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Group: 44
Project Title: Cloud Books
Project URL: http://flip1.engr.oregonstate.edu:8010/

Executive Summary

We designed an app for an online ebooks startup called “Cloud Books”. Our app has an HTML UI front end, back end server, and database. Our front end was written in HTML and Handlebars, our server is running NodeJS, and our database was created using MariaDB. Our database outline and corresponding front end can be broken into four sections: Books, Orders, Users, and Reviews. With one additional intersection table between Orders and Books.

Initially we were going to use User Preferences in place of Reviews, then it changed to a Wishlist, then we finalized on Reviews. We ended up choosing Reviews because it made the most sense in our database design while meeting the relationship requirements. A book can have many reviews, and a user can also have many reviews of different books.

Another major change we made after Step 1 feedback was a revision to our ERD and Schema. We realized that two of our relationships were really just each side of one relationship Between Users and Orders. Users can have zero or one order, but an order can only have one user. This relationship was counted as two when it was really just each side of one relationship. So we added a new 1:M relationship between Users and Reviews so we would have a total of 4 relationships.

The intersection tables were tricky to understand at first. We were not sure what information should be stored in the intersection tables and what other documentation of the intersection table was needed ex: HTML page, ERD, Schema, DB outline. We decided on only inputting the foreign keys and included primary key into the intersection table between Orders and Books. The Orders and Books tables will keep track of all other information we need. After feedback and viewing other projects we added our intersection table(orders_has_books) to our ERD, Schema, database outline, and created a HTML/HBS webpage for it.

Most of our major changes happened early in the database design stage. Once we ironed these out we could build out on the foundation of our database. These changes inspired by feedback from classmates and non-feedback changes resulted in our full stack app implementing CRUD functionalities for our Cloud Books startup company.

Project Outline

Cloud Books is a startup company that wants to sell ebooks. They need a database backend to keep track of their *books*, *orders*, *users,* and *user book reviews*. Without the database, they will not be able to function properly or make informed business intelligence decisions. Cloud Books hopes to make approximately $3 million dollars per year from selling 300,000 e-books online to 60,000 customers.

Database Outline

- **Books:** records information about an individual book's availability
    - bookID: int, auto_increment, unique, not NULL, PK
    - title: varchar(250), not NULL
    - author: varchar(250), not NULL
    - genre: varchar(250), not NULL
    - price: decimal(10,2), not NULL
    - Relationship: Many-to-Many relationship between Orders and Books. An Order can have one or many Books and a Book can be a part of one or many Orders. Both FK of each entity will be in the intersection table.

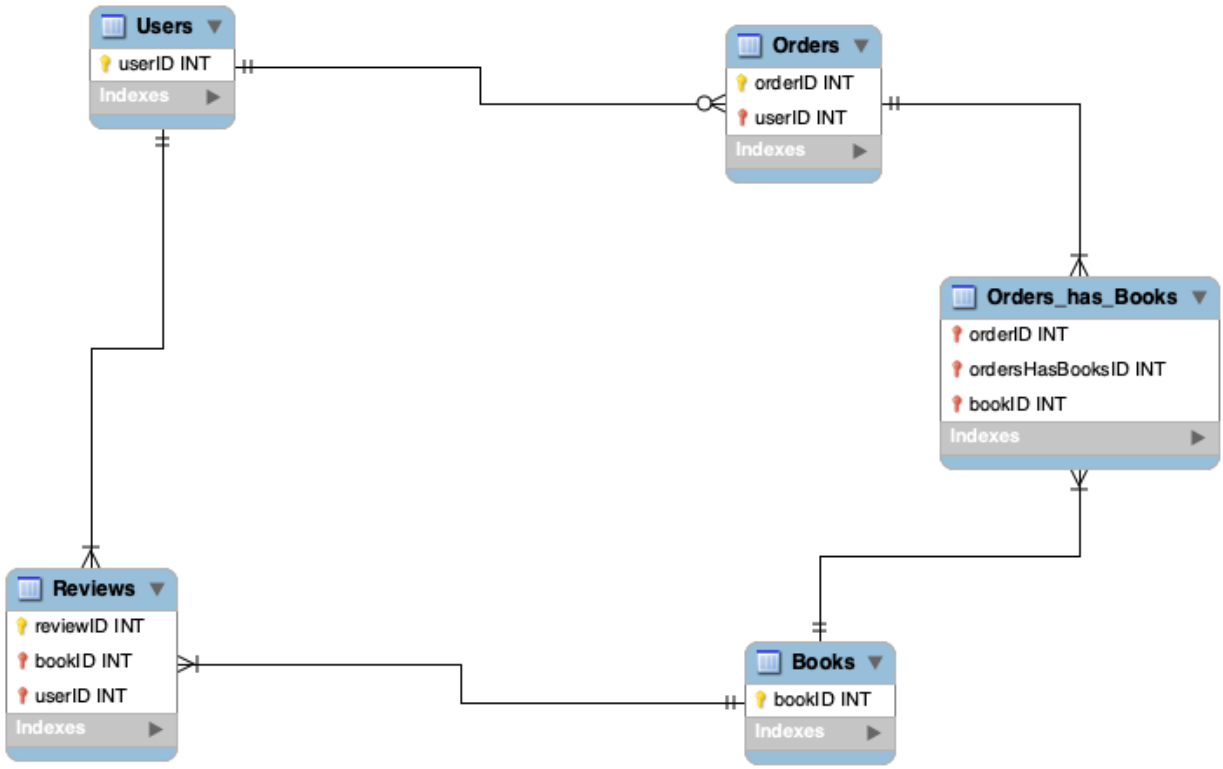
- **Orders:** records order details.
    - orderID: int, auto_increment, unique, not NULL, PK
    - userID: int, not NULL, FK
    - paymentMethod: varchar, not NULL
    - address: varchar, not NULL
    - quantity: int, not NULL
    - orderDate: datetime, no NULL
    - orderStatus: varchar, not NULL
    - totalDue: decimal(10,2), not NULL
    - Relationship: Zero-to-Many relationship between Users and Orders. A User can have zero or many Orders. Users FK will be in the Orders entity.

