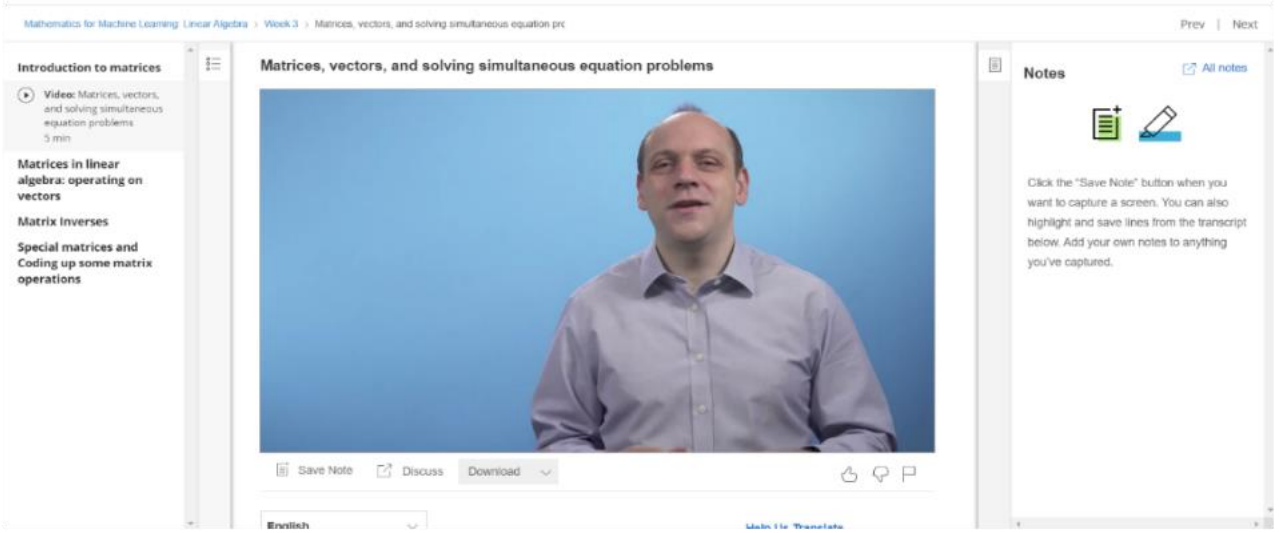
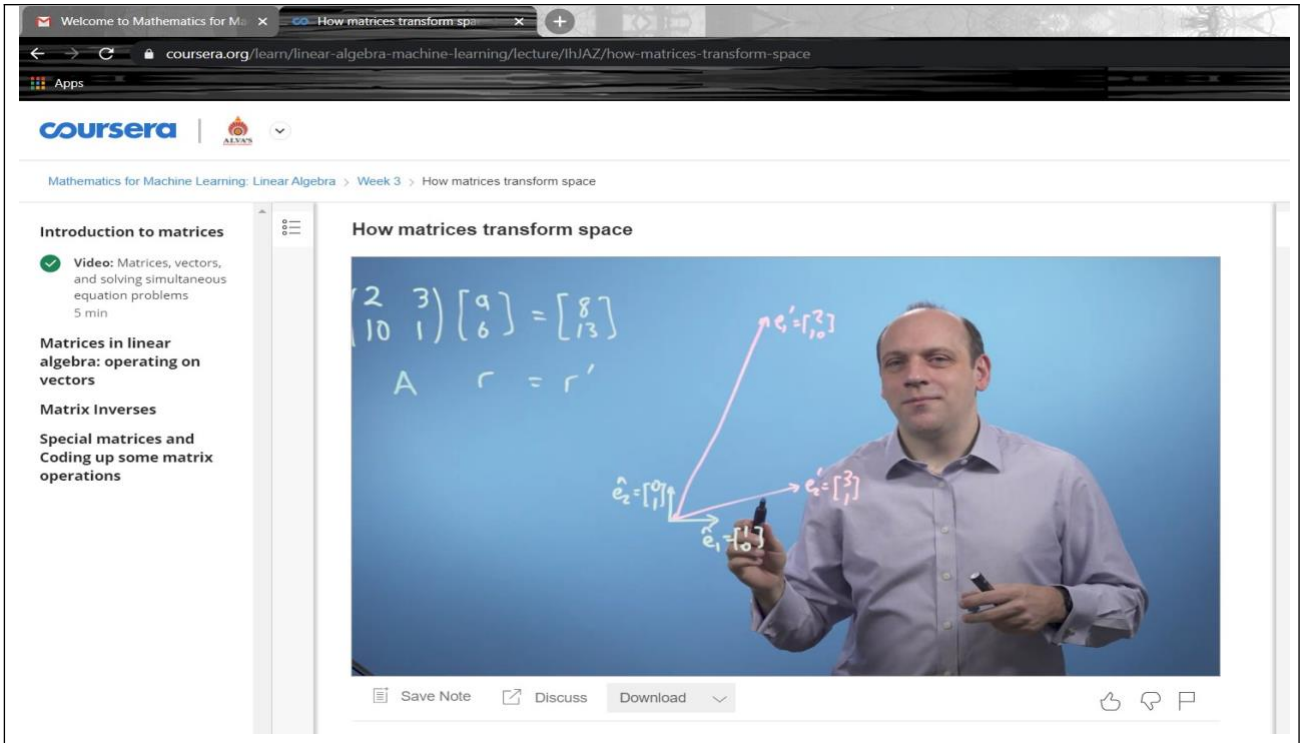
