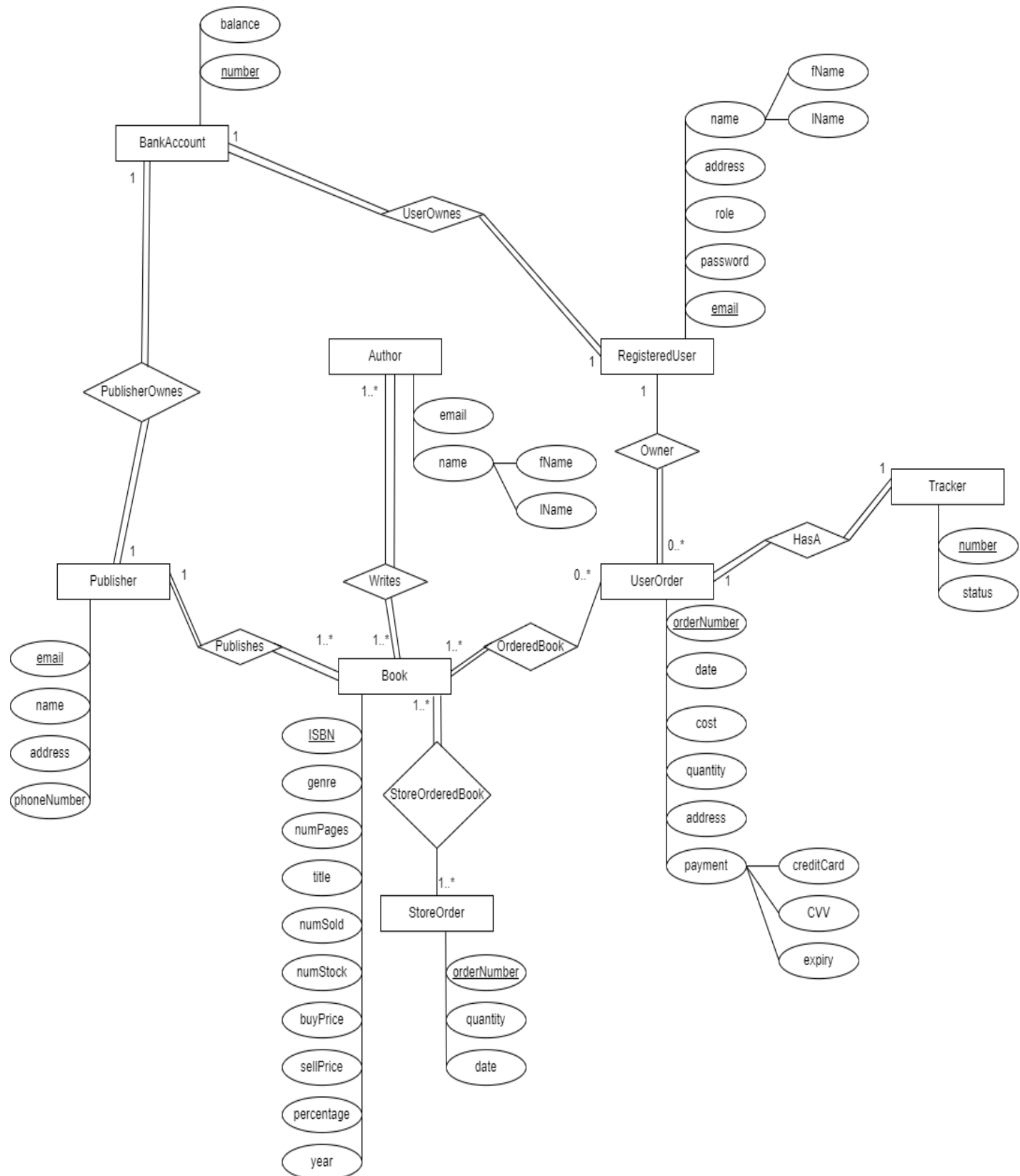COMP 3005 Project (Fall 2022)

Lauren McElravy

101184838

12.09.2022

2.1 Conceptual Design

Assumptions/Reasoning:

- Every Book requires <u>at least one</u> author to exist which means that the book has total participation. To be an Author (every author) requires <u>at least one book</u> written which also implies total participation.
- Every BankAccount requires <u>one</u> owner, either a RegisteredUser or a Publisher, which implies total participation. And thus, every RegisteredUser and Publisher in the database requires <u>one</u> BankAccount which also implies total participation.
- Every StoreOrder requires <u>at least one</u> book to exist which implies total participation. <u>Every Book</u> will have at least one StoreOrder (from the first orders that populate the store, the BookStore database). This is partial participation because each book can have multiple orders but not every book will.
- Every UserOrder requires <u>at least one</u> book to exist which implies total participation. <u>Not every book</u> will have a new order placed which implies partial participation.
- Every UserOrder requires <u>one</u> RegisteredUser to place the order which implies total participation. But <u>not every RegisteredUser</u> will place/have placed an order which implies partial participation.
- Every Book requires <u>one</u> publisher to exist which implies total participation. To be a Publisher (every publisher) requires <u>at least one</u> book published which also implies total participation.
- Every UserOrder requires <u>one</u> Tracker to exist which implies total participation. Every Tracker exists only if there is <u>one</u> Tracker which also implies total participation.

2.2 Reduction to Relation Schemas

RegisteredUser	email	password	role	address	fName	lName	bankAccount

Publisher	email	name	address	phoneNumber	bankAccount

UserOrder	orderNumber	cost	date	quantity	address	creditCard	CVV	expiry	username	ISBN

Book	ISBN	genre	numPages	title	numSold	numStock	buyPrice	sellPrice	year	percentage