- **Orders_has_Books:**
    - ordersHasBooksID, int, auto_increment, not null, PK
    - orderID, int, FK
    - bookID, int, FK
    - Relationship: Intersection table for Many-to-Many relationship between Books and Orders.

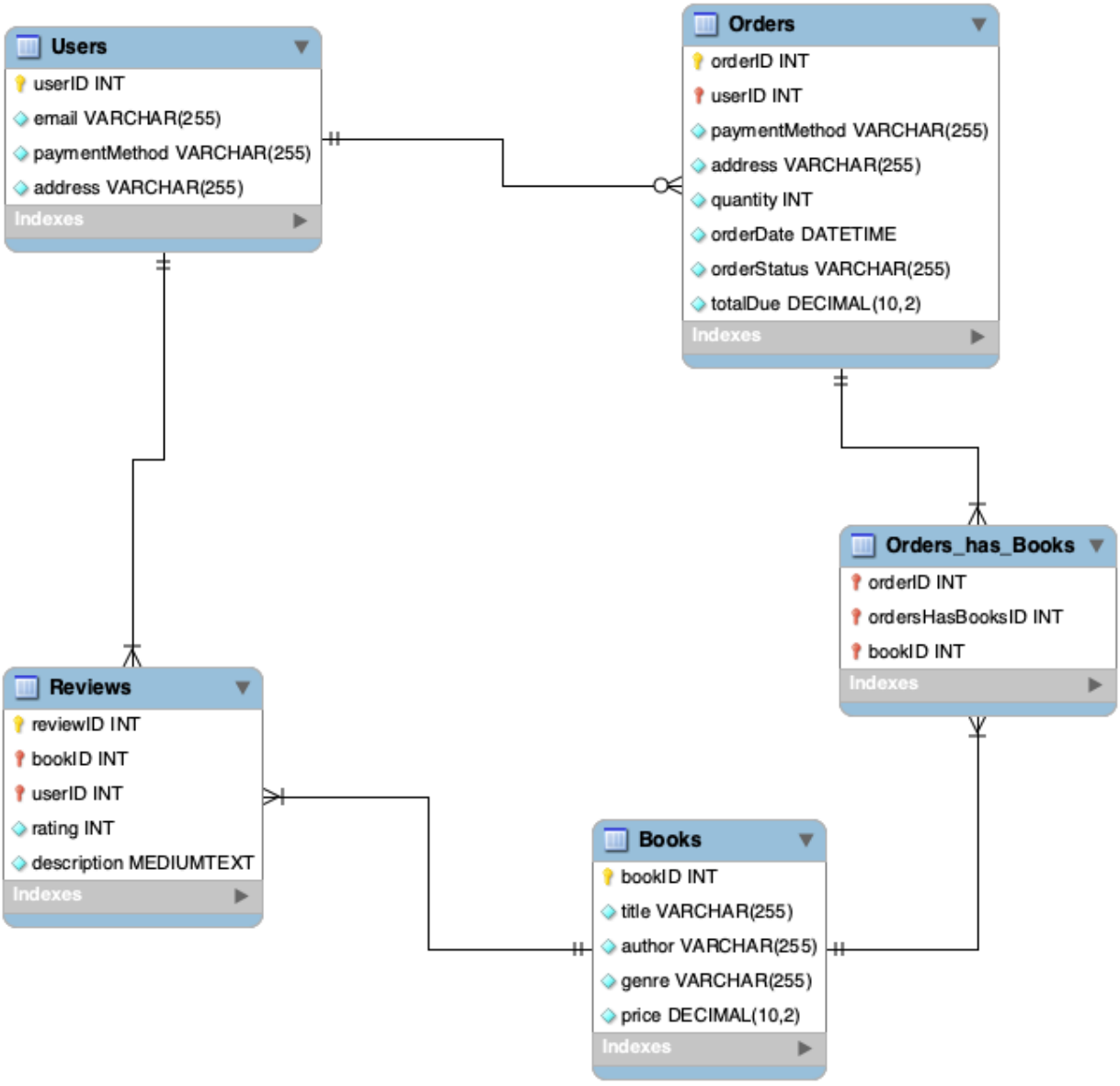
- **Users:** records user information
    - userID: int, auto_increment, unique, not NULL, PK
    - email: varchar, not NULL
    - paymentMethod: varchar, not NULL
    - address: varchar, not NULL
    - Relationship: One-to-Many relationship between Users and Reviews. Users can have many Reviews. User FK in the Reviews entity.

