

COMP 3005 Project (Fall 2022)

1. Conceptual Design

1.1. Assumptions:

Publisher:

Each publisher has only one address, phone number and bank account.

User:

Each user has only one address and phone number and unique username.

Book:

Each book is published by only on publisher and has one or more authors. In addition, it has unique ISBN. Moreover, the book may exist in one or more orders.

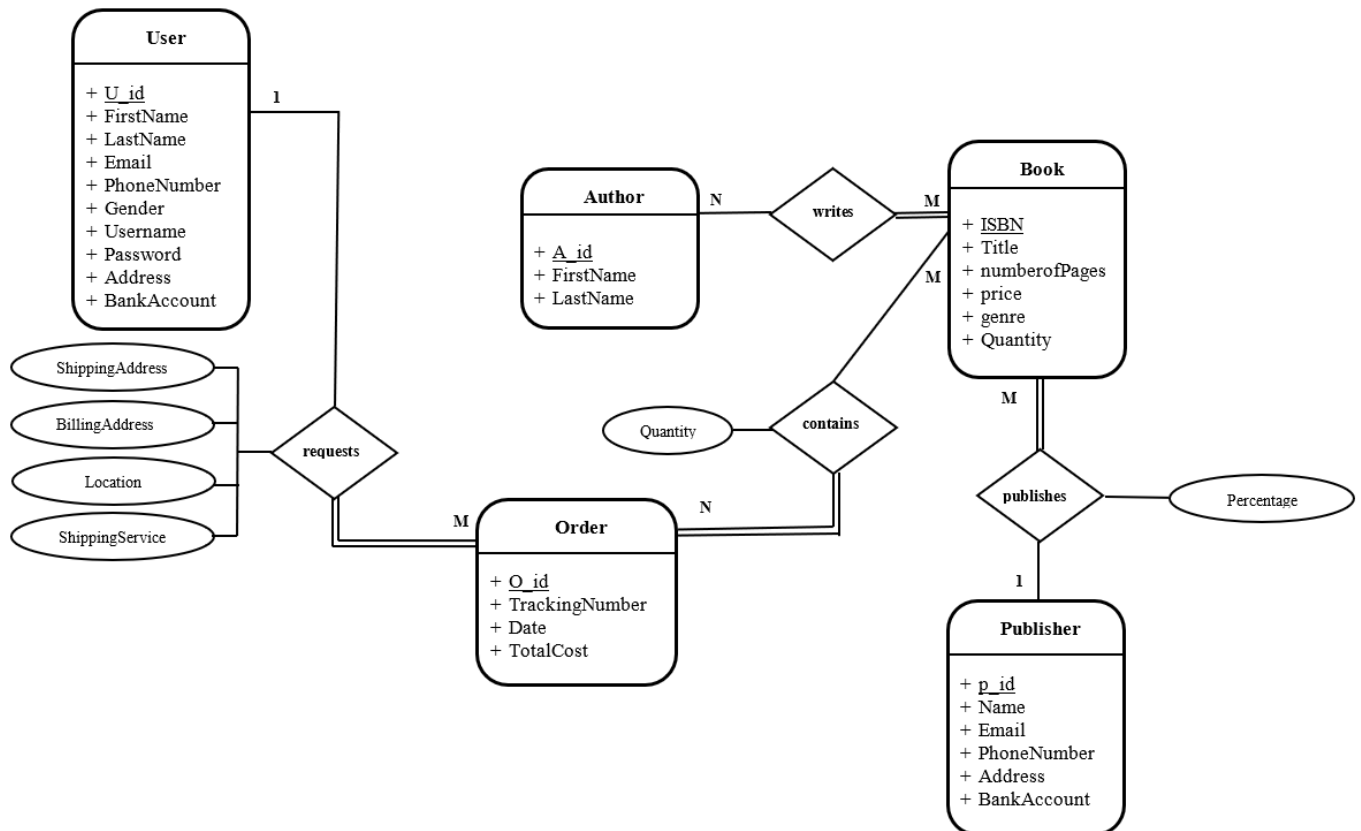
Author:

Each author has a unique id and can write one or more book.

