DAILY ASSESSMENT FORMAT

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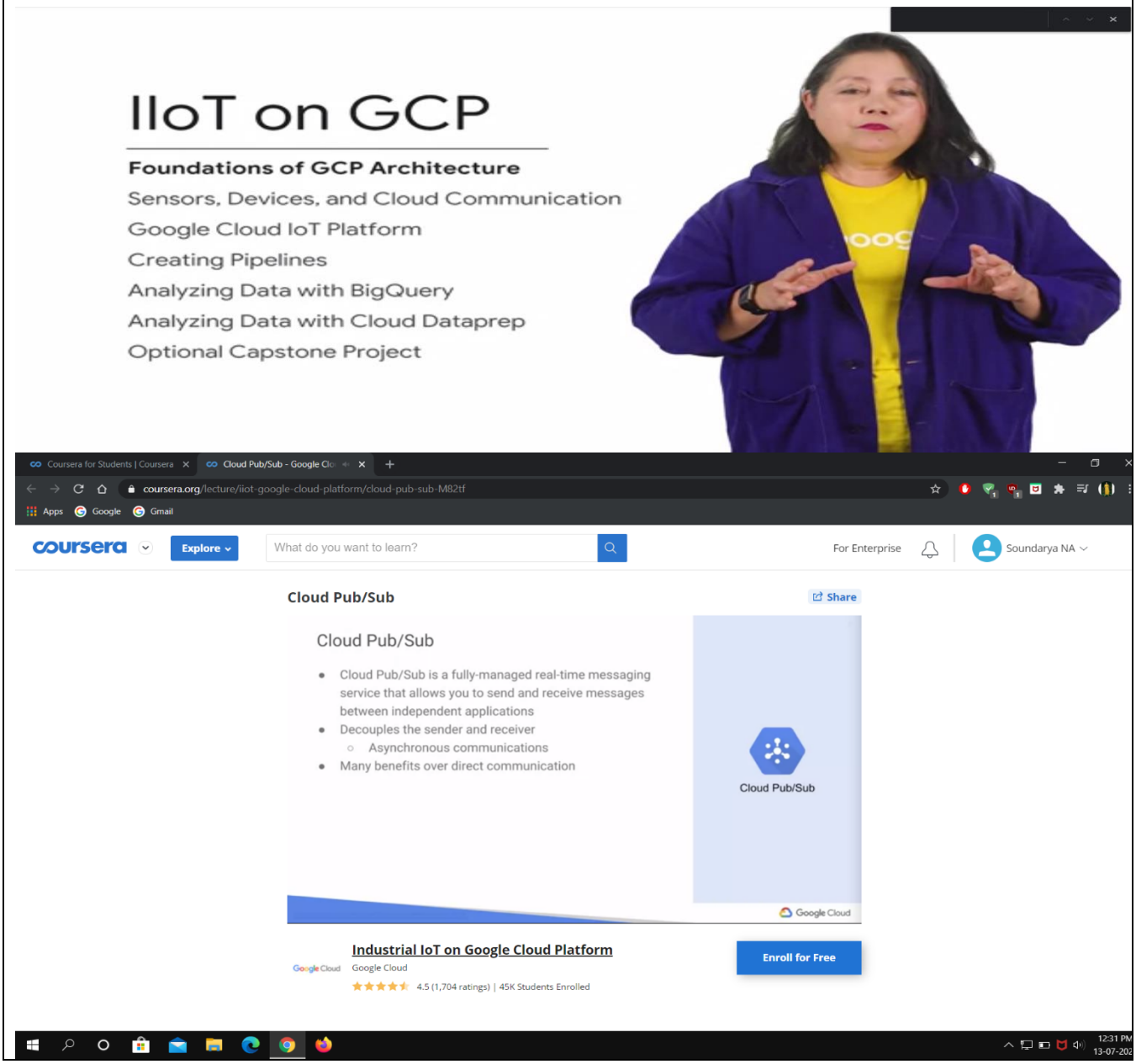
Course:	Coursera	**USN:**	4AL16EC077
Topic:	Industrial IOT on Google Cloud Platform	**Semester & Section:**	8th - B
Github Repository:	Soundaryana-courses		

FORENOON SESSION DETAILS

Image of session



Report:

IOT on GCP:

Google Cloud IoT is a complete set of tools to connect, process, store, and analyze data both at the edge and in the cloud. The platform consists of scalable, fully-managed cloud services; an integrated software stack for edge/on-premises computing with machine learning capabilities for all your IoT needs.