- **Reviews:** records information about a books rating by users
    - reviewID: int, auto_increment, unique, not NULL, PK
    - userID: int, not NULL, FK
    - bookID: int, not NULL, FK
    - rating: int, not NULL
    - description: longtext, not NULL
    - Relationship: One-to-Many relationship between Books and Reviews. A Book can have many Reviews. Book FK in the Review entity.

ER Diagram



Schema


Users
userID INT
email VARCHAR(255)
paymentMethod VARCHAR(255)
address VARCHAR(255)
Indexes
Orders
orderID INT
userID INT
paymentMethod VARCHAR(255)
address VARCHAR(255)
quantity INT
orderDate DATETIME
orderStatus VARCHAR(255)
totalDue DECIMAL(10,2)
Indexes
Orders_has_Books
orderID INT
ordersHasBooksID INT
bookID INT
Indexes
Reviews
reviewID INT
bookID INT
userID INT
rating INT
description MEDIUMTEXT
Indexes
Books
bookID INT
title VARCHAR(255)
author VARCHAR(255)
genre VARCHAR(255)
price DECIMAL(10,2)
Indexes

Sample Data

Books

bookID	title	author	genre	price
1	The Bitcoin Standard	Saifedean Ammous	Economics	14.54
2	The Price of Tomorrow	Jeff Booth	Technology	29.49
3	Permanent Record	Edward Snowden	Security	10.81
4	The Handmaid's Tale	Margaret Atwood	Novel	17.49

Orders

orderID	userID	addressLine1	addressLine2	city	state	postalCode	orderDate	orderStatus	quantity	totalDue	paymentMethod
1	1	1234 Main st.	NULL	Atlanta	Georgia	22923	2012-09-12	Pending	2	34.55	visa 0978
2	2	5678 Canyon Road	NULL	Sherwood	Oregon	99897	1969-04-20	Completed	1	13.32	mastercard 8765
3	3	210 Bowman St.	APT. #G300	Hamburg	New York	14075	1997-06-03	Completed	1	12.21	bitcoin

Orders_has_Books

ordersHasBooksID	orderID	bookID
1	1	1
2	2	2
3	3	3

Reviews

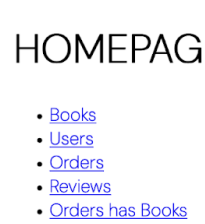
reviewID	userID	bookID	rating	description
1	1	34	4	I enjoyed learning about Bitcoin
2	2	43	3	This book wasn't that great.
3	3	23	5	Best book I've read by far!

