HSBC

Overview of Cloud Computing – GCP

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Course Objective

The following will be discussed and practiced during this session:

- Overview of GCP
- Google Compute Engine
- Google Cloud Shell
- Deploying sample application on GCE
- Introduction to Google App Engine
- Introduction to Google cloud Storage (GCS)

Overview of GCP

Runs on Google Infrastructure

- GCP is Google owns Infra which return billions of search results in milliseconds. Its all come down to its Network.
- You will be using Google Infrastructure :
  - VM
  - Network
  - Storage.

➔ Global Network

➔ Redundancy

➔ Innovative Infrastructure

Google data center in Mayes County

[360 degree view of Google Data center]

Wingspan References

https://hsbc.onwingspan.com/viewer/lex_auth_012812628135362560101 28/lex_auth_012811994956677120962 4

GCP – Products classification

- Compute
- Storage and Databases
- Networking
- Big Data
- Machine Learning
- Management Tools
- Developer Tools
- Identity & Security

Assignment 1: Creating an account and logging to Google Cloud Platform

Wingspan References

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Google Compute Engine

Tea Break !!

Deploying sample application on GCE

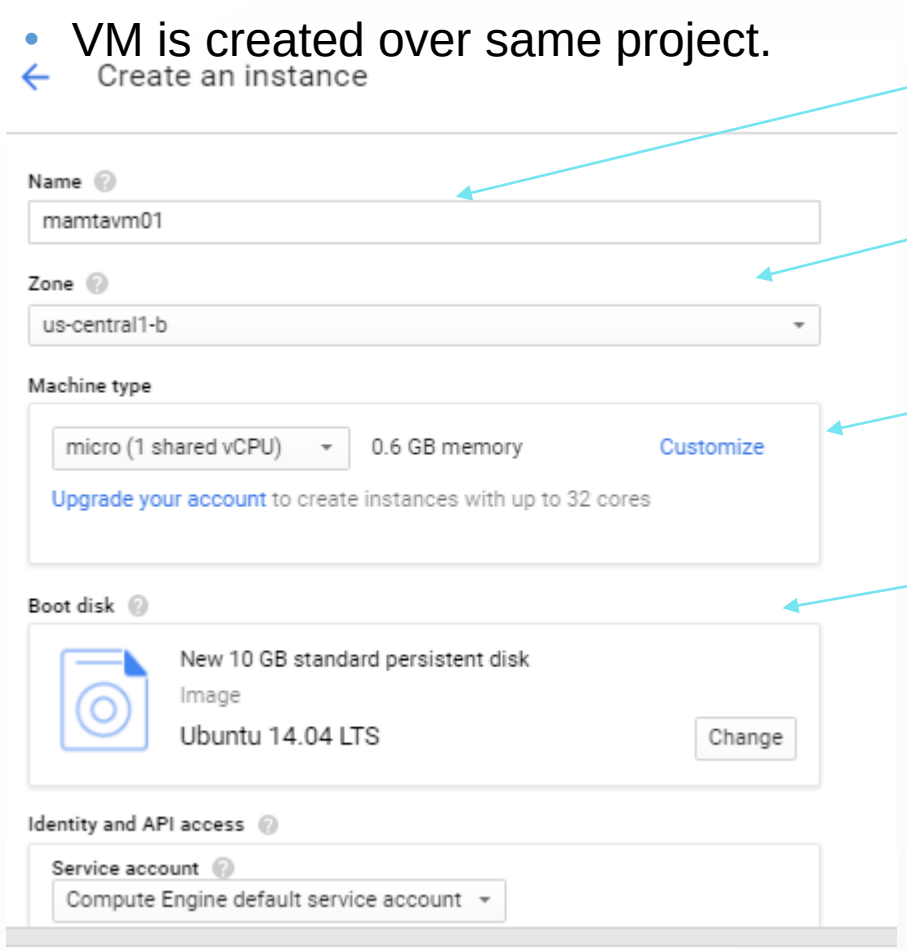
GCP Instances

*Use **Instances** to create virtual machine(VM) hosted on Google's Infra instead of procuring new hardware.*

- Connect to your instances using SSH(Secure Shell), to perform advance configuration you can use **sudo** to run commands
- The number of virtual CPUs(vCPU), amount of memory supported by the VM is dependent on the machine type selected :
  - Predefined : have fixed collection of resources including memory size, virtual CPU(vCPU) count and storage
  - Custom : specify your own vCPU count and memory

Creating Instance

- VM is created over same project.



