**COMP3005 Project Report**

Tom Lam – 101114541

Assumptions:

* Participation type is indicated by the number of participants next to each entity in the ER diagram. Specifically, “1..\*” or “1” means total participation while “0..\*” or “0..1” means partial participation
* A book can be published by 1 to many publishers, A publisher can publish 0 to many books
* A book can be collected by 0 to 1 owner, an owner can collect 0 to many book. There’s no book that belongs to 2 different owner
* A book can be ordered by 0 to many orders, an order can order 1 to many book
* An order can be placed by exactly 1 customer, a customer can place 0 to many order

**ER Diagram**

Diagram

Description automatically generated

**Relational Schema**

Book(ISBN, name, genre, description, num\_of\_pages, price)

Author(author\_id, ISBN, name)

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

Publish(publisher\_id, ISBN)

Owner(owner\_id, name)

Collect(ISBN, owner\_id, unit\_in\_stock, unit\_sold, revenue, publisher\_split)

Order(order\_id, billing\_address, shipping\_address, status, ordered\_date, estimated\_arrivate, location)

OrderBook(ISBN, order\_id)

Customer(customer\_id, name, billing\_address, shipping\_address)

CustomerOrder(order\_id, customer\_id)

**Normalization**

Functional dependencies

Book(ISBN, name, genre, description, num\_of\_pages, price)

ISBN 🡪 name, genre, description, num\_of\_pages, price

Author(author\_id, ISBN, name)

author\_id, ISBN 🡪 name

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

publisher\_id 🡪 email, bank\_account, address, email, phone\_number

Publish(publisher\_id, ISBN)

Self-explainatory

Owner(owner\_id, name)

owner\_id 🡪 name

Collect(ISBN, owner\_id, unit\_in\_stock, unit\_sold, revenue, publisher\_split)

ISBN 🡪 owner\_id, unit\_in\_stock, unit\_sold, revenue, publisher\_split

Order(order\_id, billing\_address, shipping\_address, status, ordered\_date, estimated\_arrivate, location)

order\_id 🡪 billing\_address, shipping\_address, status, ordered\_date, estimated\_arrivate, location

Customer(customer\_id, name, billing\_address, shipping\_address)

customer\_id 🡪 name, billing\_address, shipping\_address

CustomerOrder(order\_id, customer\_id)

order\_id 🡪 customer\_id

All relations are already in BCNF because their functional dependency is also the superkey

**Schema Diagram**

Diagram

Description automatically generated