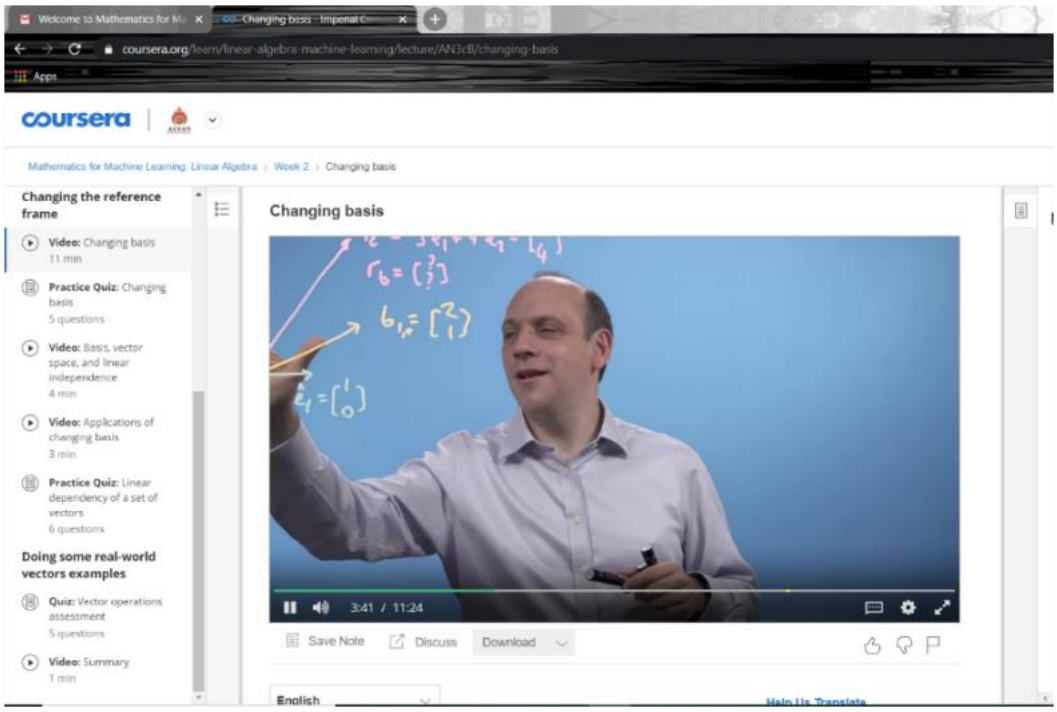
DAILYASSESSMENTFORMAT

