Project Report

On

ONLINE SHOPPING SYSTEM

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Abstract

The success of an online shopping system depends heavily on the design of its database. Our team has proposed a database system that efficiently manages and stores large amounts of information, including customer data, product information, order details, and payment information. The database system is designed with appropriate normalization levels to minimize data redundancy and improve data consistency. The database system provides an intuitive user interface that seamlessly integrates with the front-end system, offering efficient searching and filtering capabilities to help customers find their desired products quickly. The database system is also designed to support cross-selling and up-selling recommendations, providing a personalized shopping experience for the customers. The database system is designed to support multiple payment methods and ensure the security of payment information. The payment information is stored securely in the database system, and appropriate encryption and decryption techniques are used to prevent data theft or fraud. The database system is also designed to comply with relevant regulatory standards such as PCI DSS, GDPR, and CCPA.

Our database system is scalable and can handle an increasing number of customers, products, and transactions. The system is designed with appropriate indexing, partitioning, and shading techniques to distribute the workload across multiple servers and ensure efficient processing.

In conclusion, the database system designed by our team is efficient, scalable, and secure, providing customers with a seamless and personalized shopping experience. The database system's design ensures efficient data management, seamless integration with the front-end system, compliance with regulatory standards, and security of payment information.

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Introduction

The internet has revolutionized the way we shop, and online shopping has become a prevalent mode of shopping for people worldwide. Online shopping systems offer customers the convenience of shopping from the comfort of their homes, access to a wider range of products, and the ability to compare prices easily. To cater to this growing demand, businesses are increasingly investing in online shopping systems. However, the success of an online shopping system depends heavily on its design and implementation.

This project report presents the design and implementation of an online shopping system that provides customers with a seamless and personalized shopping experience. The project's primary goal is to develop a robust and efficient system that manages and stores vast amounts of data, including customer data, product information, order details, and payment information. The online shopping system is designed to provide an intuitive and easy-to-use interface to the customers, allowing them to browse products, make purchases, and track orders.

The report presents the database design, user interface design, payment system, and search and filtering mechanism employed in the online shopping system's implementation.

Project Scope

The scope of this project is to design and implement an online shopping system that provides customers with a seamless and personalized shopping experience. The project's primary goal is to develop a robust and efficient system that manages and stores vast amounts of data, including customer data, product information, order details, and payment information. The system is designed to provide an intuitive and easy-to-use interface to the customers, allowing them to browse products, make purchases, and track orders.

Database Description

Databases are the storehouses of data used in the software systems. The data is stored in tables inside the database. The online shopping system database will store information about products, customers, orders, and payments. The database will be designed to support the various functionalities of the online shopping system, such as browsing products, placing orders, and managing payments.

This is a web-based application that allows customers to browse and purchase products from an e-commerce website. This system can be implemented in any local or multinational shop. The services will be provided 24 * 7.

Data Elements

- The system can be divided into following entities.

1) Products: This will store information about each product in the online store including product ID, product name, description, price, stock quantity and image.

2) Customers: This will store information about each customer, including customer ID, name, address, email, and password

3) Orders: This will store information about each order including, order Id, customer Id, order date, total price, and order status

4) Payments: This will store information about each payment, including payment ID, order ID, payment date, payment method, and payment status

Designing Process

1) Database Design:

The database design is a critical component of the online shopping system, and it should be designed to store and manage large amounts of data efficiently. The database should be with appropriate normalization levels to minimize data redundancy and improve data consistency. The database is also should be designed to support seamless integration with the front-end user interface and provide efficient searching and filtering capabilities to help customers find their desired products quickly.

2) User Interface Design:

The user interface design should be designed to provide customers with an intuitive and easy-to-use interface, allowing them to browse products, make purchases, and track orders. The user interface should be designed to support efficient searching and filtering capabilities to help customers find their desired products quickly. The user interface is also should be designed to provide product categorization and offer cross-selling and up-selling recommendations to the customers.

3) Payment System:

The payment system should be designed to support multiple payment methods and ensure the security of payment information. The payment information should be stored securely in the database system, and appropriate encryption and decryption techniques are used to prevent data theft or fraud.

4) Search and Filtering Mechanism:

The search and filtering mechanism should be designed to provide efficient searching and filtering capabilities to help customers find their desired products quickly. The mechanism employs appropriate indexing, partitioning, and sharding techniques to distribute the workload across multiple servers and ensure efficient processing.

Schema Diagrams & Data Types

1) Products:

- The products in this database are related to the online shopping system and can vary depending on the type of business. The database can contain a wide range of products, such as electronics, clothing, home goods, beauty products, food, and beverages, and more. Each product entry in the database includes a unique product ID, product name, description, image, price, category, and other relevant details. The product category helps customers filter and search for products more efficiently. The product data can be updated regularly to reflect any changes in inventory or price. The database can also store details of products that are out of stock, discontinued, or currently on sale. By efficiently managing and organizing the product data, the online shopping system can provide a seamless and personalized shopping experience to the customers.

Product ID (Integer)	Product name (String)	Description (String)	Price (Floating Point)	Stock Quantity (Integer)	Image URL (String)	Category (String)

2) Customers:

- The customers in this database are the individuals who use the online shopping system to browse and purchase products. Each customer entry in the database includes a unique customer ID, first name, last name, email address, password, shipping address, billing address, payment information, and order history. The customer information is used to create customer profiles, which can be personalized to offer customized recommendations and promotions to individual customers. The payment information includes details such as credit card number, expiration date, and security code. To ensure the security of sensitive customer data, the payment information is encrypted and stored securely in the database.

