COMP3005 PROJECT

COMP3005 Fall 2022

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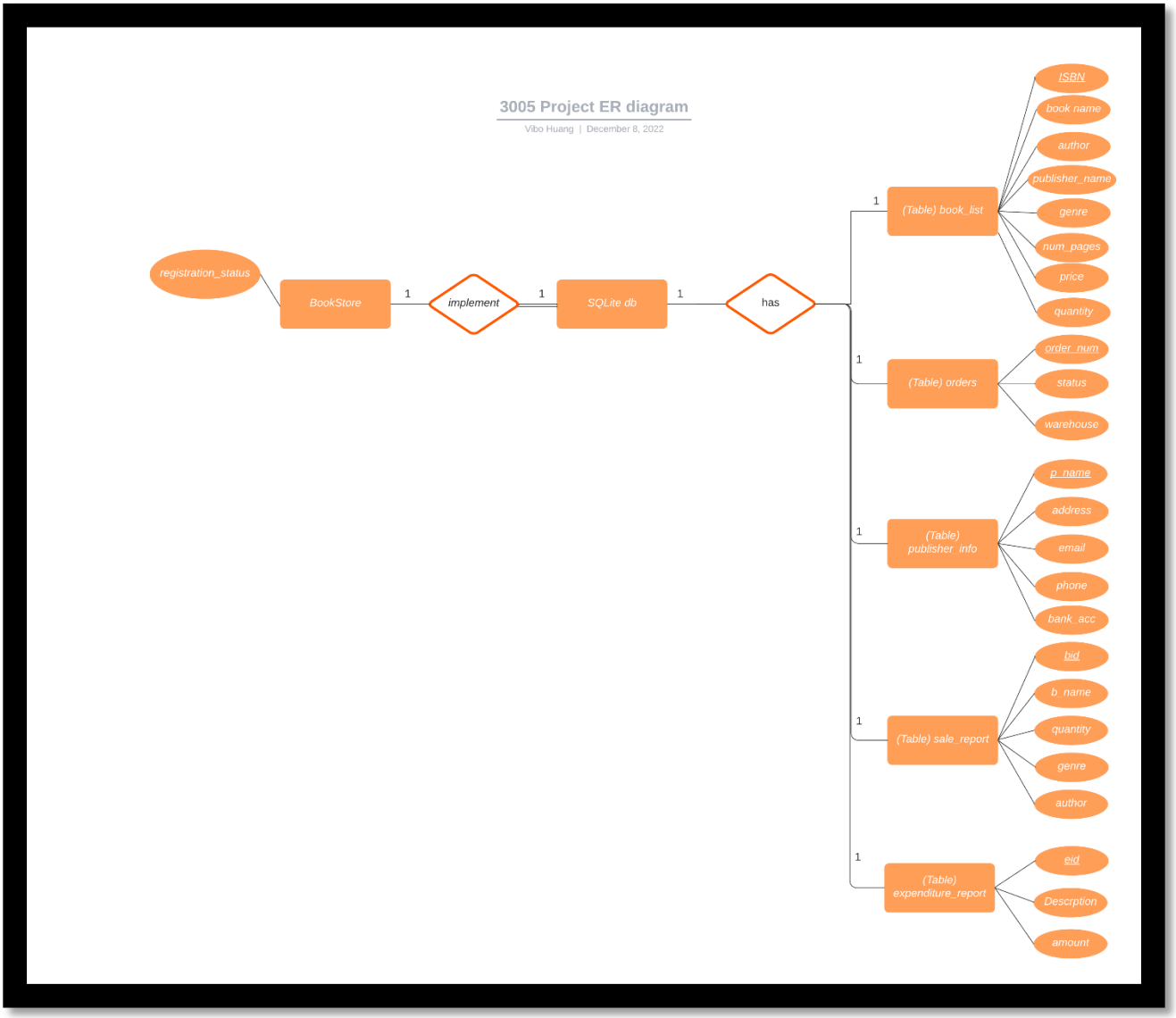
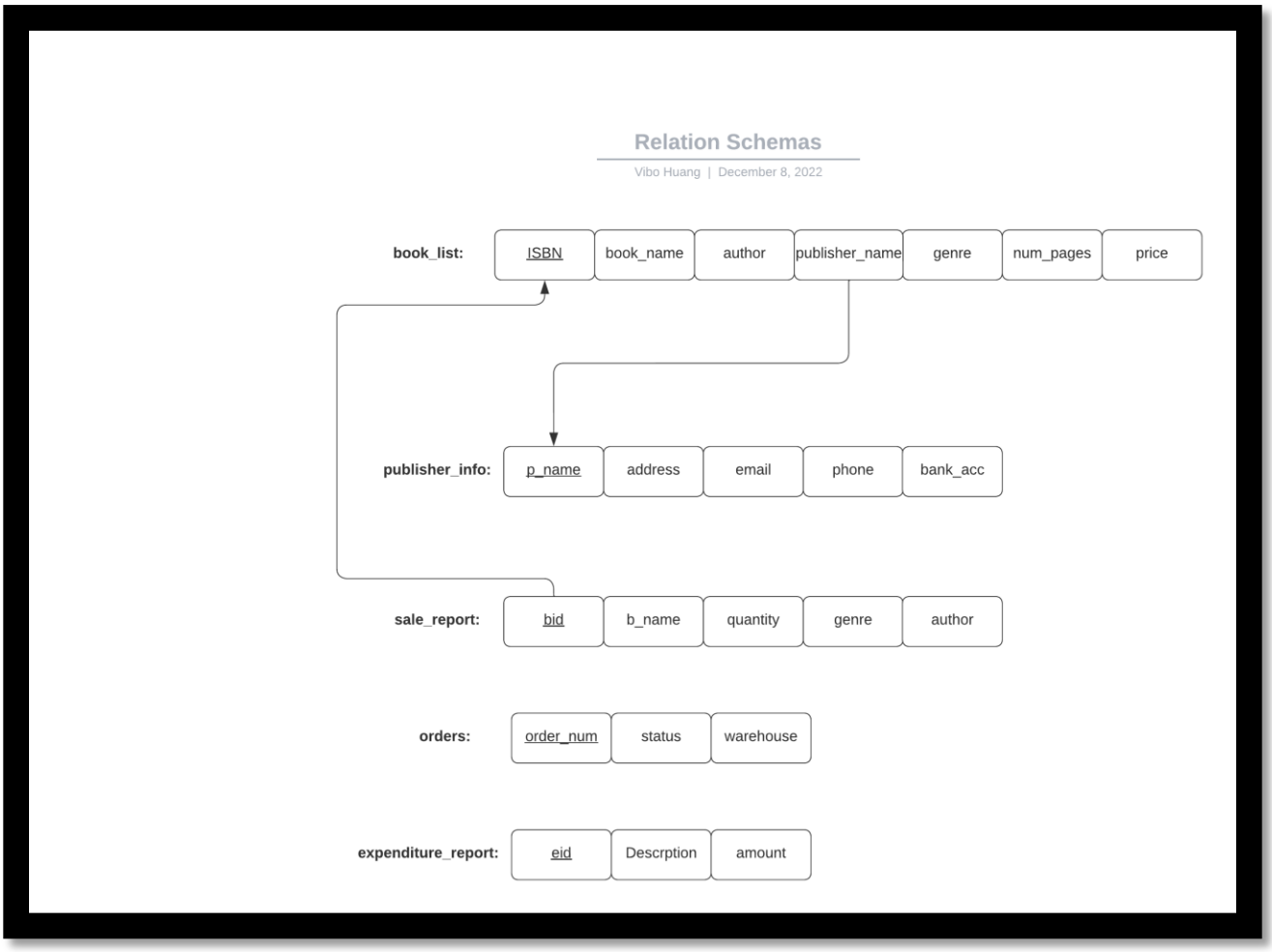
1. Conceptual Design:

The project is done solely by YiLong Huang.



2. Relational Schema:



3. Normalization of Relation Schema:

book_list (ISBN, book_name, author, publisher_name, genre, num_pages, price, quantity, address, email, phone, bank_acc)

F = {ISBN→ book_name, author, genre, num_pages, price, quantity,

publisher_name →address, email, phone, bank_acc}

A candidate key {publisher_name, address, email, phone, bank_acc}

BCNF Decomposition:

publisher_name → address, email, phone, bank_acc but publisher_name is not a superkey

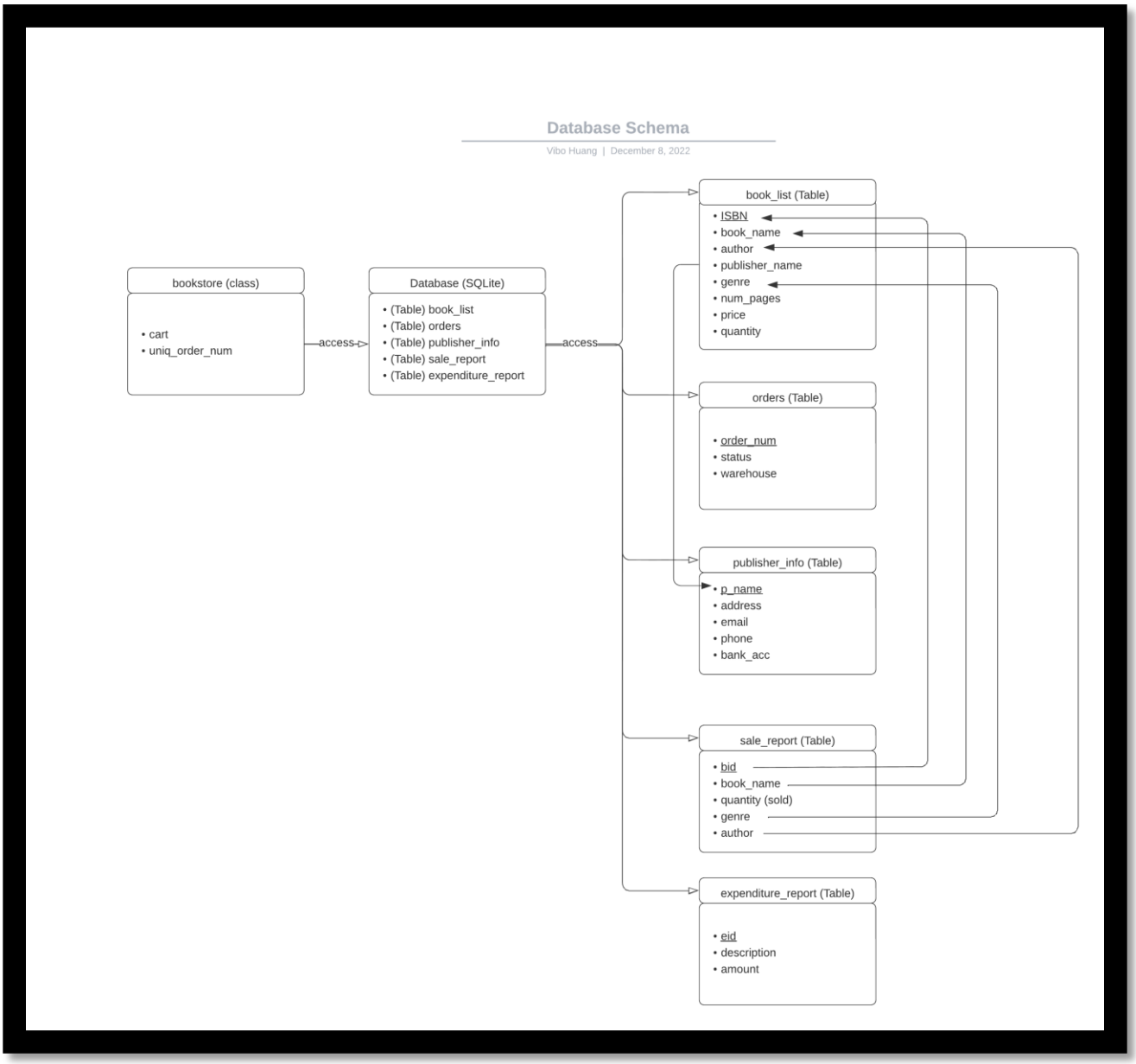
We replace book_list by:

book_list (ISBN→ book_name, author, genre, num_pages, price, quantity)

publisher_info (publisher_name → address, email, phone, bank_acc)

book_list and publisher_info are in BCNF

4. Database Schema Diagram:



5. Implementation:

The project is done using JavaScript and SQLite database. Here is a snapshot of the main menu of the application. It is a command-line application.

Main menu:

```
PS C:\Users\13430\Desktop\COMP3005\Project> node bookstore.js
Connecttion to database sucessfully.

Menu:
1. View book list
2. Search book
3. Add book to store
4. Remove book from store
5. View all publishers
6. Track order number
7. View sales report
8. View expenditure report
9. Buy a book
10. Review shopping cart
11. Clear shopping cart
12. Exit
```

PLEASE NOTE that all of the functions in the menu is implemented. For clarity purposes, I will only go through 3 examples (not to make the report too long).

