Software Architect - IoT

Exercise 1: Vehicle Tracking System

Description: The primary purpose of a Vehicle Tracking System is to track the location, speed, and status of vehicles in a fleet, providing valuable information for businesses and individuals. Vehicle Tracking System should provide numerous benefits, including improved fleet efficiency, reduced fuel costs, enhanced safety, and better overall management of vehicles and assets.

Task: Design an architecture for a vehicle tracking system, outlining key components and considerations. Address aspects like user interface, map integration, backend server, database, real-time data processing, security, scalability, notifications, data analytics, compliance, and redundancy/failover. Discuss any trade-offs made and provide comprehensive tools and strategies for future maintenance.

Exercise 2: Asset Health Monitoring System

Description: An Asset Health Monitoring System (AHMS) is a comprehensive solution to monitor and manage the condition and performance of physical assets in various industries. This system plays a crucial role in preventive maintenance, ensuring that organizations can identify and address potential issues before they lead to equipment failures or downtime. Implementing an Asset Health Monitoring System can lead to increased operational efficiency, reduced downtime, extended asset lifespan, and improved overall reliability of critical equipment in various industries such as manufacturing, energy, transportation, and more.

Task: Design an architecture for an Asset Health Monitoring System for a manufacturing facility that relies on a range of machinery and equipment. Discuss your approach to designing the system, taking into consideration key components, scalability, security, and future maintenance. Additionally, explain how you would address specific challenges related to real-time health monitoring, data analytics, user interfaces, and compliance with relevant standards.

General Guidelines :
- Work on any one Exercise from the above list.
- Feel free to use images/diagrams to explain the designs/approaches
- Discuss about assumptions and prerequisites
- Share the response in PDF format