Users

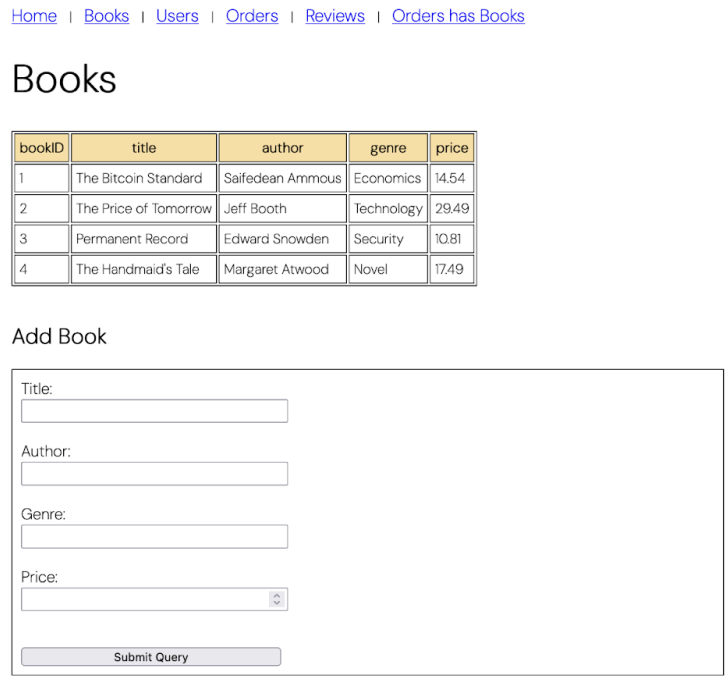
userID	fName	lName	email
1	Sam	Doe	sam1@gmail.com
2	Joy	Soh	jpy1@yahoo.com
3	Bill	Goldberg	bill1@hotmail.com
4	Mars	Boo	mb@hotmail.com

Screen Captures

Homepage



"READ/CREATE/(DYNAMIC DROP DOWN)" Books page



Search for a Book

Title:
Select a Book Title

Submit Query Reset

“READ/CREATE/DELETE(M:N)” Orders page

Home | Books | Users | Orders | Reviews | Orders has Books

Orders

orderID	userID	addressLine1	addressLine2	city	state	postalCode	orderDate	orderStatus	quantity	totalDue	paymentMethod	
1	1	1234 Main st.		Atlanta	Georgia	22923	Wed Sep 12 2012 00:00:00 GMT-0700 (Pacific Daylight Time)	Pending	2	34.55	visa 0978	Delete
2	2	5678 Canyon Road		Sherwood	Oregon	99897	Sun Apr 20 1969 00:00:00 GMT-0800 (Pacific Daylight Time)	Completed	1	13.32	mastercard 8765	Delete
3	3	210 Bowman St.	APT. #G300	Hamburg	New York	14075	Tue Jun 03 1997 00:00:00 GMT-0700 (Pacific Daylight Time)	Completed	1	12.21	bitcoin	Delete

Add Order

userID:
Select a UserID

Address Line 1:

Address Line 2:

City:

State:

Postal Code:

Order Date:
mm / dd / yyyy

Order Status:
Pending

Quantity:

Total Due:

Payment Method:

Submit

“READ/CREATE” Orders has Books page

Home | Books | Users | Orders | Reviews | Orders has Books

Orders has Books

ordersHasBooksID	orderID	bookID
1	1	1
2	2	2
3	3	3

Add Orders has Books

orderID:

bookID:

Submit Query

“READ/CREATE/UPDATE(NULLABLE RELATIONSHIP)” Reviews Page

Home | Books | Users | Orders | Reviews | Orders has Books

Reviews

reviewID	userID	bookID	rating	description
1	1	34	4	I enjoyed learning about Bitcoin
2	2	43	3	This book wasn't that great.
3	3	23	5	Best book I've read by far!

Add Review

userID:
Select a userID

bookID:
Select a bookID

Rating (1-5):
1

Description:

Submit Query

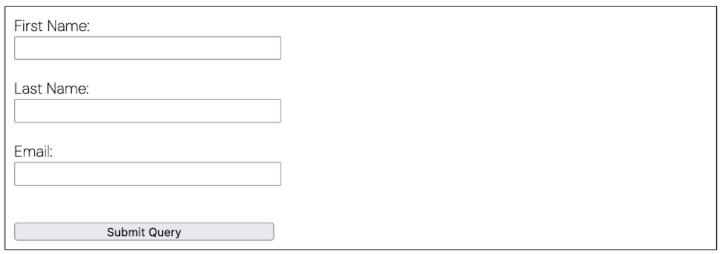
Update Review

"READ/CREATE/UPDATE" Users Page

Users

userID	fName	lName	email
1	Sam	Doe	sam1@gmail.com
2	Joy	Soh	jpy1@yahoo.com
3	Bill	Goldberg	bill1@hotmail.com
4	Mars	Boo	mb@hotmail.com

Add User



Update User