Name the Instance

Select Zones based on Availability

Chose the VM Configuration

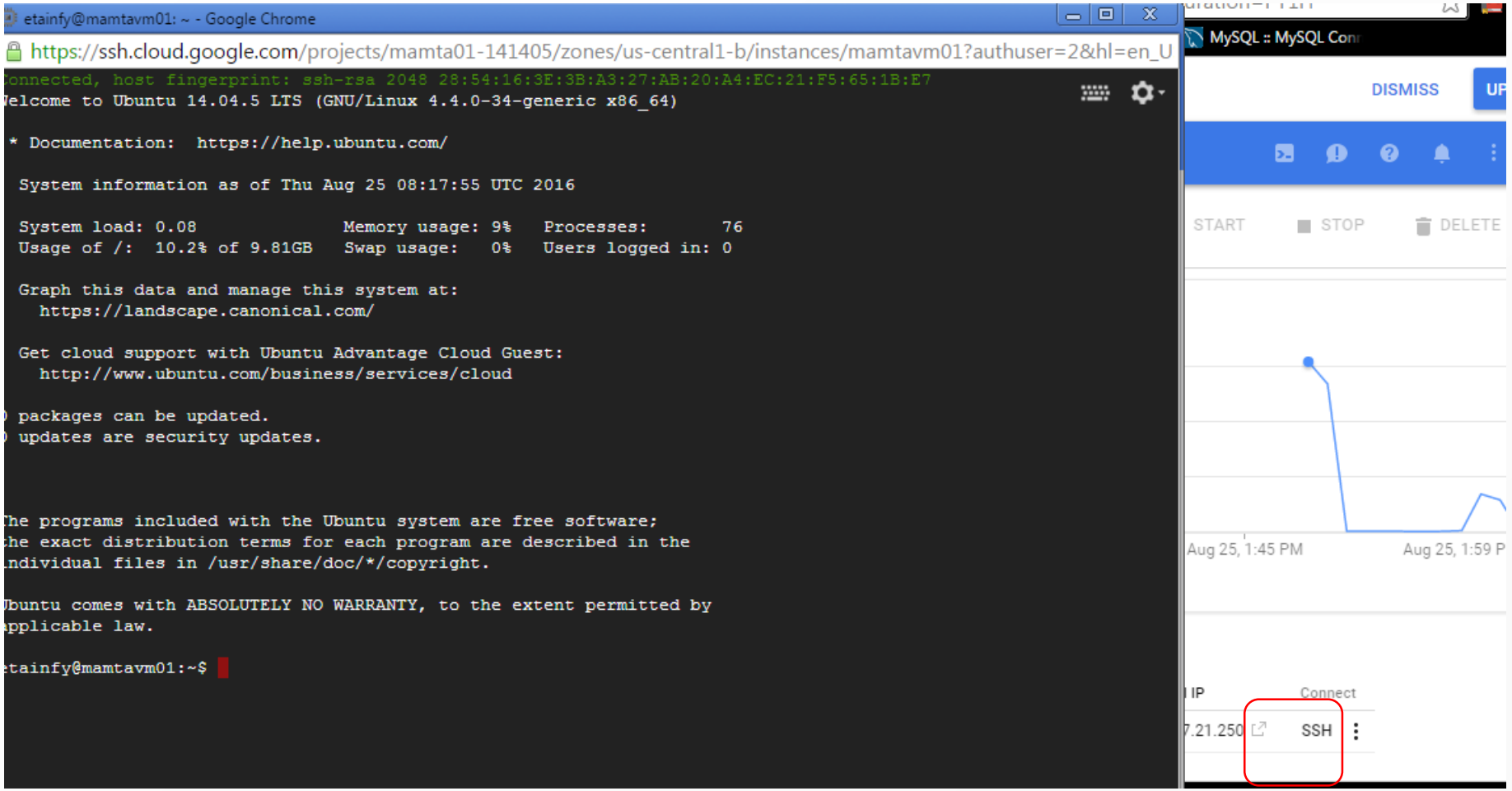
Select the boot disk image

Enable Firewall As Desired

Assignment 2: Creating Project and launching an instance

Accessing Instance

- Connect to the instance by the click on SSH: View on browser



Assignment 3: Connecting to instances

Deploy web application

- Deploying an application in the instance requires utilities like application server, deployment platform, database support and few other configuration changes.
  1. Run an Apache server on the instance
  2. Deploy a simple PHP application on the server
  3. Test the application on the browser

