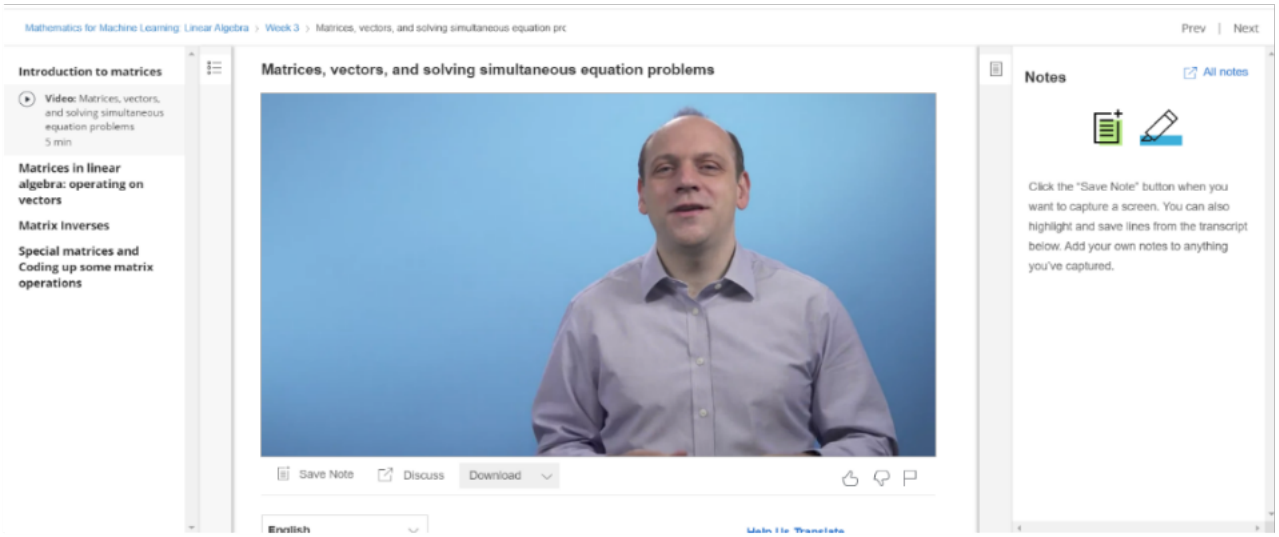
DAILY ASSESSMENT FORMAT

Date:	15-07-2020	Name:	POOJA K S
Course:	Coursera	USN:	4AL17EC070
Topic:	Mathematics for Machine Learning: Linear Algebra	Semester & Section:	6th SEM and 'B'section
Github Repository:	pooja-shivanna		

FORENOON SESSION DETAILS(9.00am to 1.00pm)



