DigiBooks.com: The Online Book Megastore

COP5725 Group18: Requirement Analysis

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I. *PROJECT INTRODUCTION*

We are planning to implement and build an e-commerce application titled "DigiBooks.com: The Online Book Megastore" which will be an online bookstore on the lines of Amazon.com or EBay.com but exclusively will serve the purpose as a book retailer.

II. *OBJECTIVE*

Our main objective here is to create a database intensive web application which can help us in learning the finer nuances of a database management system. We are planning of designing an application wherein:

- The user interface will be designed with JSP (Java Server Pages).
- The business logic will be programmed using JAVA.
- The database will be connected using JDBC (Java database connectivity platform).
- The most important part that is creating and implementing a database (CISE Oracle Database) and its various functionality on which the application rests will form the crux of our project.

We also plan to include various user functionality such as Customer functionality, Application administration functionality and Sales analyst functionality in our application. These user functionality are explained in detail in the next section.

III. *USER FUNCTIONALITY*

We are planning to implement various user roles and their corresponding functionalities in our application. These are as follows:

1. *Customer:*

The customer will be the main user of our application. He will be able to perform various tasks such as:

- Create a customer account and profile. Each customer will have a profile containing various attributes such as his name, contact no, address etc.
- The customer will be able to search through the books catalog to find a book of his choice. The search functionality will be able to search through catalog by name, author, genre or ISBN no.
- The customer will be able to purchase a book. Also his profile page will display a listing of the previous purchases.
- The customer would also be able to edit his profile details such as name and contact no.

2. *Inventory Management User:*

This user will be a part of the Application Management Team. The main functionality of the user will be to manage the book inventory. The main tasks are as follows:

- Add a new book which has been launched or delete a book that has low sales from the book catalog or the inventory.
- This user will also have access to "Inventory Dashboard" which will be report listing all the books whose inventory quantity will be below a minimum threshold.
- This will help the user on deciding on preorders of books whose quantity is less thereby increasing the product availability.

3*. Product Sales Team User:*

This user will be a part of the Application Management Team. The main functionality of this user is to monitor the various KPI's (Key Performance Indicators) related to the online book retailing business. These indicators will help the team to make important business decisions such as concentrating on a particular region where sales are low, have access to top selling as well as least selling products so as to more fine tune the book catalog etc. The team will have access to various reports which will help in decision making process. Some examples are:

- Best Selling Books Report.
- Worst Selling Books Report.
- Region Wise Sales Report.
- Genre Wise Sales Report.

4. IT Support User:

This user will be a part of the Application Management Team. The main objective of this user to create login id for the Application Management Team and assign a particular user role such as inventory management user or product sales team user.
Assigning user roles will help us to provide access to relevant data for a particular role thereby restricting unauthorized access to remaining data. This will lead to data security.

IV. *DATA MANAGEMENT REQUIREMENTS*

To implement database for the proposed e-commerce application, systems are divided into multiple modules run by different database instances. For example, a static tables could be separated from a more volatile schema such as transaction. This will help us to control redundancy and improve performance.

1. Customer:

We will have large number of customers, some of them might be new while others might be repeat customers. To enhance customer experience, we are planning to implement one time registration process. Customer will be an entity for which the attributes will be CustomerID (primary key), First Name, Last Name, Address, Contact Details and Password.

2. User data:

Our application will support different menu-driven interface for all the different roles of application management team user. Application Management team user will be an entity with attributes like UserID (primary key), User Name, Password, Role id (corresponding to role such as Inventory Management User), Created on date, Active flag. RoleID will be foreign key and will refer to ApplicationRole table. This will be make sure that all user will not have access to all data in application.

3. Book Inventory:

This part is the crux of our application. Storing and maintaining the book catalogue or inventory will comprise of complex tables and various functionalities. Entities will be books having attributes like ISBN Number, BookID as primary key, name of book, author's name, release date, current price, genre, and language. Attributes like genre and language will be foreign keys and will refer to genre and language table respectively. This part will also help to get information about stock availability of book.

4. Transaction details:

For every purchase done, we will keep data regarding payment transaction and history. A single transaction will have attributes such as TransactionID (primary key), invoice number, transaction date, invoice amount, CustomerID as attributes. Here CustomerID will be refer to customer entity. Invoice details will have attributes like book's details, quantities, total number of books purchased. This will also enable customer to keep track of their past purchases.

V. *APPLICATION POTENTIAL*

There is a huge potential in our proposed application to implement some complex queries which can derive useful data which is not readily available from the database. Some of the potential areas where such complex queries can be implemented are as follows:

Sales Dashboard

In order to retrieve some meaningful information from the stored data we are planning to implement a dashboard with several reports based on the KPI's (key performance indicators) to application user which can assist them in making important business decisions.
For example for the "Best Selling Books Report" as mentioned below we would need to create a complex query which could retrieve information from Book, Customer and Transaction tables by making use of "JOINS" and "GROUP BY" SQL clauses. Additionally we need to implement further filtering criteria based on the duration input as provided by the user.

Best Selling Books Report:

Product Sales Team user can generate the Report for a particular duration (say Monthly Report) having various parameters such as ISBN, Book Name, Author, Price, Quantity and gross sell value.

Least Selling Books Report:

This report will have the same format as above but will provide that for least selling books. The input from user will be again duration for which data is required.

Region wise Sales Report:

This report will give user data in the form of RegionID, Region Name, total number of customers, Quantity sold and gross sales per region.

Genre wise Sales Report:

This report will give user data in the form of GenreID, genre description, Quantity sold and gross sales per genre.

Prime Customers Report:

This report will provide us the details regarding our website's top grossing customers by purchase value. It would help the website management team for various customer retention programs.

Inventory Dashboard:

Inventory Management user can fetch data which will help them in ordering new stock to maintain the inventory levels. Data will be presented with details such as ISBN number, Book Name, Author, Genre, and Quantity. This will help the teams to identify those book with quantity below a minimum threshold.

Apart from the "Sales Dashboard" concept we believe that there will be other potential areas where we can implement complex and interesting queries to come up with meaningful information.

VI. SOFTWARE REQUIREMENT

We are planning to make use of the following software for the implementation of our project.

1. Eclipse

- To design user interface using JSP (Java Server pages).
- To program business logic using Java.
- To connect with database using JDBC (Java database connectivity platform).

2. CISE Oracle Database

- To implement database and its various functionality.

3. GitHub

- To create repository and for version control.