Date:	15-07-2020	Name:	Sahana S R
Course:	Coursera	USN:	4AL17EC083
Topic:	MathematicsforMachine Learning:LinearAlgebra	Semester &Section	6thSEMand'B'section
Github Repository:	sahanasr-course		

FORENOONSESSIONDETAILS(9.00amto1.00pm)







Matrix isanarrangementofnumbersintorowsandcolumns.Makeyour first introduction with matrices andlearnabouttheirdimensionsandelements. A matrix isarectangulararrangementofnumbersintorowsandcolumns.For example, matrix Ahastworowsandthreecolumns.

Themathematical concept ofa matrix referstoasetofnumbers,variablesorfunctions orderedinrowsandcolumns.Suchasetthencanbedefinedasadistinctentity, the matrix,anditcanbemanipulatedasawholeaccordingtosomebasicmathematical rules.

Matrices canbe usedto compactlywriteandworkwithmultiplelinearequations, referred to as a system of linear equations,
simultaneously. Matrices and matrix multiplicationrevealtheiressentialfeatureswhen relatedtolineartransformations,alsoknownaslinearmaps.

A matrix isacollectionofnumbersarrangedintoafixednumberofrowsandcolumns. Usuallythenumbersarerealnumbers.Ingeneral, matrices cancontaincomplex numbersbutwewon'tseethosehere.

Ingeology, matrices are used formakingseismicsurveys.Theyare used forplotting graphs,statisticsandalsotodoscientificstudiesandresearchinalmostdifferent fields. Matrices arealso used inrepresentingthe realworld data'slikethepopulationof people,infantmortalityrate,etc.

MainpointoftheMatrix

The Matrix trilogysuggeststhateveryonehastheindividualresponsibilitytomakethe choicebetweentherealworldandanartificialworld.ThoughNeoistheexemplaroffree will,fateplaysalargeroleinhisadventure.NeoreliesontheOracle,andeverythingshe sayscomestrueinsomeway.

Application of Matrices

Almosteverybranchofphysics,includingclassicalmechanics,optics,electromagnetism, quantummechanics,andquantumelectrodynamics, matrices areusedtostudyphysical phenomena,suchasthemotionofrigidbodies.

Matrices havealsocometohaveimportantapplicationsincomputergraphics,where theyhavebeenusedtorepresentrotationsandothertransformationsofimages.isa2× 3 matrix.A matrix withnrowsandncolumnsiscalledasquare matrix ofordern Matrices areclassifiedaccordingtothenumberofrowsandcolumns,andthespecific elementstherein.(i)Row Matrix:A matrix whichhasexactlyonerowiscalleda row matrix.Theabovetwo matrices arerow matrices becauseeachhasonlyonerow.

Matrices area useful waytorepresent,manipulateandstudylinearmapsbetweenfinite dimensionalvectorspaces(ifyouhavechosenbasis). Matrices canalsorepresent quadraticforms(it's useful,forexample,inanalysistostudyhessian matrices,which helpustostudythebehaviorofcriticalpoints).

The numbers in a matrix can represent data, and they can also represent mathematical equations.Evenmorefrequently,they'recalleduponto multiply matrices. Matrix multiplicationcanbethoughtofassolvinglinearequationsfor particularvariables.

Theseriesprimarilyconsistsofatrilogyofsciencefictionactionfilmsbeginningwith The Matrix (1999)andcontinuingwithtwosequels,The Matrix Reloadedand The Matrix Revolutions(bothin2003),allwrittenanddirectedbytheWachowskisand producedbyJoelSilver.

Theterm matrix wasintroducedbythe19th-centuryEnglishmathematicianJames Sylvester,butitwashisfriendthemathematicianArthurCayleywhodevelopedthe algebraicaspectof matrices intwopapersinthe1850s.