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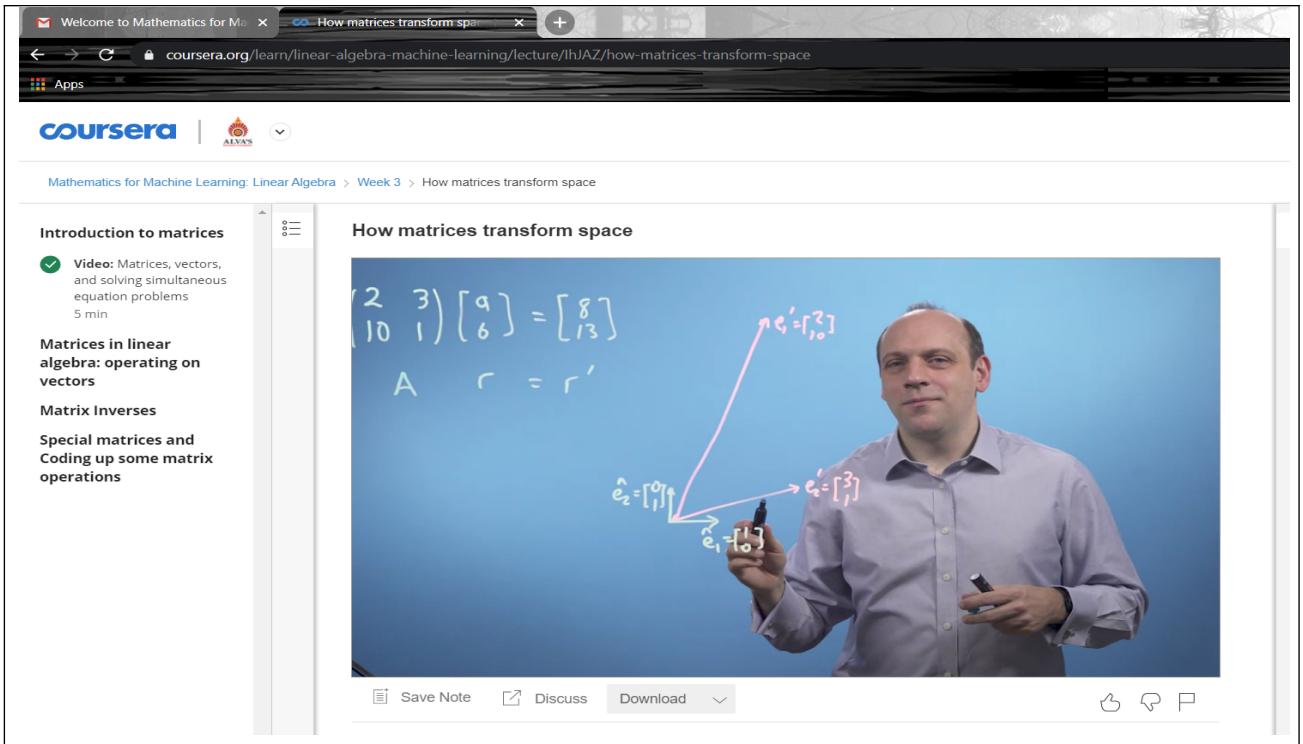