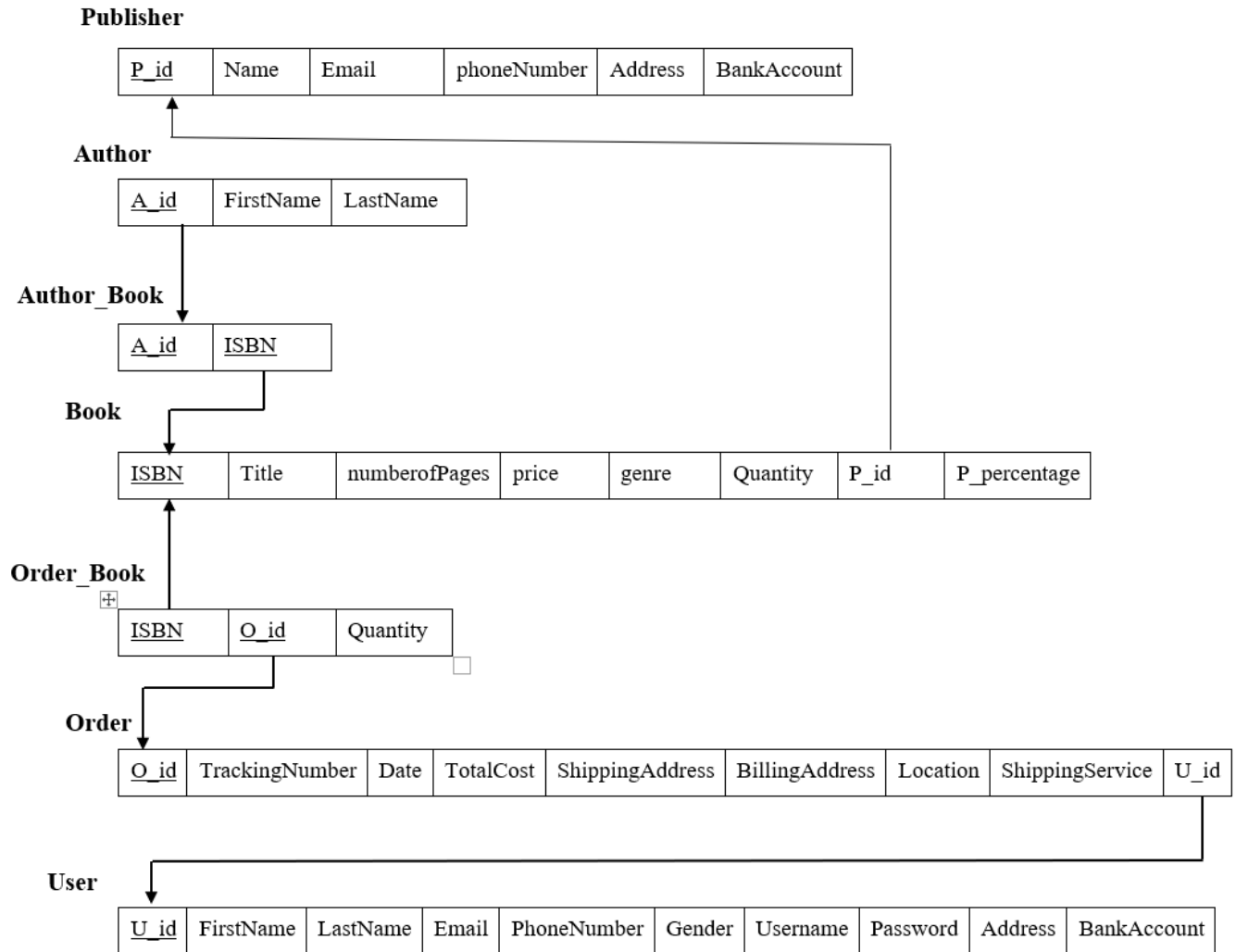
Order:

Each order contains one or more book and has unique id. In addition, it has date, current location, and total cost.

1.2.ER-Diagram:



2. Reduction to Relation Schemas



3. Normalization of Relation Schemas

Publisher:

$P_id \rightarrow \text{Name, Email, phoneNumber, Address, BankAccount}$

$(p_id)^+ = \{p_id, \text{Name, Email, phoneNumber, Address, BankAccount}\}$

Currently, the Publisher relation is in BCNF where all the attributes of the relation are directly dependent only on the primary key.

User:

$U_id \rightarrow \text{FirstName, LastName, Email, PhoneNumber, Gender, Username, Password, Address, BankAccount}$

$(U_id)^+ = \{U_id, FirstName, LastName, Email, PhoneNumber, Gender, Username, Password, Address, BankAccount\}$

Currently, the User relation is in BCNF where all the attributes of the relation are directly dependent only on the primary key.

Book:

$ISBN \rightarrow Title, numberOfPages, price, genre, Quantity, P_id, P_percentage$

$(ISBN)^+ = \{ISBN, Title, numberOfPages, price, genre, Quantity, P_id, P_percentage\}$

Currently, the Book relation is in BCNF where all the attributes of the relation are directly dependent only on the primary key.

