**CASE STUDY 1: SDLC (Software Development Life Cycle)**

**Title: Migration of a Legacy ERP System to a Cloud-Native Architecture**

Background:

A global manufacturing company, GlobalFab Ltd, relies on a legacy ERP system developed in the early 2000s. The system handles everything from inventory and order management to payroll and supply chain coordination. With increasing downtime, poor UI, and rising maintenance costs, the firm decided to redevelop the ERP as a cloud-native microservices-based application.

SDLC Phases Applied:

🔹 Requirement Gathering:

* Business analysts conducted 15+ stakeholder interviews.
* Pain points identified: frequent downtime, non-mobile interfaces, slow reporting.
* Required features: real-time reporting, cross-device compatibility, compliance with regional tax laws.

🔹 System Design:

* Microservices for Inventory, HR, Finance, CRM.
* Designed a central API gateway for internal services.
* Database schema redesigned to shift from relational Oracle DB to distributed MongoDB.

🔹 Implementation:

* Scrum-based sprints with bi-weekly reviews.
* Frontend in React.js, Backend in Java/Spring Boot.
* Integrated OAuth2 for role-based access.

🔹 Testing & Deployment:

* Used Docker and Kubernetes for containerized deployment.
* Blue-green deployment used to ensure zero downtime.
* Staging environment mirrored production for testing.

🔹 Maintenance:

* Monthly patch updates.
* Performance metrics reviewed via Prometheus and New Relic.

🔸 Key Challenges:

* Mapping old workflows to new UX.
* Data inconsistencies between old and new systems.
* Handling different regulatory requirements for EU, US, and APAC regions.