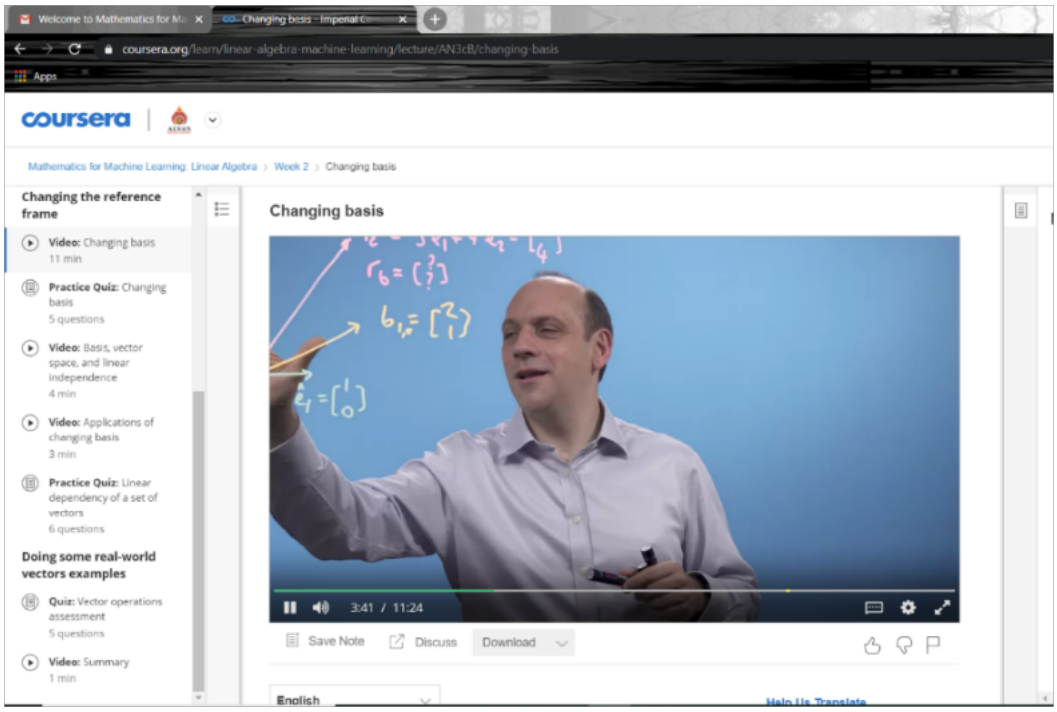

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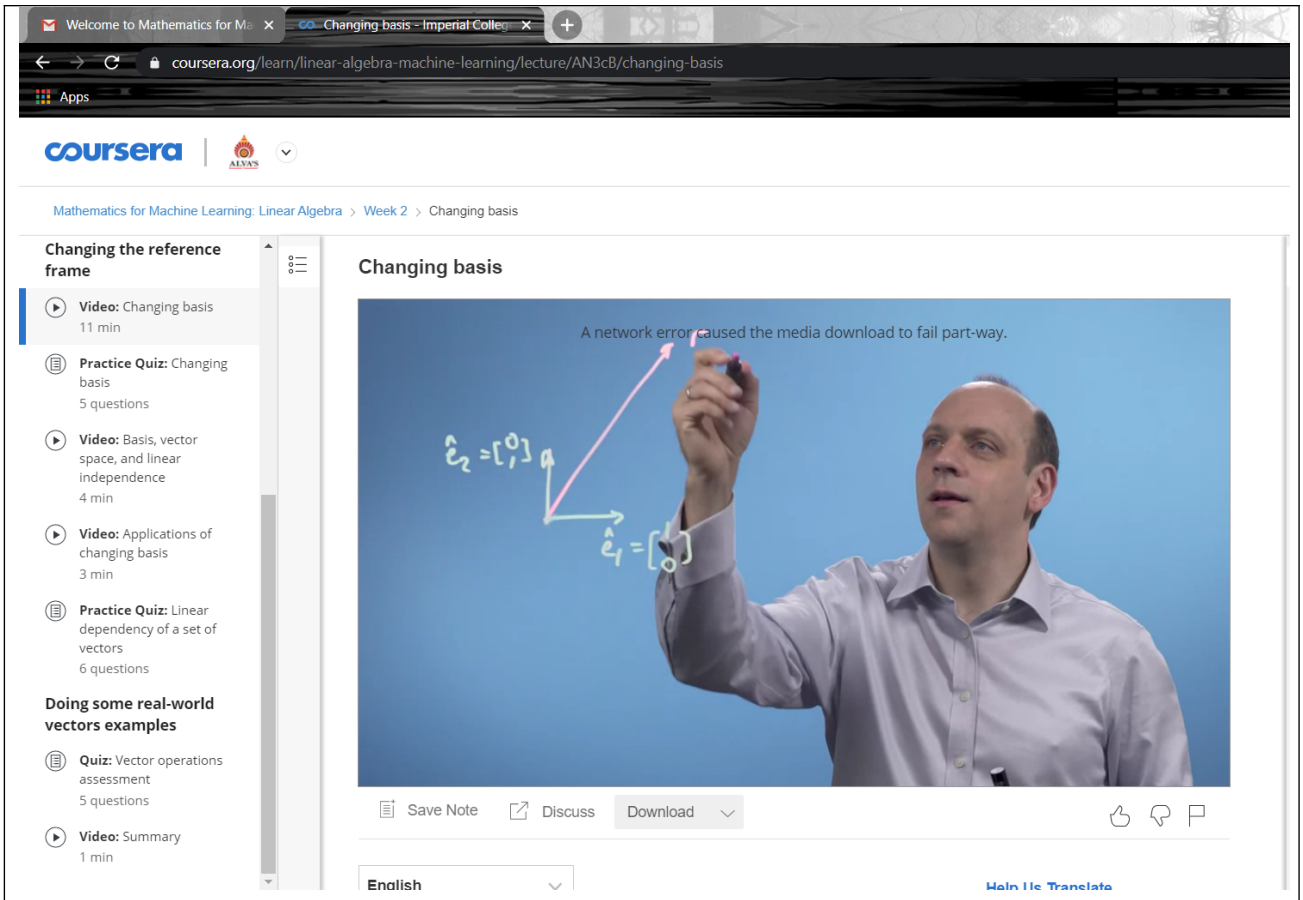

