Assignment 1

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Designing a distributed system for a Global ecommerce Platform

→ We need a system to handle millions of users, transaction, and inventory updates across the world

(A) Choosing the right Distributed system Architecture

For such e-commerce system, a client-server architecture with microservices.

Reason:

Client-server : client send request to server which process them and return response.

Microservice : Instead of one large application different services hand specific tasks, this improve scalability and fault tolerance

(B) Achieving Scalability, transperency and Reliability

Scalability ⇒
* load balancy
* Data base shardy
* Cloud infrastructure

Transparency ⇒
* location transparency
* Replication transparency
* Middleware

Reliability ⇒ * Redundancy (w.r.t back up servers)

* Data replication
* Eventual Consistency
* Retry & failover Mechanism

(c) Hardware and software Components

Hardware ⇒ * Multiple Data centers
* CDN (for faster access)

Software ⇒ * Data base choice
- SQL (for transaction)
- NoSQL (for products)

* Caching (Redis)
* Message Queue (Kafka)

(d) Role of middle ware. Communication

→ API Gateway
→ Server Discovery
→ Security & Auth
→ Data transformation.