AuthorBook	authorID	ISBN

Author	email	fName	lName

PublisherBook	publisherID	ISBN

StoreOrder	orderNumber	quantity	date	ISBN

BankAccount	number	balance

Tracker	number	status

2.3 Normalization of Relation Schemas

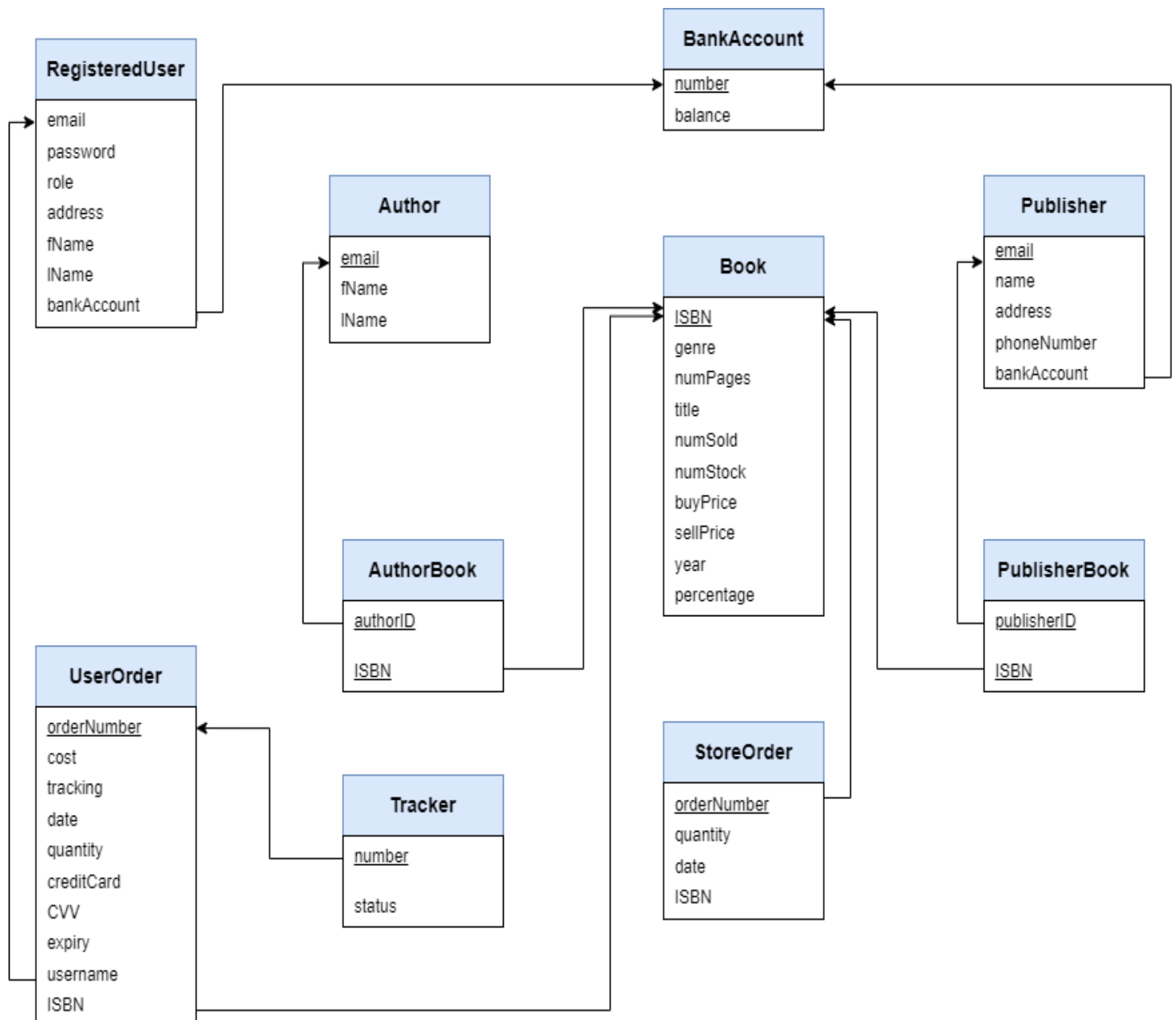| RELATION & FUNCTIONAL DEPENDENCIES	TESTING FOR BCNF

RegisteredUser (email, fName, lName, password, role, address, bankAccount)
 	
    email → fName, lName, password, role, address, bankAccount
    bankAccount → email, password, role, address, fName, lName
	Compute $email^+$
	    result = email
	        email → fName, lName, password, role, address, bankAccount: result = email, fName, lName, password, role, address, bankAccount
	        bankAccount → email, password, role, address, fName, lName = email, fName, lName, password, role, address, bankAccount
	    Thus, result = { RegisteredUser }
	    email is a superkey
	email → fName, lName, password, role, address, bankAccount DOES NOT VIOLATE BCNF
	Compute $bankAccount^+$
	    result = bankAccount
	        email → fName, lName, password, role, address, bankAccount: result = bankAccount
	        bankAccount → email, password, role, address, fName, lName = bankAccount, email, fName, lName, password, role, address
	    Thus, result = { RegisteredUser }
	    email is a superkey
	bankAccount → email, password, role, address, fName, lName DOES NOT VIOLATE BCNF
	Since, no nontrivial dependencies cause a violation of BCNF, Publisher is in BCNF.

Publisher(email, name, address, phoneNumber, bankAccount)
 	
    email → name, address, phoneNumber, bankAccount
    phoneNumber → email, name, address, bankAccount
    name → email, address, phoneNumber, bankAccount
    bankAccount → email, name, address, phoneNumber
	Compute $email^+$
	    result = email
	        email → name, address, phoneNumber, bankAccount: result = email, name, address, phoneNumber, bankAccount
	        phoneNumber → email, name, address, bankAccount: result = email, name, address, phoneNumber, bankAccount
	        name → email, address, phoneNumber, bankAccount: result = email, name, address, phoneNumber, bankAccount
	        bankAccount → email, name, address, phoneNumber: result = email, name, address, phoneNumber, bankAccount
	    Thus, result = {Publisher}
	    email is a superkey
	email → name, address, phoneNumber, bankAccount DOES NOT VIOLATE BCNF
	Compute $name^+$
	    result = name

email → name, address, phoneNumber, bankAccount: result = name

phoneNumber → email, name, address, bankAccount: result = name

name → email, address, phoneNumber, bankAccount: result = name, email, address, phoneNumber, bankAccount

bankAccount → email, name, address, phoneNumber: result = name, email, address, phoneNumber, bankAccount

Thus, result = {Publisher}

name is a superkey

name → email, address, phoneNumber, bankAccount DOES NOT VIOLATE BCNF

Compute *phoneNumber$^+$*

result = phoneNumber

email → name, address, phoneNumber, bankAccount: result = phoneNumber

phoneNumber → email, name, address, bankAccount: result = phoneNumber, email, name, address, bankAccount

name → email, address, phoneNumber, bankAccount: result = phoneNumber, email, name, address, bankAccount

bankAccount → email, name, address, phoneNumber: result = phoneNumber, email, name, address, bankAccount