Matrix is an arrangement of numbers into rows and columns. Make your first **introduction** with **matrices** and learn about their dimensions and elements. A **matrix** is a rectangular arrangement of numbers into rows and columns. For example, **matrix** A has two rows and three columns.

The mathematical **concept** of a **matrix** refers to a set of numbers, variables or functions ordered in rows and columns. Such a set then can be defined as a distinct entity, the **matrix**, and it can be manipulated as a whole according to some basic mathematical rules.

Matrices can be **used to** compactly write and work with multiple linear equations, referred to as a system of linear equations, simultaneously. **Matrices** and **matrix** multiplication reveal their essential features when related to linear transformations, also known as linear maps.

A **matrix** is a collection of numbers arranged into a fixed number of rows and columns. Usually the numbers are real numbers. In general, **matrices** can contain complex numbers but we won't see those here.

In geology, **matrices** are **used** for making seismic surveys. They are **used** for plotting graphs, statistics and also to do scientific studies and research in almost different

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fields. **Matrices** are also **used** in representing the **real world** data's like the population of people, infant mortality rate, etc.

Main point of the Matrix

The **Matrix** trilogy suggests that everyone has the individual responsibility to make the choice between the real world and an artificial world. Though Neo is the exemplar of free will, fate plays a large role in his adventure. Neo relies on the Oracle, and everything she says comes true in some way.

Application of **Matrices**

Almost every branch of physics, including classical mechanics, optics, electromagnetism, quantum mechanics, and quantum electrodynamics, **matrices** are used to study physical phenomena, such as the motion of rigid bodies.

Matrices have also come to have important applications in computer graphics, where they have been used to represent rotations and other transformations of images. is a 2 × 3 **matrix**. A **matrix** with n rows and n columns is called a square **matrix** of order n

Matrices are classified according to the number of rows and columns, and the specific elements therein. (i) Row **Matrix**: A **matrix** which has exactly one row is called a row **matrix**. The above two **matrices** are row **matrices** because each has only one row.

Matrices are a **useful** way to represent, manipulate and study linear maps between finite dimensional vector spaces (if you have chosen basis). **Matrices** can also represent quadratic forms (it's **useful**, for example, in analysis to study hessian **matrices**, which help us to study the behavior of critical points).

The numbers in a **matrix** can represent data, and they can also represent **mathematical** equations. Even more frequently, they're called upon to multiply **matrices**. **Matrix** multiplication can be thought of as solving linear equations for particular variables.

The series primarily consists of a trilogy of science fiction action films beginning with The **Matrix** (1999) and continuing with two sequels, The **Matrix** Reloaded and The **Matrix** Revolutions (both in 2003), all written and directed by the Wachowskis and produced by Joel Silver.

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The term **matrix** was introduced by the 19th-century English mathematician James Sylvester, but it was his friend the mathematician Arthur Cayley who developed the algebraic aspect of **matrices** in two papers in the 1850s.

In biology, **matrix** is the material (or tissue) in animal or plant. Structure of connective tissues is an extracellular **matrix**. ... It is found in various connective tissue. It is generally used as a jelly like structure instead of cytoplasm in connective tissue.

BONE CELLS. **Bone matrix** is synthesized by a layer of osteoblasts on the **bone** surface (Figs. 1-22 and 1-23). The osteoblasts are mesenchymal in origin and characterized by their abundant endoplasmic reticulum and their **production** of the enzyme alkaline phosphatase.

