**CASE STUDY – 1**

**Observation:** Company X is a growing E-Commerce platform with large number of customer and products. They need to store product information, customer data, order history, and transaction details.

**Challenge 1:** Handling high transaction volumes and scalability.

**Solution:** To handle High transaction volumes NoSQL databases are best options. NoSQL DB are best suited for handling BigData. Where as Relational DB wont handle big data as efficiently as NoSQL DB. And NoSQL DB allows Horizontal scaling (Sharding) to achieve scalability.

**Challenge 2:** Flexibility to accommodate evolving data schema.

**Solution:** NoSQL DB’s allows schema less collection where we don’t need to define table structure before inserting data into it.

**Challenge 3:** Efficient querying for complex joins and aggregations.

**Solution:** NoSQL DB don’t allow join operations as it is schema less DB’s. But NoSQL DB provides various aggregation function that we can perform on collection level.

**Challenge 4:** Maintaining data consistency and integrity.

**Solution:** NoSQL DB’s provides better data consistency and integrity because the follow CAP thermo principle. Where Consistency and Availability are optional and Partition tolerance in must.

Also we can achieve consistency through Replication feature in NoSQL DB’s

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