The order history keeps track of the customer's past purchases, which can be used to offer personalized recommendations and promotions to the customers. By efficiently managing and organizing customer data, the online shopping system can provide a seamless and personalized shopping experience to the customers.

Customer ID (Integer)	First Name (String)	Last Name (String)	Email (String)	Password (String)	Phone Number (Integer)	Address (String)	City (String)	Postal Code (Integer)

3) Orders:

- The orders in this database are the records of the customer's purchases made through the online shopping system. Each order entry in the database includes a unique order ID, customer ID, product ID, quantity, date and time of the purchase, order status, shipping information, and payment information. The order information is used to track the status of the order, such as processing, shipping, and delivery. The shipping information includes details such as shipping address, shipping method, and estimated delivery date. The payment information includes details such as the total amount charged, payment method, and transaction ID. By efficiently managing and organizing order data, the online shopping system can provide customers with real-time updates on their orders and improve the order fulfillment process. The order history can also be used to analyze customer behavior and preferences to offer personalized recommendations and promotions to the customers.

Order ID (Integer)	Customer ID (Integer)	Oder Date (String)	Total Price (Floating Point)

- Order details:

Order detail (Integer)	Order ID (Integer)	Product ID (Integer)	Quantity (Integer)	Unit Price (Floating Point)	Total Price (Floating Point)	Order Status (String)

4) Payments:

- The payments in this database are the records of the transactions made by the customers through the online shopping system. Each payment entry in the database includes a unique transaction ID, order ID, customer ID, payment date and time, payment method, and payment amount. The payment information is used to verify the authenticity of the transaction, process refunds or cancellations, and reconcile the accounts. The payment method can be a credit card, debit card, PayPal, or other online payment platforms. To ensure the security of sensitive payment data, the payment information is encrypted and stored securely in the database. The payment history can be used to analyze the sales patterns and revenue of the online shopping system and can be used for financial reporting and tax purposes. By efficiently managing and organizing payment data, the online shopping system can provide a secure and seamless payment experience to the customers.

Payment ID (Integer)	Order ID (Integer)	Payment Date (String)	Payment Method (String)	Payment Status (String)	Payment Amount (Floating Point)

Intended Users

- Administrators
- Buyers
- Sellers

- The intended users for this database system are administrators, buyers, and sellers of the online shopping system.
- Administrators are responsible for managing the system and ensuring that it is functioning efficiently. They can access all the data stored in the database, including customer information, product details, order history, and payment information. Administrators can perform tasks such as adding or removing products, managing inventory, monitoring sales performance, and generating reports. They are also responsible for ensuring the security of the data and preventing unauthorized access.
- Buyers are the individuals who use the online shopping system to browse and purchase products. They can create their profiles, add products to their cart, place orders, and make payments. Buyers can access their order history, update their profile information, and view personalized recommendations and promotions. They can also provide feedback and ratings on the products they purchase.
- Sellers are the businesses or individuals who sell their products through the online shopping system. They can create their profiles, add products to the database, manage their inventory, and receive orders. Sellers can access sales reports, update their product information, and receive feedback and ratings from the buyers.
- By catering to the needs of these intended users, the online shopping system can provide a seamless and personalized shopping experience to the customers and help businesses efficiently manage their sales and inventory. The database system can effectively store and manage the data to support the various functionalities of the online shopping system.

Services

1. Administrator
    - Manage products - Add product, Delete product, View product.
    - Manage users - Add users, View users, Delete users, Block / Unblock users
    - Manage orders - View orders, Delete orders
2. User
    - View products
    - Search products
    - Edit products
    - Purchase products

The database system for the online shopping system offers a range of services for both administrators and users.

For administrators, the services include managing products, users, and orders. They can add new products, delete existing ones, and view the product details stored in the database. They can also manage the users of the system, add new users, delete existing ones, and block or unblock users based on their behavior. Additionally, administrators can view orders made by the customers, delete orders if necessary, and

manage the order status. All these functionalities are supported by the data stored in the database.

For users, the services include viewing, searching, editing, and purchasing products. Users can view the list of products available in the system, search for specific products based on keywords, and view the details of the product. They can also edit the details of their own products if they are sellers. Users can add products to their cart, place orders, and make payments. The database stores the details of the products, orders, and payments, which enables users to view their purchase history, track their orders, and make quick and secure payments.

By providing these services, the database system supports the various functionalities of the online shopping system, such as browsing and purchasing products, managing orders and inventory, and managing user accounts. The database stores and manages the data efficiently, ensuring quick and easy access to information for the administrators and users.

Conclusion

In conclusion, the proposed database design for the online shopping system aims to provide an efficient and reliable solution for managing the core functionalities of an online shopping system. The project proposal has outlined the scope of the database design, which includes managing products, customers, orders, and payments, and the intended users, including administrators, buyers, and sellers.

The proposed database system offers a range of services for both administrators and users, including managing products, users, and orders, viewing, searching, editing, and purchasing products. The database system stores and manages data related to these functionalities efficiently, ensuring data accuracy, integrity, and security.

The proposed database design provides a solid foundation for the development and implementation of the online shopping system. The database system can support the smooth functioning of the online shopping system, providing a seamless and personalized shopping experience to the customers and helping businesses efficiently manage their sales and inventory.

The proposed project offers significant potential benefits, including increased efficiency, improved user experience, and better data management. The successful implementation of the project can help businesses increase their revenue, reduce costs, and enhance their customer satisfaction levels.

Overall, the proposed database design offers a valuable solution for the online shopping system and has the potential to make a significant positive impact on the business operations and customer experience.