Thus, result = {Publisher}

phoneNumber is a superkey

phoneNumber → email, name, address, bankAccount DOES NOT VIOLATE BCNF

Compute *bankAccount$^+$*

result = bankAccount

email → name, address, phoneNumber, bankAccount: result = bankAccount

phoneNumber → email, name, address, bankAccount: result = bankAccount

name → email, address, phoneNumber, bankAccount: result = bankAccount

bankAccount → email, name, address, phoneNumber: result = bankAccount, email, name, address, phoneNumber

Thus, result = {Publisher}

bankAccount is a superkey

bankAccount → email, name, address, phoneNumber DOES NOT VIOLATE BCNF

Since, no nontrivial dependencies cause a violation of BCNF, Publisher is in BCNF.

UserOrder(orderNumber, cost, date, address, creditCard, CVV, expiry, username)
     orderNumber → cost, date, addresss,
     creditCard, CVV, expiry, username
	Compute $orderNumber^+$
	     result = orderNumber
	         orderNumber → cost, date, address,
	         creditCard, CVV, expiry, username, ISBN:
	         result = orderNumber, cost, date, address,
	         creditCard, CVV, expiry, username
	     Thus, result = {UserOrder}
	     orderNumber is a superkey
	 orderNumber → cost, date, address, creditCard, CVV, expiry, username, DOES NOT VIOLATE BCNF
	 Therefore, UserOrder is in BCNF.

Book(ISBN, genre, numPages, title, numSold, numStock, buyPrice, sellPrice, year, percentage)
     ISBN → genre, numPages, title,
     numSold, numStock, buyPrice,
     sellPrice, year, percentage
     title, numPages, year, genre → ISBN
	Compute $ISBN^+$
	     result = ISBN
	         ISBN → genre, numPages, title, numSold,
	         numStock, buyPrice, sellPrice, year,
	         percentage: result = ISBN, genre, numPages,
	         title, numSold, numStock, buyPrice, sellPrice,
	         year, percentage
	         title, numPages, year, genre → ISBN: result =
	         ISBN, genre, numPages, title, numSold,
	         numStock, buyPrice, sellPrice, year,
	         percentage
	     Thus, result = {Book}
	     ISBN is a superkey
	 ISBN → genre, numPages, title, numSold, numStock, buyPrice, sellPrice, year, percentage DOES NOT VIOLATE BCNF
	 Compute $(title, numPages, year, genre)^+$
	     result = (title, numPages, year, genre)
	         ISBN → genre, numPages, title, numSold,
	         numStock, buyPrice, sellPrice, year,
	         percentage: result = title, numPages, year,
	         genre, ISBN
	         title, numPages, year, genre → ISBN: result =
	         title, numPages, year, genre, ISBN
	         ISBN → genre, numPages, title, numSold,
	         numStock, buyPrice, sellPrice, year,
	         percentage: result = title, numPages, year,
	         genre, ISBN, numSold, numStock, buyPrice,
	         sellPrice, year, percentage
	         title, numPages, year, genre → ISBN: result =
	         title, numPages, year, genre, ISBN, numSold,
	         numStock, buyPrice, sellPrice, year,
	         percentage
	     Thus, result = {Book}
	     (title, numPages, year, genre) is a superkey
	 title, numPages, year, genre → ISBN DOES NOT VIOLATE BCNF
	 Since, no nontrivial dependencies cause a violation of BCNF, Book is in BCNF.

AuthorBook(authorID, ISBN)
    authorID → ISBN
    ISBN → authorID
	Compute $authorID^+$
	    result = authorID
	        authorID → ISBN: result = authorID, ISBN
	        ISBN → authorID: result = authorID, ISBN
	    Thus, result = {AuthorBook}
	    authorID is a superkey
	authorID → ISBN DOES NOT VIOLATE BCNF
	Compute $ISBN^+$
	    result = ISBN
	        authorID → ISBN: result = ISBN
	        ISBN → authorID: result = authorID, ISBN
	    Thus, result = {AuthorBook}
	    ISBN is a superkey
	ISBN → authorID DOES NOT VIOLATE BCNF
	Since, no trivial dependencies cause a violation of BCNF, AuthorBook is in BCNF.