Author:

$A_id \rightarrow FirstName, LastName$

$(A_id)^+ = \{A_id, FirstName, LastName\}$

Currently, the Author relation is in BCNF where all the attributes of the relation are directly dependent only on the primary key.

Order:

$O_id \rightarrow TrackingNumber, Date, TotalCost, ShippingAddress, BillingAddress, Location, ShippingService, U_id$

$(O_id)^+ = \{O_id, TrackingNumber, Date, TotalCost, ShippingAddress, BillingAddress, Location, ShippingService, U_id\}$

Currently, the Order relation is in BCNF where all the attributes of the relation are directly dependent only on the primary key.

Author Book:

Since the relation has only two attributes, its in the BCNF and no need to decomposition.

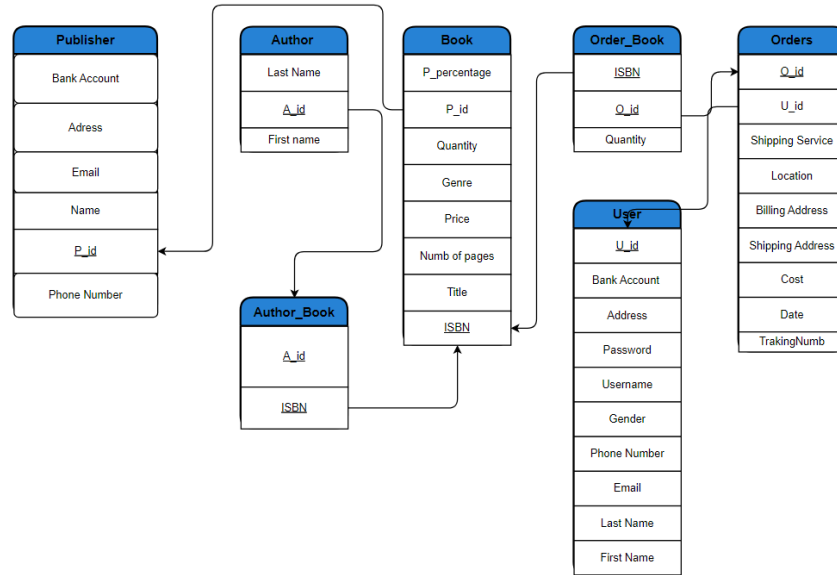
Order Book:

$O_id, ISBN \rightarrow Quantity$

$(O_id, ISBN)^+ = \{O_id, ISBN, Quantity\}$

Currently, the Order_Book relation is in BCNF where all the Quantity is dependent on the O_id and ISBN.