Inbiology, matrix isthematerial(ortissue)inanimalorplant.Structureofconnective tissuesisanextracellular matrix....Itisfoundinvariousconnectivetissue.Itisgenerally usedasajellylikestructureinsteadofcytoplasminconnectivetissue.

BONE CELLS. Bonematrix issynthesizedbyalayerofosteoblastsonthe bone surface (Figs.1-22and1-23).Theosteoblastsaremesenchymalinoriginandcharacterizedby theirabundantendoplasmicreticulumandtheir production oftheenzymealkaline phosphatase.

Inthe mitochondrion,the matrix isthespacewithintheinnermembrane.Theword "matrix"stemsfromthefactthatthisspaceisviscous,comparedtotherelatively aqueouscytoplasm.

The extracellularmatrix (ECM)isthenon-cellularcomponentpresentwithinalltissues andorgans,andprovidesnotonlyessentialphysicalscaffoldingforthecellula constituentsbutalsoinitiatescrucialbiochemicalandbiomechanicalcuesthatare requiredfortissuemorphogenesis,differentiationandhomeostasis.

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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?

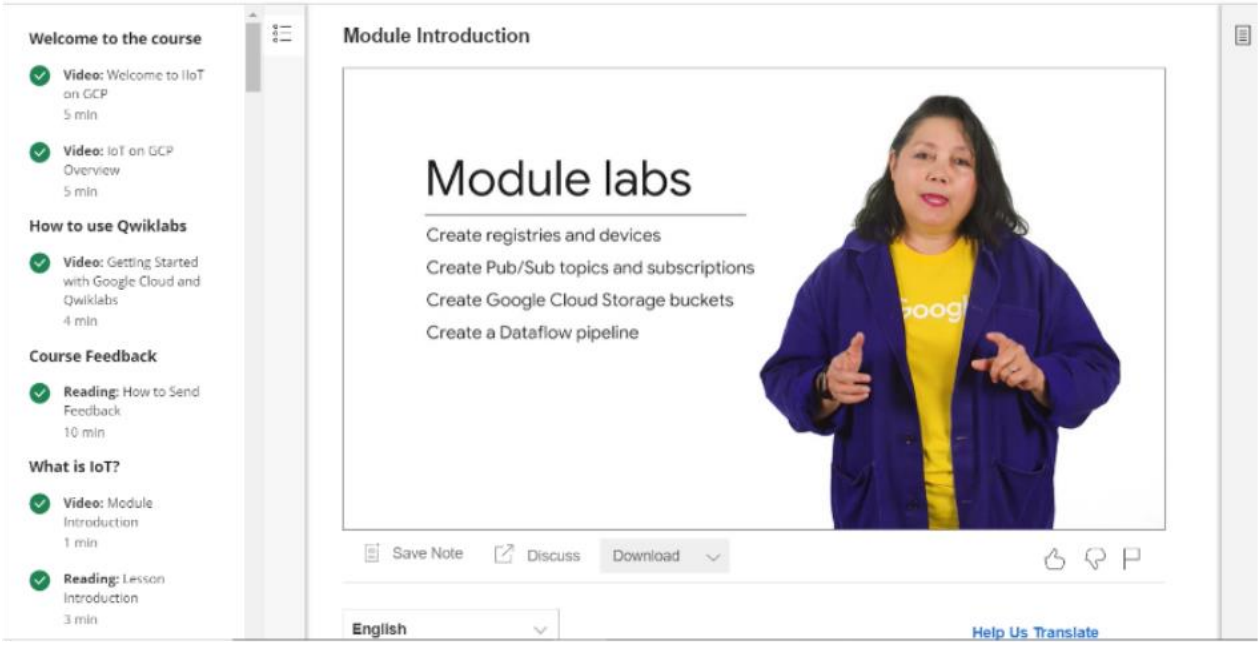
- **Video:** Module Introduction
  1 min
- **Reading:** Lesson Introduction
  3 min