Author (email, fName, lName)
    email → fName, lName
    fName, lName → email
	Compute $email^+$
	    result = email
	        email → fName, lName: result = email, fName, lName
	        fName, lName → email: result = email, fName, lName
	    Thus, result = {Author}
	    email is a superkey
	email → fName, lName DOES NOT VIOLATE BCNF
	Compute $(fName, lName)^+$
	    result = fName, lName
	        email → fName, lName: result = fName, lName
	        fName, lName → email: result = fName, lName, email
	    Thus, result = {Author}
	    (fName, lName) is a superkey
	fName, lName → email DOES NOT VIOLATE BCNF
	Since, no trivial dependencies cause a violation of BCNF, Author is in BCNF.

PublisherBook(publisherID, ISBN)
    publisherID → ISBN
    ISBN → publisherID
	Compute $publisherID^+$
	    result = publisherID
	        publisherID → ISBN: result = publisherID, ISBN
	        ISBN → publisherID: result = publisherID, ISBN
	    Thus, result = {PublisherBook}
	    publisherID is a superkey
	publisherID → ISBN DOES NOT VIOLATE BCNF
	Compute $ISBN^+$
	    result = ISBN
	        publisherID → ISBN: result = ISBN

	$ISBN \rightarrow publisherID$: result = ISBN, publisherID Thus, result = {PublisherBook} ISBN is a superkey $ISBN \rightarrow publisherID$ DOES NOT VIOLATE BCNF Since, no trivial dependencies cause a violation of BCNF, PublisherBook is in BCNF.

StoreOrder(orderNumber, quantity, date, ISBN)
    orderNumber $\rightarrow$ quantity, date, ISBN
	Compute $orderNumber^+$
	    result = orderNumber
	        orderNumber $\rightarrow$ quantity, date, ISBN: result = orderNumber, quantity, date, ISBN
	    Thus, result = {StoreOrder}
	    orderNumber is a superkey
	orderNumber $\rightarrow$ quantity, date, ISBN DOES NOT VIOLATE BCNF
	Therefore, StoreOrder is in BCNF.

BankAccount(number, balance)
    number $\rightarrow$ balance
	Compute $number^+$
	    result = number
	        number $\rightarrow$ balance: result = number, balance
	    Thus, result = {BankAccount}
	    number is a superkey
	number $\rightarrow$ balance DOES NOT VIOLATE BCNF
	Therefore, BankAccount is in BCNF.

Tracker(number, status)
    number $\rightarrow$ status
	Compute $number^+$
	    result = number
	        number $\rightarrow$ status: result = number, status
	    Thus, result = {Tracker}
	    number is a superkey
	number $\rightarrow$ status DOES NOT VIOLATE BCNF
	Therefore, Tracker is in BCNF.

2.4 Database Schema Diagram

BankAccount
- number
- balance

RegisteredUser
- email
- password
- role
- address
- fName
- lName
- bankAccount

Author
- email
- fName
- lName

Book
- ISBN
- genre
- numPages
- title
- numSold
- numStock
- buyPrice
- sellPrice
- year
- percentage

Publisher
- email
- name
- address
- phoneNumber
- bankAccount

AuthorBook
- authorID
- ISBN

PublisherBook
- publisherID
- ISBN

UserOrder
- orderNumber
- cost
- tracking
- date
- quantity
- creditCard
- CVV
- expiry
- username
- ISBN

Tracker
- number
- status

StoreOrder
- orderNumber
- quantity
- date
- ISBN

2.5 Implementation

Files included:

  bookstore.py

  config.py

  database.ini

  projectDDL.sql

This is a command-line application.

projectDDL.sql is the DDL and DML of the database named Bookstore. This contains the table definitions. The structure of the database. It also contains a few SQL statements that fill the relations/tables up with preliminary information.

database.ini is used to set up the connection to the PostgreSQL database to python with psycopg2.

config.py is used to read the database.ini file. It defines the config function that is used in the bookstore.py

bookstore.py is main body of the application. It uses database.ini and config.py to facilitate the connections to the SQL database. It is the application.