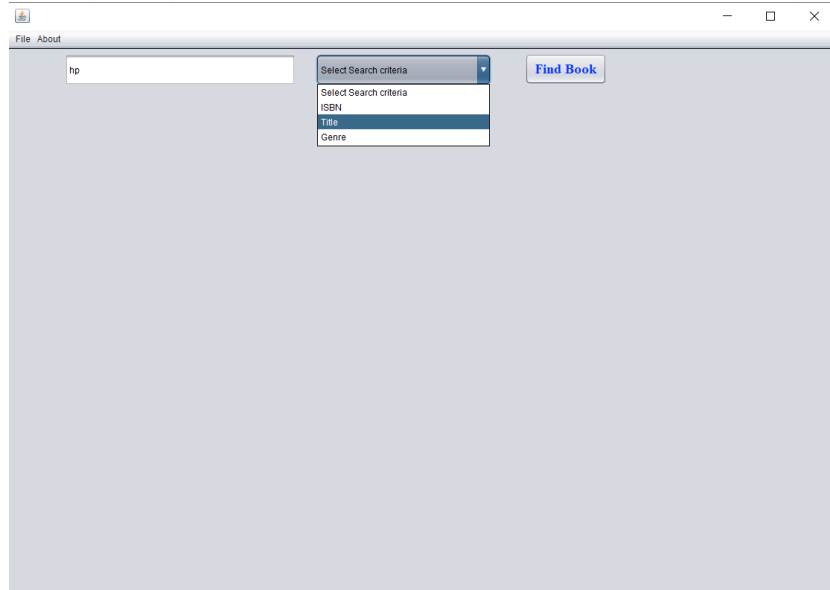
4. Database Schema Diagram



Screen Shoots

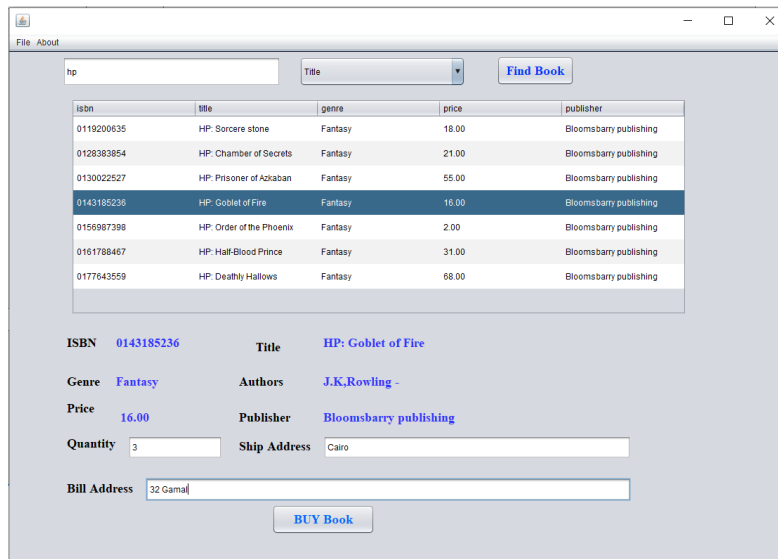
User Screen

1. First, the user search for a book using ISBN, Title, or Genre.



A screenshot of a web application window titled "File About". It features a search bar with the text "hp". To the right of the search bar is a dropdown menu labeled "Select Search criteria" with options "ISBN", "Title", and "Genre". A "Find Book" button is located to the right of the dropdown menu.

2. Then, all the books that match the word appear to the user to select between them and then, click buy.



A screenshot of the same web application window showing search results for "hp". The results are displayed in a table with columns: isbn, title, genre, price, and publisher. The book "HP: Goblet of Fire" is highlighted. Below the table, the selected book's details are shown: ISBN 0143185236, Title HP: Goblet of Fire, Genre Fantasy, Authors J.K.Rowling, Price 16.00, Publisher Bloomsbarry publishing. There is a "Quantity" field with the value 3, a "Ship Address" field with the value Cairo, and a "Bill Address" field with the value 32 Gamal. A "BUY Book" button is at the bottom.

isbn	title	genre	price	publisher
0119200635	HP: Sorcere stone	Fantasy	18.00	Bloomsbarry publishing
0128383854	HP: Chamber of Secrets	Fantasy	21.00	Bloomsbarry publishing
0130022527	HP: Prisoner of Azkaban	Fantasy	55.00	Bloomsbarry publishing
0143185236	HP: Goblet of Fire	Fantasy	16.00	Bloomsbarry publishing
0156987398	HP: Order of the Phoenix	Fantasy	2.00	Bloomsbarry publishing
0161788467	HP: Half-Blood Prince	Fantasy	31.00	Bloomsbarry publishing
0177643559	HP: Deathly Hallows	Fantasy	68.00	Bloomsbarry publishing

ISBN 0143185236 Title HP: Goblet of Fire
Genre Fantasy Authors J.K.Rowling
Price 16.00 Publisher Bloomsbarry publishing
Quantity 3 Ship Address Cairo
Bill Address 32 Gamal
BUY Book

Name: Ali Nasr **ID:** 101191700

3. Then, the user adds the quantity, shipping, and billing address and then new order is created with this book.

hp Title Find Book

isbn	title	genre	price	publisher
0119200635	HP: Sorcere stone	Fantasy	18.00	Bloomsbarry publishing
0128383854	HP: Chamber of Secrets	Fantasy	21.00	Bloomsbarry publishing
0130022527	HP: Prisoner of Azkaban	Fantasy	55.00	Bloomsbarry publishing
0143185236	HP: Goblet of Fire	Fantasy	16.00	Bloomsbarry publishing
0156987398	HP: Order of the Phoenix	Fantasy	2.00	Bloomsbarry publishing
0161788467	HP: Half-Blood Prince			Bloomsbarry publishing
0177643559	HP: Deathly Hallows			Bloomsbarry publishing

Select an Option
Are You sure to buy this book?
Yes No Cancel

ISBN 0143185236 Title HP: Goblet of Fire

Genre Fantasy Authors J.K.Rowling -

Price 16.00 Publisher Bloomsbarry publishing

Quantity 3 Ship Address Cairo

Bill Address 32 Gamal

BUY Book

Owner/Manager Screen

1. First, the owner can add a new author, new publisher, or new book.

The screenshot shows a software window titled "File About" with a light gray background. It contains several input fields and buttons. At the top, there are four input fields labeled "ISBN", "Title", "Number of pages", and "Genre". Below these are "Quantity" and "Price". Further down, there is a "Publisher %" field, a "Publisher Name" dropdown menu (currently showing "Bloomsbury publishing"), and an "ADD New Publisher" button. In the center, there is an "Authors" input field and an "Authors List" dropdown menu (showing a list of authors: Rowling, J.K.; Lewis, C.S.; Cawthon, Scott; Tolkien, J.R.; Consell, R.A.; Rawn, Melanie; AbugnaleJR, Frank; Levenson, Steven). To the right of the "Authors List" are two buttons: "ADD New Author" and "ADD Selected Author". At the bottom center, there is a large "ADD Book" button.