In the **mitochondrion**, the **matrix** is the space within the inner membrane. The word "**matrix**" stems from the fact that this space is viscous, compared to the relatively aqueous cytoplasm.

The **extracellular matrix** (ECM) is the non-cellular component present within all tissues and organs, and provides not only essential physical scaffolding for the cellular constituents but also initiates crucial biochemical and biomechanical cues that are required for tissue morphogenesis, differentiation and homeostasis.

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Welcome to the course

- **Video:** Welcome to IIoT on GCP
  5 min
- **Video:** IoT on GCP Overview
  5 min

How to use Qwiklabs

- **Video:** Getting Started with Google Cloud and Qwiklabs
  4 min

Course Feedback

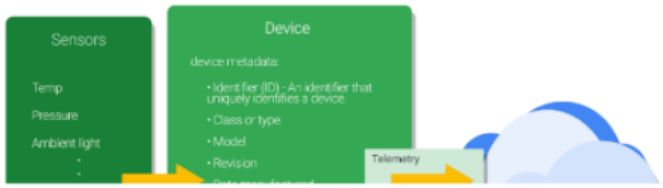
- **Reading:** How to Send Feedback
  10 min

What is IoT?

- **Video:** Module Introduction
  1 min
- **Reading:** Lesson Introduction
  3 min

Devices

A "Thing" in the "Internet of Things" is a processing unit that is capable of connecting to the internet and exchanging data with the cloud. Devices are often called "smart devices" or "connected devices." They communicate two types of data: telemetry and state.



Types of information

Each device can provide or consume various types of information. Each form of information might best

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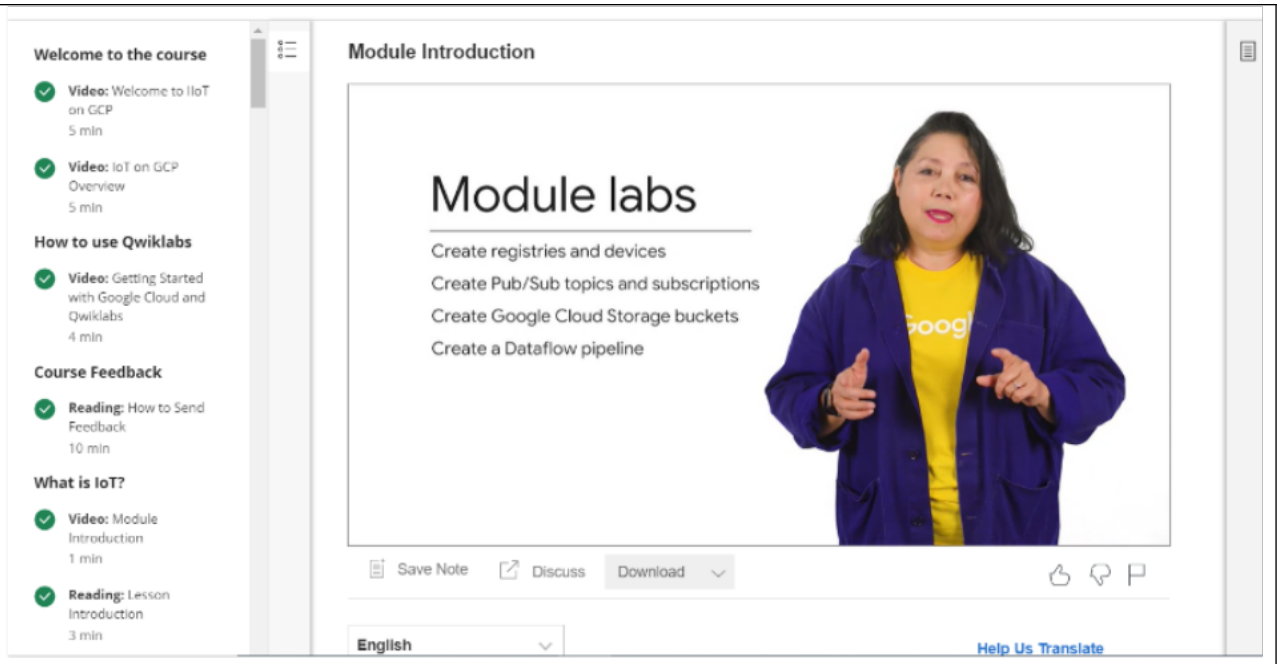