First user interface: The owner/employee

```
------------------------------------------------------------
---------                Look Inna Book              ---------
-----                  THE ONLINE BOOKSTORE              -----
---                                                      ---
    New user? Please Register
    Have you shopped with us before? Please Login
    Look Inna Book employee(s) please enter
    your login

    12/10/22

    Are you Registered? (Enter y for Yes): y

    username: admin@employee.com
    password: 0000

------------------------------------------------------------
          WELCOME Look Inna Book EMPLOYEE!

    (1) Sales VS. Expenditures Report
    (2) Add NEW BOOK
    (3) Remove BOOK
    (4) Sales per genre Report
    (5) sales per author Report
    (6) Exit

    Enter request: ▌
```

Sales VS. Expenditures Report

```
----------------------------------------------------------------
    SALES VS. EXPENDITURES REPORT PER BOOK

    Book: Desert Star: Signed Edition
        Sales: 190.00
        Sales minus Publisher's Percentage: 133.00
        Expenditures: 50.00
        Profits: 83.00

    Book: The Guest List: A Novel
        Sales: 64.95
        Sales minus Publisher's Percentage: 44.95
        Expenditures: 77.50
        Profits: -32.55

    Book: Void Moon
        Sales: 12.99
        Sales minus Publisher's Percentage: 7.99
        Expenditures: 10.00
        Profits: -2.01

    Book: November 9: A Novel
        Sales: 91.96
        Sales minus Publisher's Percentage: 66.00
        Expenditures: 78.00
        Profits: -12.00

    Book: It Ends with Us: A Novel
        Sales: 91.96
        Sales minus Publisher's Percentage: 60.96
        Expenditures: 80.00
        Profits: -19.04

    Book: Verity
        Sales: 45.98
        Sales minus Publisher's Percentage: 35.16
        Expenditures: 39.00
        Profits: -3.84
```

```
Book: A World of Curiosities: A Novel
     Sales: 119.97
     Sales minus Publisher's Percentage: 81.87
     Expenditures: 61.50
     Profits: 20.37

------------------------------------------------------------

SALES VS. EXPENDITURES REPORT TOTAL
Total Sales: 617.81
Total Sales minus Publisher's Percentage: 221.81
Total Expenditures: 429.93
Total Profits: -33.93
------------------------------------------------------------


(1) Sales VS. Expenditures Report
(2) Add NEW BOOK
(3) Remove BOOK
(4) Sales per genre Report
(5) sales per author Report
(6) Exit

Enter request: █
```

Adding a new book

```
------------------------------------------------------------
ADD A NEW BOOK

Please Ensure You Have The Information On:
Book, Author and Publisher

Book Information
    Book ISBN: 1234567890126
    Book Genre: Mystery
    Number of Pages: 123
    Book Title: Book Example
    Quantity to Order: 2
    Cost: 1.99
    Price to Sell: 12.99
    Year Book was Published: 2022
    Percentage owed: 10.0

Author Information
    Author's Email: author@email.com
    Author's First Name: Author
    Author's Last Name: Test

Publisher Information
    Publisher's Email: publisher@email.com
    Publisher's Name: Publisher
    Publisher's Address: Test
    Publisher's Phone Number: 6131234567

Please confirm the following is correct.

Book Information: 1234567890126 Mystery 123 Book Example 0 2 1.99 12.99 2022 10.0
Author Information: author@email.com Author Test
Publisher Information: publisher@email.com Publisher Test 6131234567

Is this information correct (y for Yes): y
```

Removing a Book

```
--------------------------------------------------------------------------------
    REMOVE A BOOK FROM THE COLLECTION

    Current Books in the Store's Collection:

        Stock: 10 ISBN: 9781478948278 Title: Void Moon
        Stock: 7 ISBN: 9781538724736 Title: Verity
        Stock: 11 ISBN: 9781501110344 Title: November 9: A Novel
        Stock: 3 ISBN: 9780063215382 Title: The Guest List: A Novel
        Stock: 9 ISBN: 9781250145291 Title: A World of Curiosities: A Novel
        Stock: 5 ISBN: 9780316505420 Title: Desert Star: Signed Edition
        Stock: 2 ISBN: 1234567890123 Title: Example Test
        Stock: 2 ISBN: 1234567890128 Title: Example Test
        Stock: 2 ISBN: 1234567890127 Title: Example Test
        Stock: 2 ISBN: 1234567890126 Title: Add Book Example
--------------------------------------------------------------------------------

    Enter the ISBN of the Book to be Removed: 1234567890127

    (1) Sales VS. Expenditures Report
    (2) Add NEW BOOK
    (3) Remove BOOK
    (4) Sales per genre Report
    (5) sales per author Report
    (6) Exit

    Enter request: █
```

