Database Management Systems - UE19CS301

ASSIGNMENT - 1

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Problem Statement: Online Book Store with an inbuilt genre classification systems

Name Ideas: EZBook

Problem Statement Description:

The current issue faced by physical bookstores is the fact that classification is primarily manual and is prone to human errors. We aim to make the classification of books into their genres more automated and user friendly. This advancement will tailor to the needs of the new generation of readers.

According to the Gartner- Hype Cycle, Data classification is one of the up and coming technologies here to stay for 2-5 years.

Miniworld: Book Store

Description :

The ER diagram comprises 8 entities.

1. Books form a strong entity and have attributes such as ISBN, book title and ID, year of publication, genre, price, rating and author name. It is used to describe the features of each book.
2. The customer entity consists of the attributes of a unique Customer ID, name, phone number and email address. The customer can request books, buy books, and each user has their cart. The customer is also given the option to give feedback for books purchased earlier.
3. The Cart entity consists of customer ID, book name, book price and count. Each user has one cart associated with them. The prices of the books are chosen according to

4. The Billing entity consists of attributes such as bill number, total amount, date, customer ID and mode of payment. Each customer may have multiple purchases and have several bills.
5. The Bestseller entity is derived from the billing entity. The number of times a book is purchased increases its popularity and will thus get recommended to users on the landing page.
6. Customer Feedback is a weak entity that consists of attributes such as Book ID, customer ID and description. One customer can give feedback for many books and each book may have feedback from multiple users.
7. The Writer-Publication house weak entity consists of Book Id and Publication House. Each publication house may have several books.
8. The request for books entity consists of Request_ID, book title and customer ID. This feature provides users with the scope to request books that are not currently available.

Functional requirements:

Functional requirements consist of the user's perspective and usage, our application allows the user to buy online books from a plethora of genres and languages.
The user gets to choose the topic, check out the best seller's in a particular category (predictive data analysis) and add their favourite books to their cart.
During the checkout, the user has to provide some basic information, pay through the online payment portal and have unlimited access to the books they bought.

To add new books, the publication house can add them as and when they produce soft copies of new books.

Non - functional requirements:

The backend component and these models together form the non-functional requirement of the application, as they do not concern the user.

1. The classification tool is used to classify incoming books into different genres
2. the billing calculation
3. the predictive analytics tool to find best-sellers

Assumptions:

1. Fixed genres as the dataset and writers
2. The prices are calculated using a fixed metric wrt date, rating, and no. of copies sold/demand

Constraints:

The book needs to be present in inventory, to be bought by the user otherwise they can place a request for the books which will be redirected to the publication house.
The constraints for the multiple relationships present have been highlighted in the ER Diagram.

Cardinality Ratio:

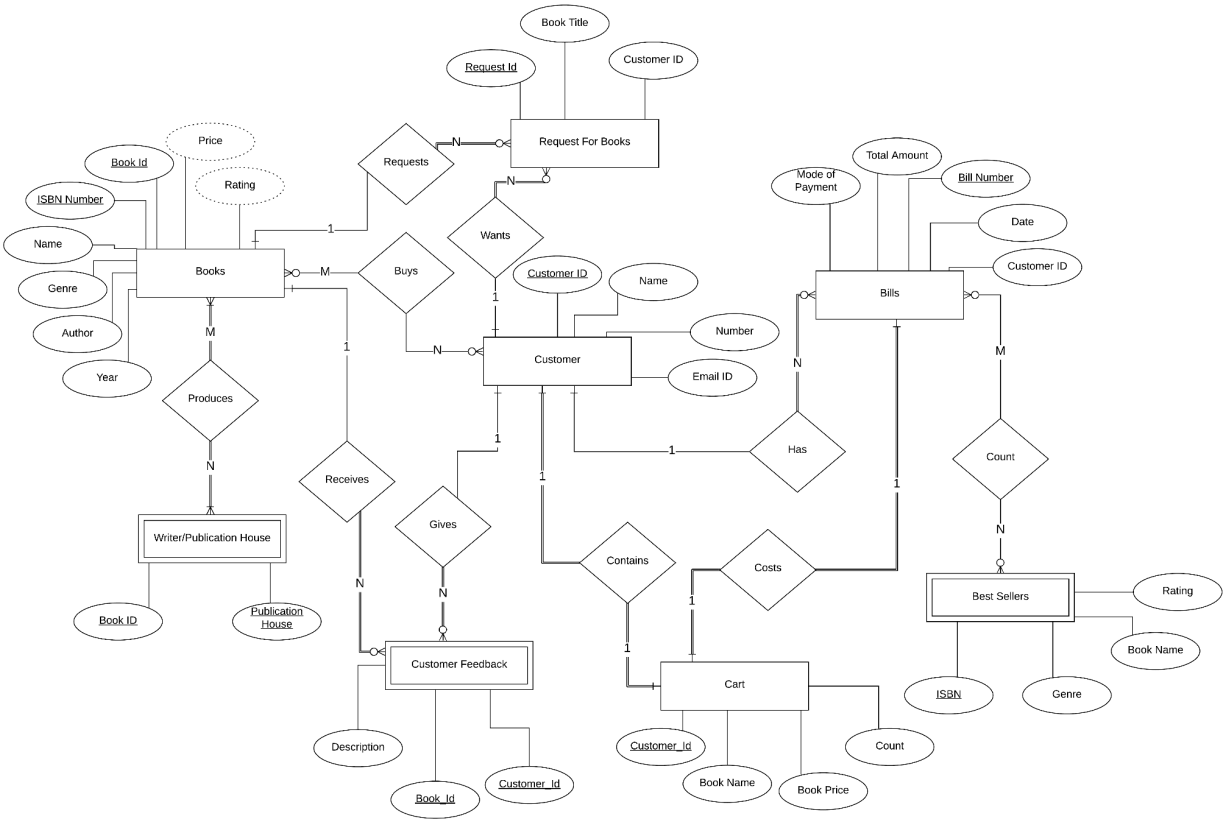
1. Requests - 1:N Relationship
2. Produces - M:N Relationship
3. Buys - M:N Relationship
4. Receives - 1:N Relationship
5. Give - 1:N Relationship
6. Wants - 1:N Relationship
7. Contains - 1:1 Relationship
8. Has - 1:N Relationship
9. Costs - 1:1 Relationship
10. Count - M:N Relationship

