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COMP 3005 A

**Project Report**

**2.1 Conceptual Design**

|  |
| --- |
| Book |
| book\_id |
| title |
| num\_pages |
| genre |
| price |
| num\_total\_  bought |
| num\_remain |
| expense |
| transfer\_rate |

write

|  |
| --- |
| Author |
| author\_id |
| name |
| phone\_num |

|  |
| --- |
| Owner |
| owner\_id |
| name |
| phone\_num |

add

publish

|  |
| --- |
| Publisher |
| publisher\_id |
| name |
| email |
| address |
| bank\_account |
| phone\_num |

add\_to

|  |
| --- |
| Customer |
| customer\_id |
| name |
| password |

|  |
| --- |
| Checkout\_Basket |
| basket\_id |
| book\_list |
| price |

belong\_to

checkout

|  |
| --- |
| Order |
| order\_id |
| book\_list |
| total\_price |
| details |
| current\_location |

Assumptions:

User has to log in or register first in order to use this application.

Each book must the written by one or more authors, and each author has to write one or more books in order to be an author.

Each book must have one and only one publisher, but each publisher can publish more than one book. A publisher must publish at least one book in order to be taken into consideration.

Each customer can have only one checkout basket.

Customer can place order, or do not place order.

Order is created whenever a customer place order.

Customer cannot see orders that is placed by other people. Only owner can see all placed orders.

Owners can add books to the bookstore.

Owners can only add books from given author and publisher. If the owner wants to add books whose author or publisher is not in database, he must add author or publisher first.

**2.2 Reduction to Relation Schemas**

Author(author\_id, name, phone\_num)

Book(book\_id, title, num\_page, price, num\_total\_bought, num\_remain, genre, publisher\_id, expense, transfer\_rate)

Publisher(publisher\_id, name, email, address, bank\_account, phone\_num)

Owner(owner\_id, name, phone\_num)

Customer(customer\_id, name, password)

Checkout\_Basket(customer\_id, basket\_id, book\_list)

Order(order\_id, total\_price, details, current\_location, customer\_id, basket\_id)

write(author\_id, book\_id)

add(owner\_id, book\_id)

add\_to(customer\_id, basket\_id, book\_id)

**2.3 Normalization of Relation Schema**

Author:

author\_id🡺name, phone\_num

(author\_id)+ = author\_id, name, phone\_num

This is in BCNF because author\_id is a super key for Author.

Book:

book\_id🡺title, num\_page, price, num\_total\_bought, num\_remain, publisher\_id, genre, expense, transfer\_rate

(book\_id)+ = book\_id, title, num\_page, price, num\_total\_bought, num\_remain, publisher\_id, genre, expense, transfer\_rate

This is in BCNF because book\_id is a super key for Book.

Publisher:

publisher\_id🡺name, email, address, bank\_account, phone\_num

(publisher\_id)+ = publisher\_id, name, email, address, bank\_account, phone\_num

This is in BCNF because publisher\_id is a super key for Publisher.

Owner:

owner\_id🡺name, phone\_num

(owner\_id)+ = owner\_id, name, phone\_num

This is in BCNF because owner\_id is a super key for Owner.

Customer:

customer\_id🡺name, password

(customer\_id)+ = customer\_id, name, password

This is in BCNF because customer\_id is a super key for Customer.

Cheakout\_Basket:

customer\_id🡺 basket\_id , book\_list, price, order\_id

basket\_id🡺book\_list, price, order\_id

basket\_id🡺 customer\_id

(customer\_id)+ = customer\_id, basket\_id , book\_list, price, order\_id

customer\_id is a super key for Checkout\_Basket.

(basket\_id)+ = customer\_id, basket\_id , book\_list, price, order\_id

basket\_id is also a super key for Checkout\_Basket.

This is in BCNF because both customer\_id and basket\_id are super keys for Checkout\_Basket.

Order:

order\_id🡺 customer\_id, book\_list, total\_price, details, current\_location

customer\_id🡺 basket\_id

customer\_id🡺 order\_id

(order\_id)+ = order\_id, customer\_id, book\_list, total\_price, details, current\_location, basket\_id

order\_id is a super key for Order.

(customer\_id)+ = order\_id, customer\_id, book\_list, total\_price, details, current\_location, basket\_id

customer\_id is also a super key for Order.

This is in BCNF because both customer\_id and order\_id are super keys for Order.

write:

author\_id, book\_id🡺 author\_id, book\_id

This is in BCNF because it is trivial.

add:

owner\_id, book\_id🡺 owner\_id, book\_id

This is in BCNF because it is trivial.

add\_to:

customer\_id, nasket\_id, book\_id🡺 customer\_id, nasket\_id, book\_id

This is in BCNF because it is trivial.

All functional dependencies are in “good” form, so normalization is completed.

**2.4 Databse Schema Diagram**

|  |
| --- |
| Owner |
| owner\_id |
| name |
| phone\_num |

|  |
| --- |
| Author |
| author\_id |
| name |
| phone\_num |

|  |
| --- |
| write |
| author\_id |
| book\_id |

|  |
| --- |
| publish |
| publisher\_id |
| book\_id |

|  |
| --- |
| Book |
| book\_id |
| title |
| num\_pages |
| genre |
| price |
| num\_total\_  bought |
| num\_remain |
| expense |
| transfer\_rate |

|  |
| --- |
| add |
| owner\_id |
| book\_id |

|  |
| --- |
| Publisher |
| publisher\_id |
| name |
| email |
| address |
| bank\_account |
| phone\_num |

|  |
| --- |
| add\_to |
| book\_id |
| basket\_id |
| customer\_id |

|  |
| --- |
| Customer |
| customer\_id |
| name |
| password |

|  |
| --- |
| Order |
| order\_id |
| book\_list |
| total\_price |
| details |
| current\_location |

|  |
| --- |
| Checkout\_Basket |
| basket\_id |
| customer\_id |
| book\_list |
| price |

|  |
| --- |
| Place\_order |
| customer\_id |
| order\_id |

**2.5 Implementation**

GitHub: <https://github.com/ZhangPeizhou/BookStoreProject.git>

Demo: <https://youtu.be/iRg-DBWpNJo>

**2.7 GitHub Repository**

<https://github.com/ZhangPeizhou/BookStoreProject.git>

**2.8 Appendix I**

Demo: <https://youtu.be/iRg-DBWpNJo>