Sales per Genre Report

```
    (1) Sales VS. Expenditures Report
    (2) Add NEW BOOK
    (3) Remove BOOK
    (4) Sales per genre Report
    (5) sales per author Report
    (6) Exit

    Enter request: 4

------------------------------------------------------------
    SALES PER GENRE REPORT

        GENRE: Romance
        Sales: 25.92

        GENRE: Thrillers
        Sales: 65.45

        GENRE: Crime
        Sales: -9.56

        GENRE: Mystery
        Sales: 140.00

------------------------------------------------------------
    (1) Sales VS. Expenditures Report
    (2) Add NEW BOOK
    (3) Remove BOOK
    (4) Sales per genre Report
    (5) sales per author Report
    (6) Exit

    Enter request: █
```

Sales per Author Report

```
    Enter request: 5

-------------------------------------------------------------

    SALES PER AUTHOR REPORT

        AUTHOR: Louise Penny
        SALES: 58.47

        AUTHOR: Colleen Hoover
        SALES: 11.96

        AUTHOR: Michael Connelly
        SALES: 140.00

        AUTHOR: Lucy Foley
        SALES: -12.55

        AUTHOR: Author Email
        SALES: 0.00

        AUTHOR: Author Test
        SALES: 0.00

-------------------------------------------------------------

    (1) Sales VS. Expenditures Report
    (2) Add NEW BOOK
    (3) Remove BOOK
    (4) Sales per genre Report
    (5) sales per author Report
    (6) Exit

    Enter request: █
```

Second user interface: User

```
----------------------------------------------------------------
---------              Look Inna Book              ---------
-----                THE ONLINE BOOKSTORE              -----
---                                                       ---
    New user? Please Register
    Have you shopped with us before? Please Login
    Look Inna Book employee(s) please enter
    your login

    12/10/22

    Are you Registered? (Enter y for Yes): y

    username: new@user.com
    password: 123

    You are not a registered User please register now :)
----------------------------------------------------------------
    REGISTERING USER
```

Register User

```
---------------------------------------------------------------
---------                Look Inna Book              ---------
-----                  THE ONLINE BOOKSTORE             -----
---                                                      ---

    New user? Please Register
    Have you shopped with us before? Please Login
    Look Inna Book employee(s) please enter
    your login

    12/11/22

    Are you Registered? (Enter y for Yes): n


----------------------------------------------------------------
    REGISTERING USER


    User Registration
    email (this will be your username): new@user.com
    First Name: New
    Last Name: User
    Password: 123
    Full Address: 1 New Road A1B2C3 Ottawa ON Canada

    Please confirm the following information is correct.
----------------------------------------------------------------
    username = new@user.com
    First Name = New
    Last Name = User
    password = 123
    Full Address = 1 New Road A1B2C3 Ottawa ON Canada
----------------------------------------------------------------
 Confirm Here (y for yes, any key to restart): y

    (1) Search by TITLE
    (2) Search by AUTHOR
    (3) Search by ISBN
    (4) Search by GENRE
    (5) Search by YEAR
    (6) Track Order
    (7) Checkout
    (8) Exit

Enter request: █
```

Search by Title

```
------------------------------------------------------------
    SEARCH BY TITLE

    SEARCH: Verity

        9781538724736: | TITLE: Verity| AUTHOR: colleen@hoover.com| NUMBER OF PAGES: 336| GENRE: Thrillers| PUBLISHERgrandcentralpublishing@publishing.com
                Available Copies: 7 Priced at: 22.99

        Add to Cart (Enter isbn # or any key to continue): 9781538724736

(1) Search by TITLE
(2) Search by AUTHOR
(3) Search by ISBN
(4) Search by GENRE
(5) Search by YEAR
(6) Track Order
(7) Checkout
(8) Exit

Enter request: █
```

Search by Author

```
------------------------------------------------------------
    SEARCH BY AUTHOR

        SEARCH (using email, first name, last name): Colleen

        9781538724736: | TITLE: Verity| AUTHOR: colleen@hoover.com| NUMBER OF PAGES: 336| GENRE: Thrillers| PUBLISHERgrandcentralpublishing@publishing.com
                Available Copies: 7

        9781501110344: | TITLE: November 9: A Novel| AUTHOR: colleen@hoover.com| NUMBER OF PAGES: 320| GENRE: Romance| PUBLISHERatriabooks@publishing.com
                Available Copies: 7

        9781501110368: | TITLE: It Ends with Us: A Novel| AUTHOR: colleen@hoover.com| NUMBER OF PAGES: 384| GENRE: Romance| PUBLISHERatriabooks@publishing.com
                Available Copies: 7

        Add to Cart (Enter isbn #):

(1) Search by TITLE
(2) Search by AUTHOR
(3) Search by ISBN
(4) Search by GENRE
(5) Search by YEAR
(6) Track Order
(7) Checkout
(8) Exit

Enter request: █
```