The screenshot shows a software window titled "Author Information". It has a light gray background. At the top, the title "Author Information" is displayed in blue. Below the title, there are two input fields: "First Name" and "Last Name". At the bottom center, there is a button labeled "ADD Author".

The screenshot shows a software window titled "Publisher Information". It has a light gray background. At the top, the title "Publisher Information" is displayed in blue. Below the title, there are four input fields: "Name", "Email", "Phone", and "Address". At the bottom, there is a "Bank Account" input field and an "ADD Publisher" button.

Name: Ali Nasr **ID:** 101191700

The screenshot shows a window titled 'File About' with a light blue background. It contains several input fields and buttons. The 'ISBN' field has the value '123456789'. The 'Title' field has the value 'DataBase Design'. The 'Number of pages' field has the value '952'. The 'Genre' field has the value 'Genre'. The 'Quantity' field has the value '36'. The 'Price' field has the value '20'. The 'Publisher %' field has the value '4'. The 'Publisher Name' dropdown menu is open, showing a list of publishers: 'Lewis, C.S Rawn, Melanie', 'Rowling, J.K', 'Lewis, C.S', 'Cawthon, Scott', 'Tolkien, J.R', 'Consell, R.A', 'Rawn, Melanie' (highlighted), 'Abugnale, J.R, Frank', and 'Levenson, Steven'. To the right of the dropdown menu are two buttons: 'ADD New Author' and 'ADD Selected Author'. Below the dropdown menu is a large 'ADD Book' button.

ISBN: 123456789 Title: DataBase Design

Number of pages: 952 Genre: Genre

Quantity: 36 Price: 20

Publisher %: 4 Publisher Name: Bloomsbarr publishing ADD New Publisher

Authors: Lewis, C.S Rawn, Melanie

Authors List: Rowling, J.K, Lewis, C.S, Cawthon, Scott, Tolkien, J.R, Consell, R.A, Rawn, Melanie, Abugnale, J.R, Frank, Levenson, Steven

ADD New Author ADD Selected Author

ADD Book

This screenshot is identical to the one above, but with a 'Message' dialog box overlaid in the center. The dialog box has a title bar 'Message' and a close button 'X'. It contains an information icon 'i' and the text 'Book is added successfully'. There is an 'OK' button at the bottom of the dialog box. The background application window is slightly dimmed.

ISBN: 123456789 Title: DataBase Design

Number of pages: 952 Genre: Genre

Quantity: 36 Price: 20

Publisher %: 4 Publisher Name: Bloomsbarr publishing ADD New Publisher

Authors: Lewis, C.S Rawn, Melanie

Authors List: Consell, R.A, Rawn, Melanie, Abugnale, J.R, Frank, Levenson, Steven

ADD New Author ADD Selected Author

ADD Book

Message: Book is added successfully OK

Name: Ali Nasr **ID:** 101191700

The screenshot shows a window titled "Book Info" with a menu bar containing "File" and "About". The window contains several input fields for book details: ISBN, Title, Quantity, Authors, Price, Publisher, Genre, Number of pages, and Publisher %. There is a "Find Book" button at the top right. Below the input fields is a table with four columns labeled "Title 1", "Title 2", "Title 3", and "Title 4". The table is currently empty. At the bottom center of the window is a "Remove Book" button.

The screenshot shows a window titled "Display Report" with a menu bar containing "File" and "About". The window contains a "Sales" label, a "Sales vs. Expenditures" label, and an "Expenditures Value" label. A dropdown menu is open, showing the following options: "Select Report criteria", "Sales vs. Expenditures", "Sales per Genres", "Sales per Author", and "Sales per Publisher". A "Display Report" button is located at the top right of the window.

The screenshot shows a window titled "Report" with a menu bar containing "File" and "About". The window contains a "Date: 2022-12-12" label, a "Report" label, and a "Display Report" button. A dropdown menu is open, showing the following options: "Sales Per Author", "Select Report criteria", "Sales vs. Expenditures", "Sales Per Author", and "Sales Per Publisher".

Name: Ali Nasr **ID:** 101191700