Participation Constraint

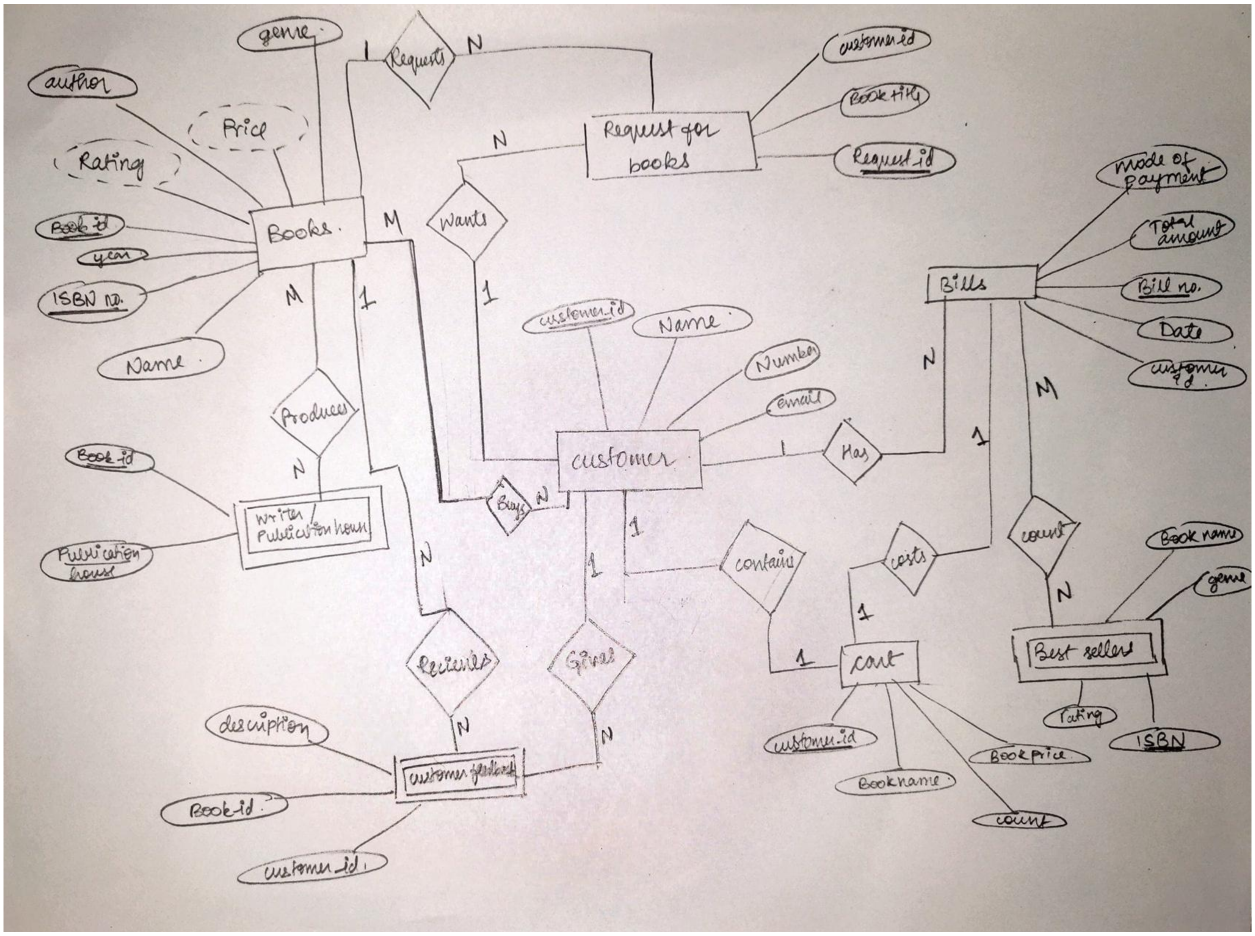
1. Requests
    a. Books - Optional
    b. Requests - Mandatory
2. Produces
    a. Books - Mandatory
    b. Writer/Publishing House - Mandatory
3. Buys
    a. Books - Optional
    b. Customers - Optional
4. Receives
    a. Books - Optional
    b. Customer Feedback - Mandatory
5. Give
    a. Customer - Optional
    b. Customer Feedback - Mandatory
6. Wants
    a. Customer - Optional
    b. Requests for Books - Mandatory
7. Contains
    a. Customer - Mandatory
    b. Cart - Mandatory
8. Has
    a. Customer - Optional
    b. Bills - Mandatory
9. Costs
    a. Bills - Mandatory
    b. Cart - Mandatory
10. Count
    a. Bills - Optional
    b. Best Sellers - Optional

ER Diagram with the tool

1. Write about the tool you have chosen?
    a. We chose to use Lucid Chart to build our ER Diagram for the Book Store mini-world. We chose the tool based on ease of use and ability to collaborate. Moreover, Lucid Chart had ample shapes and line endings to help us demonstrate all of the constraints, cardinality ratio and participation constraints, easily and clearly. We were able to build big and complex diagrams using Lucid Chart which ensures that our ER diagram can easily be comprehended.



Hand drawn ER Diagram:



genre
author
Price
Rating
Book id
year
ISBN no.
Name
Books
Requests
Request for books
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Publication house
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mode of payment
Total amount
Bill no.
Date
customer id
contains
costs
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customer feedback
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