COMP 3005 Project (Fall 2021)

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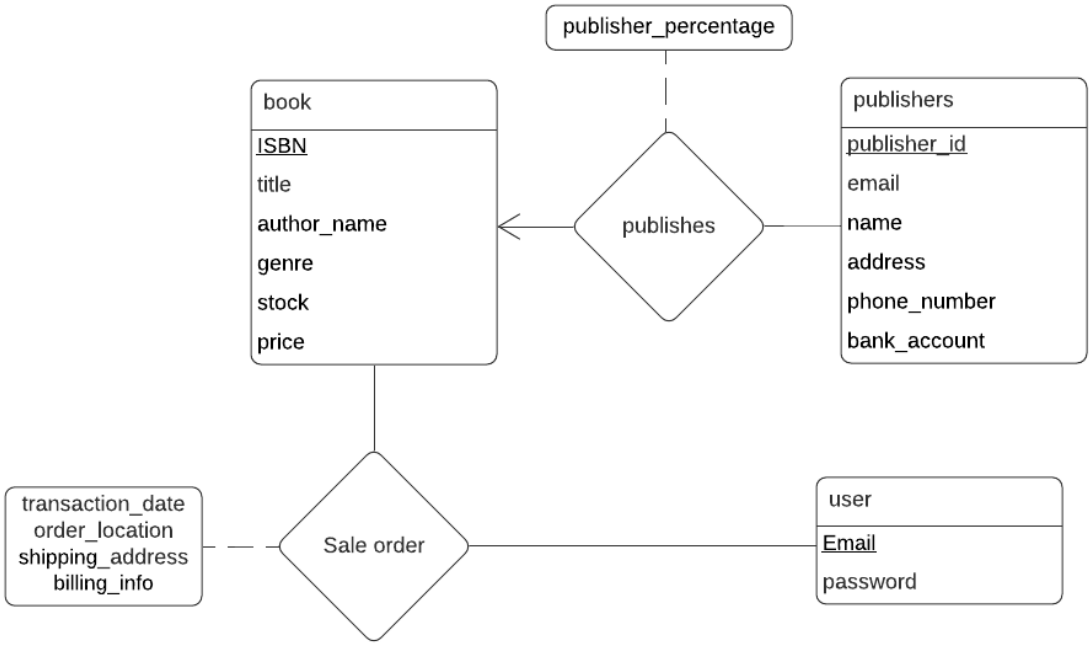
1 Introduction

This project is done SOLO by YOUSSEF ZAYED only for the COMP 3005 course.

2 Project Report

2.1 Conceptual Design



For the book store there are three entities being the publishers, books and users. The users can create a order relation with a book which would include some other order info required for the project. The publishers have a publishes relation with books which includes the percentage the publisher takes from the book sale. some assumptions made are that users only need email and password fields, each

user has a unique email, books have an ISBN which is unique, publishers can only have one phone number per publisher (doesn't have to be unique). Each book can only have one publisher and only has one genre. Assume that each order is only for one book each and that a user must create multiple orders to order multiples of each book.

2.2 Reduction to Relation Schemas

Relation schemas
book(ISBN,title, author_name, genre, stock, price)
publisher(publisher_id,email,name,address,phone_number, bank_account)
user(email,password)
publishes(publisher_id, ISBN, publisher_percentage)
order(order_id, ISBN, email, transaction_date, order_locations, shipping_address, billing_info)

2.3 Normalization of Relation Schemas

book = (ISBN,title, author_name, genre, stock, price)

$F = \{ISBN \rightarrow title, author\_name, genre, stock, price\}$

ISBN determines the reset of the other attributes thus ISBN is a super key which makes all the functional dependencies in BCNF form.

publisher(publisher_id,email,name,address,phone_number, bank_account)

$F = \{publisher\_id \rightarrow email, name, address, phone\_number, bank\_account\}$

publisher_id determines the reset of the other attributes thus publisher_id is a super key which makes all the functional dependencies in BCNF form.

user(email,password)

$F = \{email \rightarrow password\}$

email determines the reset of the other attributes thus email is a super key which makes all the functional dependencies in BCNF form.

publishes(publisher_id, ISBN, publisher_percentage)

$F = \{publisher\_id, ISBN \rightarrow publisher\_percentage\}$

publisher_id, ISBN determine the reset of the other attributes thus publisher_id, ISBN is a super key which makes all the functional dependencies in BCNF form.

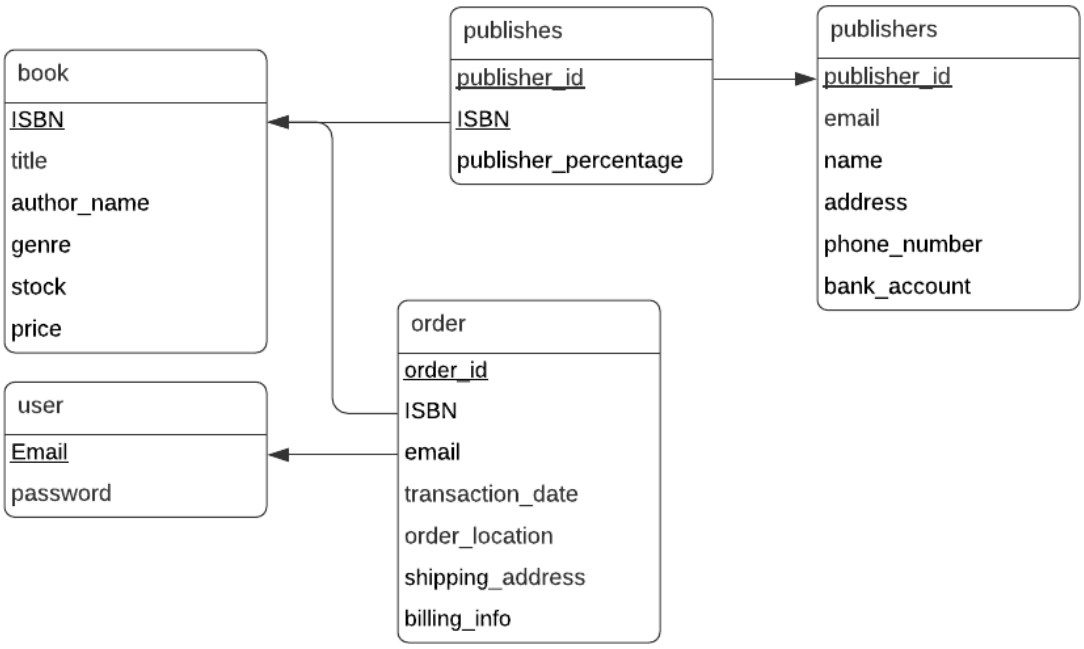
order(order_id, ISBN, email, transaction_date, order_locations, shipping_address, billing_info)

$F = \{order\_id \rightarrow ISBN, email, transaction\_date, order\_locations, shipping\_address, billing\_info\}$

order_id determines the reset of the other attributes thus order_id is a super key which makes all the functional dependencies in BCNF form.

All relations are in BCNF form thus no decomposition is needed.

2.4 Database Schema Diagram



2.5 GitHub Repository

https://github.com/YoussefZayed/3006

2.6 Appendix I

DEC 11th available from 10:59 AM est to 11:59 AM est