Assignment 4: Deploying sample application on GCE

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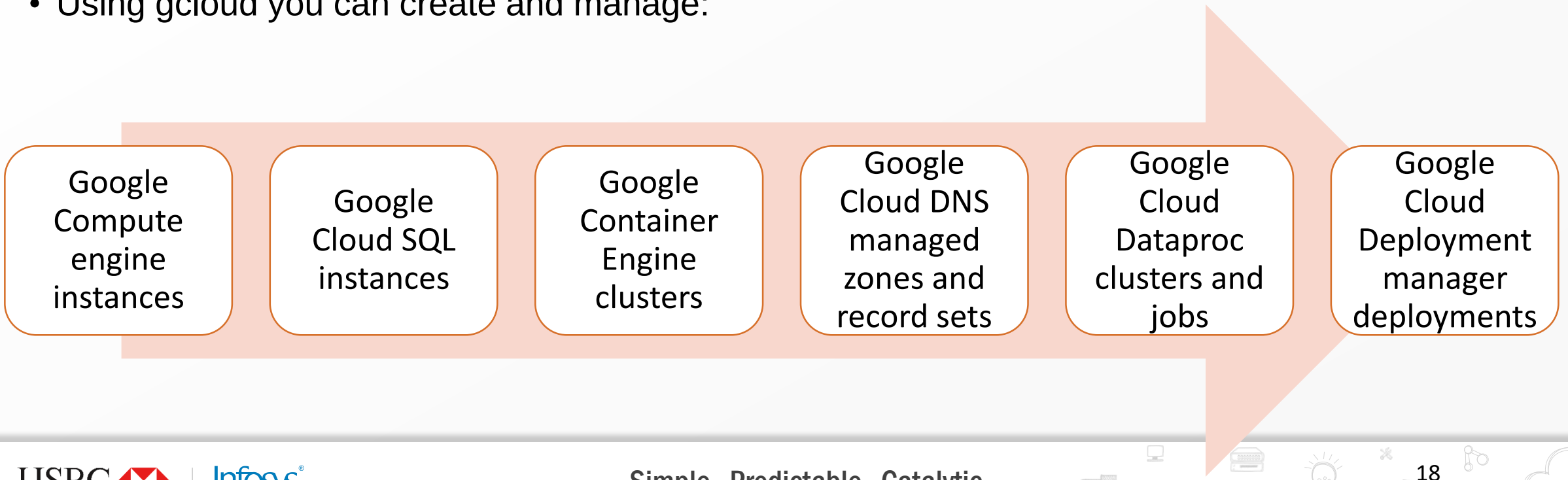
Google Cloud Shell

Interacting Methods with GCP

- GCP Console and Market place
  - Web based GUI to manage GCP resources and Projects
  - Can create new/ work with existing project
- Command Line Interface
  - gcloud Command line tool provided by Google Cloud SDK
  - Used to manage both development work flow and Cloud platform resources
  - https://cloud.google.com/sdk/gcloud/reference/
- Client Libraries
  - Create and Manager resources through APIs
    - App APIs – to provide access to services
    - Admin APIs- to provide resource management
  - https://cloud.google.com/sdk/cloud-client-libraries
  - Ex: APIs for Google Maps, you tube, Google Drive etc..

Google Cloud (gcloud)

- Is a command line interface tool to manage your to Google cloud platform resources
- It allows you to perform many common tasks from the command line through automated scripts
- gcloud CLI manages authentication, local configuration, developer workflow and interaction with the google cloud platform APIs
- The cloud SDK is a set of tools which contains gcloud, bq, and gsutil
- Using gcloud you can create and manage:



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Progress check

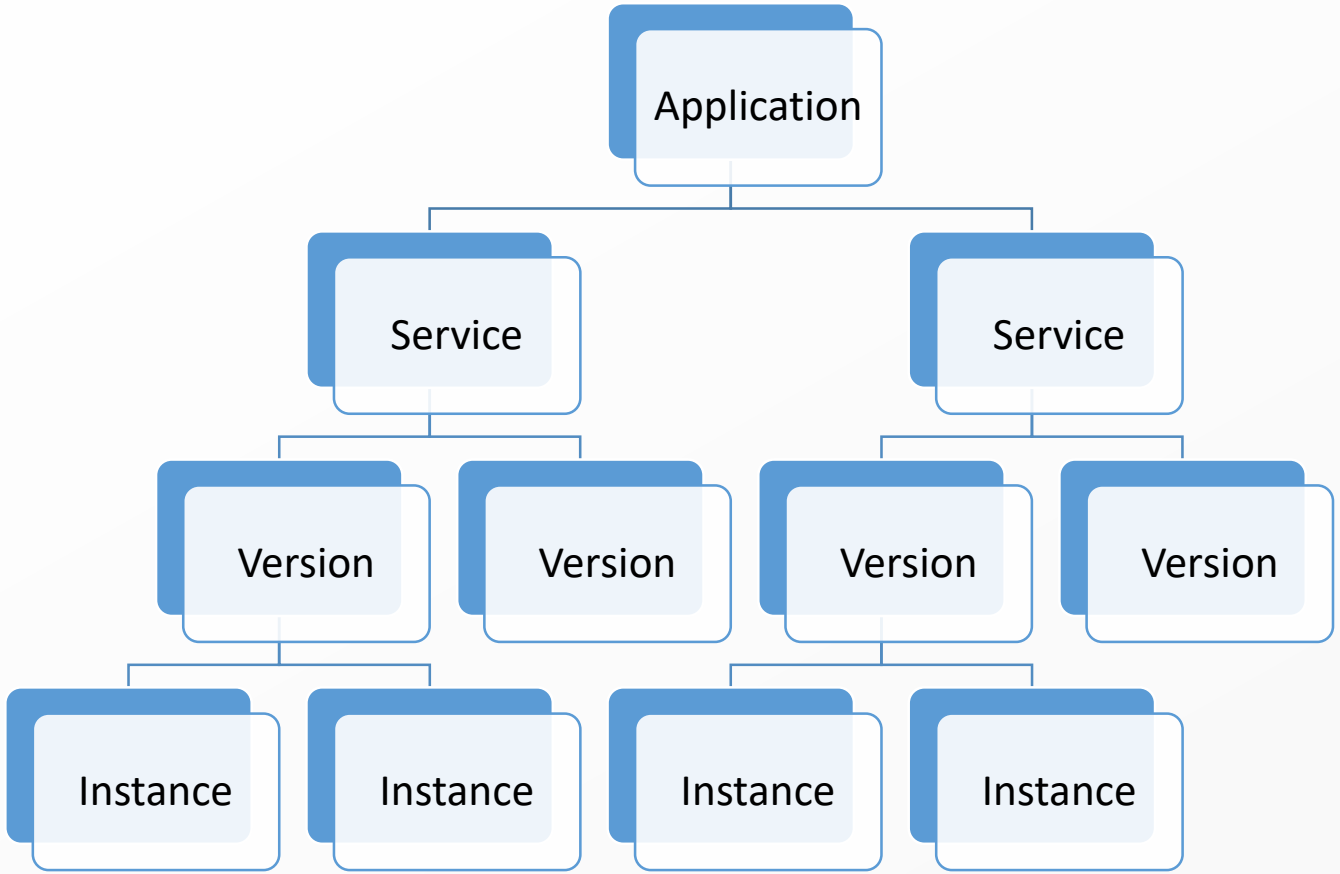
Progress Check

- Overview of GCP
- Google Compute Engine
- Google Cloud Shell
- Deploying sample application on GCE