Search by ISBN

```
------------------------------------------------------------
    SEARCH BY ISBN

        SEARCH: 9780063215382

        9780063215382: | TITLE: The Guest List: A Novel| AUTHOR: lucy@foley.com| NUMBER OF PAGES: 416| GENRE: Crime| PUBLISHERharpercollins@publishing.com
                Available Copies: 3

        Add to Cart (Enter isbn #): 9780063215382

(1) Search by TITLE
(2) Search by AUTHOR
(3) Search by ISBN
(4) Search by GENRE
(5) Search by YEAR
(6) Track Order
(7) Checkout
(8) Exit

Enter request: █
```

Search by Genre

```
-------------------------------------------------------------
    SEARCH BY GENRE

        SEARCH: Thrillers

        9781538724736: | TITLE: Verity| AUTHOR: colleen@hoover.com| NUMBER OF PAGES: 336| GENRE: Thrillers| PUBLISHERgrandcentralpublishing@publishing.com
              Available Copies: 7

        9781250145291: | TITLE: A World of Curiosities: A Novel| AUTHOR: louise@penny.com| NUMBER OF PAGES: 400| GENRE: Thrillers| PUBLISHERstmartinspublishinggroup@publishing.com
              Available Copies: 9

        Add to Cart (Enter isbn #):

    (1) Search by TITLE
    (2) Search by AUTHOR
    (3) Search by ISBN
    (4) Search by GENRE
    (5) Search by YEAR
    (6) Track Order
    (7) Checkout
    (8) Exit

Enter request: █
```

Search by Year

```
-------------------------------------------------------------
    SEARCH BY PUBLISHED YEAR

        SEARCH: 2021

        9781538724736: | TITLE: Verity | AUTHOR: colleen@hoover.com | NUMBER OF PAGES: 336 | GENRE: Thrillers | PUBLISHERgrandcentralpublishing@publishing.com
              Available Copies: 8

        Add to Cart (Enter isbn # or any key to continue):

    (1) Search by TITLE
    (2) Search by AUTHOR
    (3) Search by ISBN
    (4) Search by GENRE
    (5) Search by YEAR
    (6) Track Order
    (7) Checkout
    (8) Exit

Enter request: █
```

Checkout

```
----------------------------------------------------------------
    CART:

    1. Verity  BY Colleen Hoover A Thrillers NOVEL
         Price: 22.99

    Billing/Shipping Information
    Street Number: 2
    Street Name: Road Lane
    Postal Code: A1B2C3
    Province: Ontario
    City: Ottawa
    Country: Canada

    Payment Information
    Credit Card Number: 1234567890123451
    CVV: 123
    expiry: 09/23

    Please confirm the above is correct (y for yes): y

    Quantity of Verity: 3

    (1) Search by TITLE
    (2) Search by AUTHOR
    (3) Search by ISBN
    (4) Search by GENRE
    (5) Search by YEAR
    (6) Track Order
    (7) Checkout
    (8) Exit

Enter request: 6

----------------------------------------------------------------
```

Track Order

```
----------------------------------------------------------------
    TRACK YOUR ORDER

    Order Number: 11

    Order 11 Status is Ordered

    (1) Search by TITLE
    (2) Search by AUTHOR
    (3) Search by ISBN
    (4) Search by GENRE
    (5) Search by YEAR
    (6) Track Order
    (7) Checkout
    (8) Exit

Enter request: █
```

The application has certain type checking and ensuring proper user input. However, there is still room for improvement in that regard.

2.7 GitHub Repository

https://github.com/laurenmcelravy/COMP3005

2.8 Appendix I

As I mentioned in the online form, I am available for a 20-minute demonstration of my work at these time slots on December 12th.

1. 10:00AM
2. 10:40AM
3. 11:00AM
4. 11:40AM
5. 1:00PM
6. 1:20PM
7. 1:40PM