View book list function:

The bookstore will send a query to the database asking it to return all elements in the book_list table. The bookstore receives the request and send back the results. The bookstore then displays the results:

```
6. Track order number
7. View sales report
8. View expenditure report
9. Buy a book
10. Review shopping cart
11. Clear shopping cart
12. Exit
1
------------------- Books List -------------------
[
  {
    ISBN: 1,
    book_name: 'Harry Potter',
    author: 'J. K. Rowling',
    publisher_name: 'Bloomsbury Publishing',
    genre: 'Fantasy',
    quantity: 20
  },
  {
    ISBN: 2,
    book_name: 'IT',
    author: 'Stephen King',
    publisher_name: 'Viking',
    genre: 'Horror',
    num_pages: 132,
    price: 19.99,
    quantity: 20
  },
  {
    ISBN: 3,
    book_name: 'Enders Game',
    author: 'Orson Scott Card',
    publisher_name: 'Tor Books',
    genre: 'Science fiction',
    num_pages: 219,
    price: 22.55,
    quantity: 20
  }
]
```

Add book to store function:

Bookstore first asks the owner to enter a unique ISBN for the new book:

```
Menu:
1. View book list
2. Search book
3. Add book to store
4. Remove book from store
5. View all publishers
6. Track order number
7. View sales report
8. View expenditure report
9. Buy a book
10. Review shopping cart
11. Clear shopping cart
12. Exit
3
Please enter the ISNB for the book (Integers ONLY!):
```

Bookstore will then ask for the name of the new book:

```
Please enter the ISNB for the book (Integers ONLY!): 4
Please enter the name of the book:
```

Then the author, publisher name, genre, number of pages, price, quantity in stock:

```
Please enter the ISNB for the book (Integers ONLY!): 4
Please enter the name of the book: Wiki
Please enter the author of the book: Jackey Chen
Please enter the publisher of the book: Viking books
Please enter the genre of the book: Fantasy
Please enter the number of pages of the book: (Integers ONLY!) 213
Please enter the price of the book: (NUMBERS ONLY!, may have 2 decimals) 21.99
Please enter quantity of the book: (0 or Positive integers ONLY!) 15
```

Once that is done, the store will check for the validity of the data with the database (e.g., unique ISBNs) and add the new book to the database

```
Please enter the price of the book: (NUMBERS ONLY!, may have 2 decimals) 21.99
Please enter quantity of the book: (0 or Positive integers ONLY!) 15
Book added
```

Showing the new book in the book_list by view the list again:

```
    genre: 'Horror',
    num_pages: 132,
    price: 19.99,
    quantity: 20
  },
  {
    ISBN: 3,
    book_name: 'Enders Game',
    author: 'Orson Scott Card',
    publisher_name: 'Tor Books',
    genre: 'Science fiction',
    num_pages: 219,
    price: 22.55,
    quantity: 20
  },
  {
    ISBN: 4,
    book_name: 'Wiki',
    author: 'Jackey Chen',
    publisher_name: 'Viking books',
    genre: 'Fantasy',
    num_pages: 213,
    price: 21.99,
    quantity: 15
  }
]
```

Remove book from store function:

The bookstore will as for an ISBN of the book to remove:

```
Menu:
1. View book list
2. Search book
3. Add book to store
4. Remove book from store
5. View all publishers
6. Track order number
7. View sales report
8. View expenditure report
9. Buy a book
10. Review shopping cart
11. Clear shopping cart
12. Exit
4
Please enter the book ISBN for removal:
```

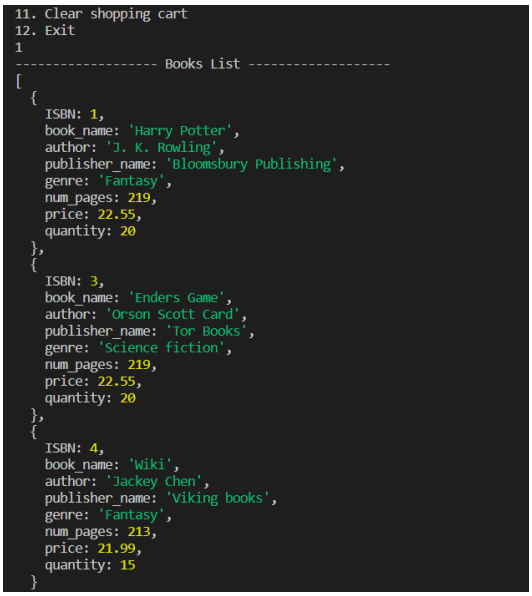
It will check with the database if the ISBN is valid. If not, then display error:

```
Please enter the book ISBN for removal: 55
Invalid ISNB, book not found
```

If the book ISBN exists, remove the book in the book_list table with the given ISBN:

```
Please enter the book ISBN for removal: 2
Book removed
```

Showing the book_list after the removal:



ISBN number 2 is gone.

Summary:

For more functionality and detail, please download project file from github and run it in console. (All function are done!)

Github HTTPS: https://github.com/ViboHuang/COMP3005_Project.git

Github SSH: git@github.com:ViboHuang/COMP3005_Project.git

6. Appendix:

My availability of December 12th is 10 Am, 11AM, and 2PM. Please let me know a day ahead so I can prepare for any presentation.