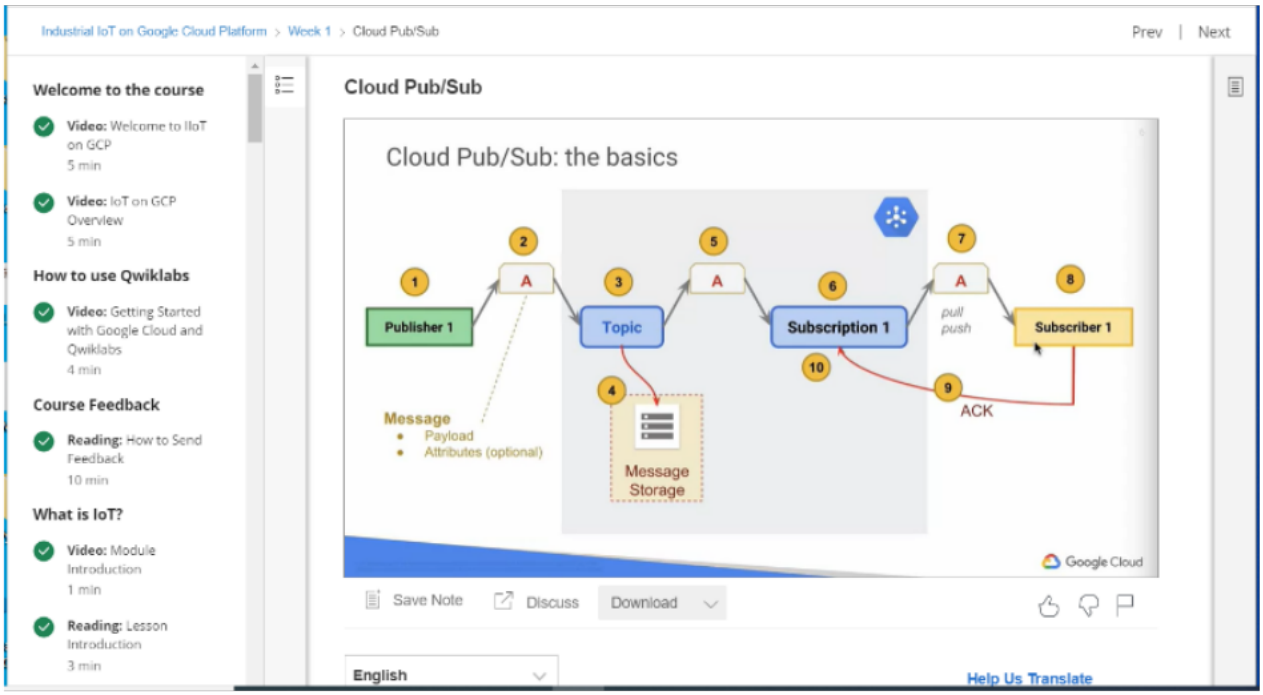

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Google Cloud Platform (**GCP**), offered by Google, is a suite of cloud computing services that runs on the same infrastructure that Google uses internally for its end-user products, such as Google Search, Gmail and YouTube. Alongside a set of management tools, it provides a series of modular cloud services including computing, data storage, data analytics and machine learning. Registration requires a credit card or bank account details.

Google Cloud Platform provides infrastructure as a service, platform as a service, and server less computing environments.