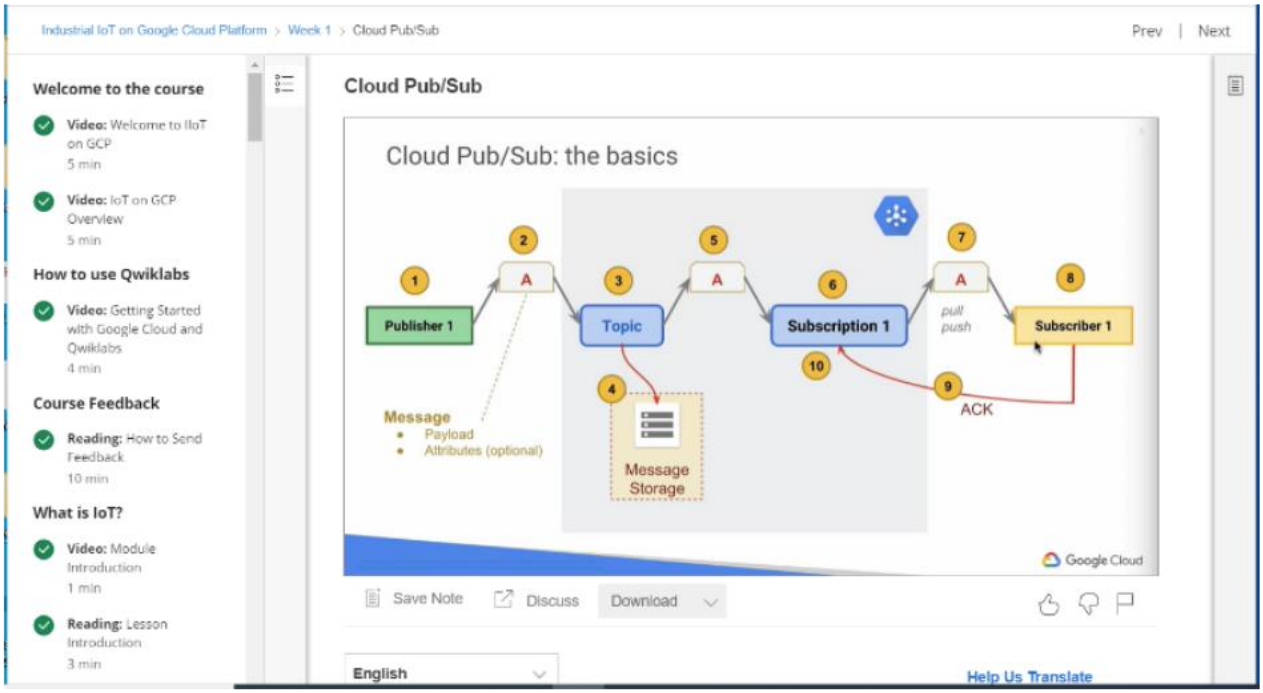
Devices

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





GoogleCloudPlatform (GCP),offeredby Google,isasuiteof cloudcomputing services thatrunsonthesameinfrastructurethatGoogleusesinternallyforitsend-userproducts, suchas GoogleSearch, Gmail and YouTube. Alongsideasetofmanagementtools,it providesaseriesofmodularcloudservicesincludingcomputing, datastorage, data analytics and machinelearning. Registrationrequiresa creditcard orbankaccount details.

GoogleCloudPlatformprovides infrastructureasaservice, platformasaservice, and serverlesscomputing environments.

InApril2008,Googleannounced AppEngine,aplatformfordevelopingandhostingweb applicationsinGoogle-managed datacentres,whichwasthefirstcloudcomputing servicefromthecompany.TheservicebecamegenerallyavailableinNovember2011. SincetheannouncementoftheAppEngine,Googleaddedmultiplecloudservicestothe platform.

GoogleCloudPlatformisapart of GoogleCloud,whichincludestheGoogleCloud Platformpubliccloudinfrastructure,aswellas GSuite,enterpriseversions of Android and ChromeOS,and applicationprograminginterfaces(APIs) for machine learning andenterprisemappingservices.