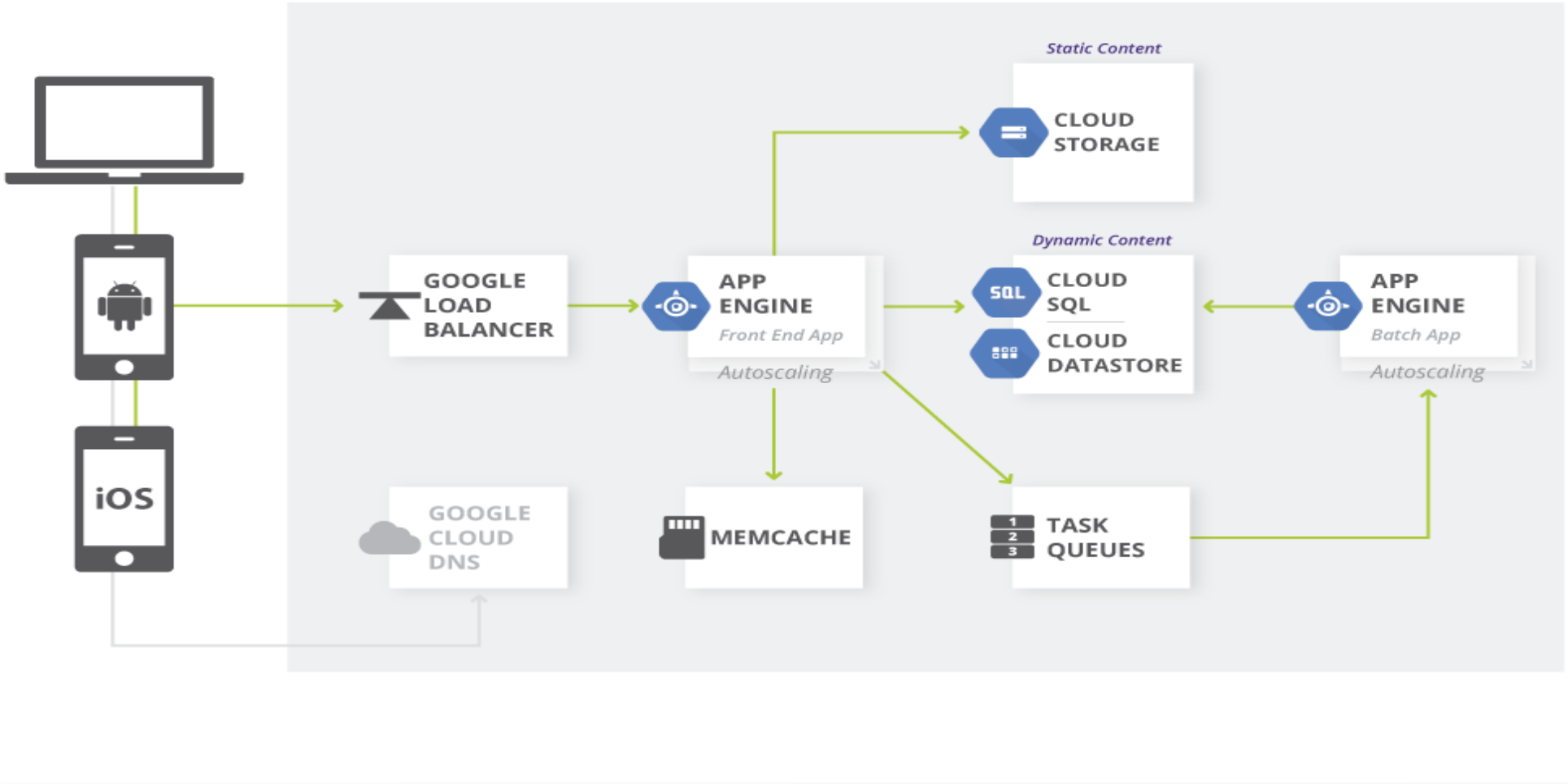
Lunch Break !!

Introduction to Google App Engine

Hierarchy of a running App Engine application



GAE Architecture



Lab Work

Assignment 5: Deploy Spring Boot Application in App Engine standard

(OR)

Assignment 5: Deploy a simple Python web application on App engine

Quiz Time

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Quiz 1

John is trying to build and deploy an application using App Engine which runs reliably under heavy load with large amount of data. Which of the following environment in App Engine helps her for her application ?

- ❑ Flexible environment
- ❑ Standard environment
- ❑ Premium environment

Quiz 2

Sam works on developing in App Engine with one of the supported language “Java”. Apart from that, which of the following languages are supported by App Engine

- ❑ Python
- ❑ PHP
- ❑ Ruby
- ❑ Node.js
- ❑ All of the above options

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Progress Check

- Overview of GCP
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- Google App Engine

Tea Break !!

Introduction to Google Cloud Storage(GCS)

Storage Classes

Class	Characteristics	Use Cases	Examples
Multi-Regional	• 99.95% availability • Geo-redundant	Frequently accessed hot objects around the world	Website Content, Streaming videos ,Game & Mobile Apps
Regional	• 99.9% Availability • Data in Narrow Geo region • Lower cost /GB	Frequently accessed in same region	Data Analytics
Nearline	• 99.0% Availability • Very Low Cost/GB • Data Retrieval & Per operation costs are higher • 30 day min storage	Not frequently accessed data Not more than once /month	back-up and serving long-tail multimedia content.
Coldline	• 99.0% Availability • Lower Cost/GB • Data Retrieval & Per operation costs are higher • 90 day min storage	Not frequently accessed data Not more than once /year	Disaster recovery , data archived and not needed at future time

Lab Work

Assignment 6a: Creating a bucket in Cloud Storage

Assignment 6b: Upload objects in to a bucket in Cloud Storage

Quiz Time

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Quiz 1

A company similar to Youtube needs to enable video streaming from its website accessible across globe. Which of the storage class is recommended for high availability?

- ❑ Regional
- ❑ Nearline
- ❑ Multi-Regional

Quiz 2

Which of these statement is FALSE with respect to Cloud Storage option on GCP?

- ❑Objects can be edited in place on Cloud Storage
- ❑Any type and any size of the file can be uploaded
- ❑It is a BLOB storage
- ❑Cloud storage is fully managed and scalable resource

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Summary

- GCP Global infrastructure (Regions, Zones etc..)
- GCP compute, storage , DB and networking services
- GCP Compute(GCE)
- Cloud shell
- Deploying application on GCE
- Google App Engine
- Google Cloud Storage

Thank You