In April 2008, Google announced App Engine, a platform for developing and hosting web applications in Google-managed data centres, which was the first cloud computing service from the company. The service became generally available in November 2011. Since the announcement of the App Engine, Google added multiple cloud services to the platform.

Google Cloud Platform is a part of **Google Cloud**, which includes the Google Cloud Platform public cloud infrastructure, as well as **G Suite**, enterprise versions of Android and Chrome OS, and application programming interfaces (APIs) for machine learning and enterprise mapping services.

Storage & Databases

- Cloud Storage - Object storage with integrated edge caching to store unstructured data.
- Cloud SQL - Database as a Service based on MySQL and PostgreSQL.
- Cloud Big table - Managed NoSQL database service.
- Cloud Spanner - Horizontally scalable, strongly consistent, relational database service.
- Cloud Datastore - NoSQL database for web and mobile applications.
- Persistent Disk - Block storage for Compute Engine virtual machines.
- Cloud Memory Store - Managed in-memory data store based on Radis.
- Local SSD: High-performance, transient, local block storage.
- File store: High-performance file storage for Google Cloud users.

Networking

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- VPC - Virtual Private Cloud for managing the software defined network of cloud resources.
- Cloud Load Balancing - Software-defined, managed service for load balancing the traffic.
- Cloud Armour - Web application firewall to protect workloads from DDoS attacks.
- Cloud CDN - Content Delivery Network based on Google's globally distributed edge points of presence.
- Cloud Interconnect - Service to connect a data centre with Google Cloud Platform
- Cloud DNS - Managed, authoritative DNS service running on the same infrastructure as Google.
- Network Service Tiers - Option to choose Premium vs Standard network tier for higher -performing network.

Big Data

- Big Query - Scalable, managed enterprise data warehouse for analytics.
- Cloud Dataflow - Managed service based on Apache Beam for stream and batch data processing.
- Cloud Dataproc - Big data platform for running Apache Hadoop and Apache Spark jobs.
- Cloud Composer - Managed workflow orchestration service built on Apache Airflow.
- Cloud Data lab - Tool for data exploration, analysis, visualization and machine learning. This is a fully managed Jupiter Notebook service.
- Cloud Data prep - Data service based on Trifecta to visually explore, clean, and prepare data for analysis.
- Cloud Pub/Sub - Scalable event ingestion service based on message queues.
- Cloud Data Studio - Business intelligence tool to visualize data through dashboards and reports.

Cloud AI

- Cloud AutoML - Service to train and deploy custom machine, learning models. As of September 2018, the service is in Beta.

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- Cloud TPU - Accelerators used by Google to train machine learning models.
- Cloud Machine Learning Engine - Managed service for training and building machine learning models based on mainstream frameworks.
- Cloud Job Discovery - Service based on Google's search and machine learning capabilities for the recruiting ecosystem.
- Dialog flow Enterprise - Development environment based on Google's machine learning for building conversational interfaces.
- Cloud Natural Language - Text analysis service based on Google Deep Learning models.
- Cloud Speech-to-Text - Speech to text conversion service based on machine learning.
- Cloud Text-to-Speech - Text to speech conversion service based on machine learning.
- Cloud Translation API - Service to dynamically translate between thousands of available language pairs
- Cloud Vision API - Image analysis service based on machine learning
- Cloud Video Intelligence - Video analysis service based on machine learning

Management Tools

- Stack driver - Monitoring, logging, and diagnostics for applications on Google Cloud Platform and AWS.
- Cloud Deployment Manager - Tool to deploy Google Cloud Platform resources defined in templates created in YAML, Python or Jinja2.
- Cloud Console - Web interface to manage Google Cloud Platform resources.
- Cloud Shell - Browser-based shell command-line access to manage Google Cloud Platform resources.
- Cloud Console Mobile App - Android and iOS application to manage Google Cloud Platform resources.

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- Cloud APIs - APIs to programmatically access Google Cloud Platform resources

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