Storage&Databases

- CloudStorage - Objectstorage withintegratededgecachingtostore unstructured data.
- CloudSQL- DatabaseasaService basedon MySQL and PostgreSQL.
- CloudBigtable -Managed NoSQL databaseservice.
- CloudSpanner -Horizontallyscalable,stronglyconsistent, relationaldatabase service.
- CloudDatastore -NoSQLdatabaseforwebandmobileapplications.
- PersistentDisk-Blockstorage forComputeEnginevirtualmachines.
- CloudMemoryStore-Managedin-memorydatastorebasedonRadis.
- LocalSSD:High-performance,transient,localblockstorage.
- Filestore:High-performancefilestorageforGoogleCloudusers.

Networking

- VPC- VirtualPrivateCloud formanagingthe softwaredefinednetwork ofcloud resources.
- CloudLoadBalancing-Software-defined,managedservicefor loadbalancing the traffic.
- CloudArmour- Webapplicationfirewall toprotectworkloadsfrom DDoS attacks.
- CloudCDN- ContentDeliveryNetwork basedonGoogle'sgloballydistributededge pointsofpresence.
- CloudInterconnect-ServicetoconnectadatacentrewithGoogleCloudPlatform
- CloudDNS-Managed,authoritative DNS servicerunningonthesameinfrastructure asGoogle.
- NetworkServiceTiers-OptiontochoosePremiumvsStandardnetworktierforhigher - performingnetwork.

BigData

- BigQuery -Scalable,managedenterprise datawarehouse foranalytics.
- CloudDataflow -Managedservicebasedon ApacheBeam forstreamandbatchdata processing.
- CloudDataproc - Bigdata platformforrunning ApacheHadoop and Apache Spark jobs.
- CloudComposer-Managedworkfloworchestrationservicebuilton ApacheAirflow.
- CloudDatalab-Toolfor dataexploration, analysis,visualizationandmachine learning.ThisisafullymanagedJupiterNotebookservice.
- CloudDataprep-Dataservicebasedon Trifecta tovisuallyexplore,clean,and preparedataforanalysis.
- CloudPub/Sub-Scalableeventingestionservicebasedon messagequeues.
- CloudDataStudio- Businessintelligence tooltovisualizedatathroughdashboards andreports.

CloudAI

- CloudAutoML-Servicetotrainanddeploycustommachine,learningmodels.As ofSeptember2018,theserviceisinBeta.

- Cloud TPU -AcceleratorsusedbyGoogletotrainmachinelearningmodels.

- CloudMachineLearningEngine-Managedservicefortrainingandbuilding machinelearningmodelsbasedonmainstreamframeworks.

- CloudJobDiscovery-ServicebasedonGoogle'ssearchandmachinelearning capabilitiesfortherecruitingecosystem.

- DialogflowEnterprise-DevelopmentenvironmentbasedonGoogle'smachine learningforbuilding conversationalinterfaces.

- CloudNaturalLanguage- Textanalysis servicebasedonGoogle Deep Learning models.

- CloudSpeech-to-Text- Speechtotext conversionservicebasedonmachine learning.
- CloudText-to-Speech- Texttospeech conversionservicebasedonmachine learning.
- CloudTranslationAPI-Servicetodynamicallytranslatebetweenthousandsof availablelanguagepairs
- CloudVisionAPI- Imageanalysis servicebasedonmachinelearning
- CloudVideoIntelligence- Videoanalysis servicebasedonmachinelearning

ManagementTools

- Stackdriver -Monitoring,logging,anddiagnosticsforapplicationsonGoogleCloud PlatformandAWS.
- CloudDeploymentManager-TooltodeployGoogleCloudPlatformresources definedintemplatescreatedin YAML, Python or Jinja2.
- CloudConsole-WebinterfacetomanageGoogleCloudPlatformresources.
- CloudShell -Browser-basedshellcommand-lineaccesstomanageGoogleCloud Platformresources.
- CloudConsoleMobileApp- Android and iOS applicationtomanageGoogleCloud Platformresources.

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