Accelerate business agility and decision making with IoT data:

Gain real-time business insights from globally dispersed devices, at the edge or in the cloud, with comprehensive services from Google Cloud IoT. Device data captured by Cloud IoT Core gets published to Cloud Pub/Sub for downstream analytics. Easily do ad hoc analysis using Google Big Query or run advanced analytics and apply machine learning with Cloud Machine Learning Engine. Plus, you can visualize results with rich reports and dashboards in Google Data Studio.

Improve operational efficiency:

Discover how efficiently your devices operate, manage global assets, and carry out firmware updates on Google Cloud IoT platform. The platform supports a wide variety of embedded operating systems, works seamlessly with Debian Linux OS, and provides out-of-the-box support for devices from leading manufacturers like Intel and Microchip. Plus, trigger automatic changes based on real-time events using Cloud Functions workflows.

Enhance your IoT solution with location intelligence:

Make your business location-aware with the power of Google Maps. Visualize where assets are located in real time, where they've traveled, and how often they've moved. Whether your IoT assets are indoors, in remote areas, or distributed across hundreds of cities, track them with precision.

What is IOT?

"The Internet of Things (IoT) is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction."

Sensor, Devices and Communication:

Converging of MANET with WSN used in ubiquitous smart environments opens new prospect in monitoring the large scale urban area and makes a new communication platform for different applications in Internet of Things (IoT) domain. Sensors used for IoT applications, sense the environment and send the data to the gateway node, which in turn send the collected data to the MANET node, especially used for data harvesting. Here we considered two IoT applications which are monitored by wireless sensor nodes. The challenging part of this work is to make a platform by converging sensor network with the MANET network because nodes have different power levels, heterogeneous protocols and have chances of co-channel interferences. We proposed a total solution which includes network protocols, spectrum distribution, node deployment, MANET routing and mobility pattern and finally implementation of the IoT applications which are simulated using Omnet++ simulator and shown their performances and feasibility.

Google Cloud IOT Platform:

Ingest events at any scale:

Data ingestion is the foundation for analytics and machine learning, whether you are building stream, batch, or unified pipelines. Cloud Pub/Sub provides a simple and reliable staging location for your event data on its journey towards processing, storage, and analysis.

With Cloud Pub/Sub, data engineers can scale without provisioning, partitioning, or load isolation worries, and expand applications and pipelines to new regions simply with global topics.

Use Cloud Dataflow with Cloud Pub/Sub to enrich, deduplicate, order, aggregate, and land events. Mix real-time and batch processing via Cloud Pub/Sub's durable storage.

Simplify development of event-driven microservices:

Whether you're just beginning your journey to event-driven asynchronous microservices or migrating an existing system, making your events accessible through messaging middleware is a critical early step. Application developers on GCP rely on Cloud Pub/Sub to reliably deliver each event to all the services that must react to it.

Upon event publication to Cloud Pub/Sub, push subscriptions deliver the event to serverless apps running in Cloud Functions, App Engine, or Cloud Run and pull subscriptions make it available to more

complex stateful services running in Google Kubernetes Engine or Cloud Dataflow. Multi-region environments operate seamlessly because of Cloud Pub/Sub's global nature.

Be production ready from day one:

Cloud Pub/Sub is designed as a premium service that lets Google Cloud users focus on application logic, regardless of location or scale. The service is minimal and easy to start with but also eliminates the operational, scaling, compliance, and security surprises that inevitably reveal themselves in software projects.

This is why Cloud Pub/Sub includes end-to-end encryption, IAM, and audit logging, as well as NoOps, fully automated scaling and provisioning with virtually unlimited throughput. It also provides extreme data durability and availability with synchronous cross-zone replication, plus native client libraries in major languages and an open-service API.

IOT Cloud Core:

Cloud IoT Core is a fully managed service for connecting and managing IoT devices. This tutorial uses the google cloud command-line tool to create a Cloud IoT Core device registry, add a device, and run an MQTT sample to connect a device and publish device telemetry events.