**MS Enablement Program - Domain Exercise**

# Design & Implementation of an event driven architecture:

### Use case:

1. Create an Event store for attendance system of an organization.
2. Employee while entering the building will swipe in and going out will swipe out.
3. The employee can go in and out as many times he/she wants.
4. The in and out can be mimicked by sending rest calls to microservices.
5. At EOD employee total hours in office needs to be counted with the formula (this can be mimicked using the rest call) First swipe in and last swipe out in the day.
6. Once the state of the employee is calculated the information is streamed to a Kafka topic.
7. Create separate MS for Attendance. (This will be a read store) This system will listen to the above topic and persist the attendance in a separate read DB (any RDBMS DB)

### Employee attendance formula:

* 1. Total hours for a date less than 4 hours – Absent
  2. Greater than 4 hours but less than 8 –Half day
  3. Greater than 8 hours – Present

This MS will expose an endpoint to get the total hours employee is present in the office. You can use rest and upgrade the same with Graphql end points

### Features:

* Swipe In/Out
* EOD total hours calculation for all employees
* Attendance calculation based on total number of hours present in office
* Notification of absenteeism (Desired) - Refer to the Bonus Marks section below

Please address the following milestones as listed below. You can leverage the reference courses for easy learning, but it doesn’t limit to only those recommended courses.

## Milestone 1: Architecture Artifacts & Design

1. Solution Architecture-
   * Logical Architecture, Physical Architecture, Business context diagram
   * EDA Strategy and implementation with MS architecture
   * NFRS managed
2. Sequence diagram: Features Implemented
3. Design:
   * DDD & Bounded context
   * Ready heavy – CQRS
   * DB selections (NOSQL + RDBMS), ER diagram

## Milestone 2: Set up MVP

1. CONFIGURATION
   * Configure Monitoring Dashboards - 7
   * Use of Build Tools - 7
   * Deployment of services on Cloud managed AKS using CI/CD Pipelines (Desired) – Refer to the Bonus Marks section below
   * Kafka Set up

## Milestone 3: Build Phase

1. Microservices Ecosystem with Springboot
   1. Features Implemented
   2. Springboot annotations
   3. Transactions
   4. configurations
2. API Security
   1. O-Auth2.0
   2. API Gateway
3. Logging & Tooling
   1. Observability: Grafana, cloud monitoring
4. Exception handling

## Milestone 4: Testing Phase

1. Testing:
   1. Junit> Code Coverage >80%
   2. SIT (BDD: Cucumber or Karate)
   3. JMeter
2. Build & Release pipeline: Set up pipeline & Reporting
3. Entire solution deployable on cloud (Burner account)