Experiment - 2

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Subject Name: System Design
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Aim:

To design and analyze an **E-commerce System** by identifying its functional and non-functional requirements and representing the system architecture using a **draw.io diagram.**

Objectives:

1. To understand the working of a E-commerce system
2. To identify **functional requirements** of the system
3. To identify **non-functional requirements** such as performance and scalability
4. To design a high-level system flow using **draw.io**
5. To design a **DB schema** for the system using **ERD**.
6. To improve understanding of real-world system design concepts

Procedure-

1. Studied real-world E-commerce platforms such as Amazon and Flipkart.
2. Identified core components including users, products, carts, orders, inventory, and payments.
3. Listed functional requirements required for smooth E-commerce operations.
4. Analyzed non-functional requirements like low latency, scalability, and fault tolerance.
5. Designed a structured system design diagram using draw.io.
6. Designed a DB schema using DB scripts and ERD.
7. Reviewed the design to ensure scalability, data consistency, and clarity.

Functional Requirements -

- User registration and authentication
- Browse and search products by category
- Add products to cart
- Update or remove items from cart
- Place orders and process payments

- Manage inventory and product availability
- View order history
- Provide product reviews and ratings

Non-functional Requirements

- Low latency response time (< 300 ms)
- High availability (99.9% uptime)
- Scalability to support millions of concurrent users
- Strong consistency for inventory and payments
- Secure handling of user and payment data

Outcome / Result -

- Successfully designed an E-commerce system using draw.io.
- Identified functional and non-functional requirements clearly.
- Understood scalability and consistency challenges in large-scale systems.
- Gained hands-on experience in system design and architectural thinking.

REQUIRED SYSTEM DESIGN -