***What is Docker?***

***Why Use Docker?***

* A Use case Driven Problem Statement
* Applying the Solution with Docker

***Docker Installation***

* Chose OS
* Install Docker
* Start docker Service
* Stop docker
* Uninstall docker

***Docker Architecture***

* Docker Client
* Docker Daemon

***Docker Basic Commands***

* docker version
* docker info
* docker help
* docker images
* docker pull
* docker rmi
* docker ps
* docker login
* docker push
* docker rm

***Writing Docker File***

* Creating Docker File using
* Touch command
* Visual Source Code IDE
* Understanding the Instructions used in Docker file

***Docker Images***

* Understanding the Base Image
* Image Layered Structure
* Internals of docker Image
* rootfs
* Bootfs
* Build Process of docker Images
* Tagging the images
* Image Generation with Docker Commit.
* Get all images
* Run , inspect, remove and prune images

***Docker Containers***

* Running Docker Containers from Images
* Listing Running Containers
* Container Lifecycle
* Start,Stop and Restart Containers
* Removing the Containers
* Retrieving the Logs from Containers
* Container With Dependencies-Muti Containers
* Starting Containers in shell
* Resource Utilization
* Attach and Detaching to a Container
* History
* Running Containers in Bash Mode using IT flag
* Container Isolation
* Kitematic Setup
* Container Management From Kitematic

***Docker Volume***

* Advantages
* Bind Mounts
* Volumes over Bind Mounts
* Creating Volumes
* List all Volumes
* Run Container on Volumes
* Remove Volumes

***Docker Compose***

* Installation
* Docker Compose file
* Check the validity of the file
* Run docker compose
* Stop docker
* Scale the containers

***Docker Swarm***

* Container orchestration
* Features of docker swarm
* Docker machine
* Docker swarm node manager
* Create worker nodes
* Run containers on swarm
* Scaling the services
* Shutdown node
* Leave the swarm
* Stop a machine
* Remove machine
* Remove service

***Dockerizing a Realtime Project- Medilab Pre clinic***

* Project Outline
* Understanding the Project Architecture and Components
* **Dockerizing the UI Application: medilab-preclinic-ui**
* Writing Docker File with Node installation
* Node Server Setup
* Specifying the working Directory
* Copying Package.json file to working directory
* Container Port Mapping
* Dockerizing the react app
* Attaching to a Web Container
* Usage of Nginx
* writing the Docker Compose file
* Networking with Docker Compose
* Docker Compose Commands
* Container Maintenance with docker compose
* Automatic Container Restarts
* Container Status with Docker Compose
* **Dockerizing the Backend Application: medilab-preclinic-services**
* Understanding Microservices
* Understanding Database per service Pattern
* Creating Microservices specific MySQL Containers
* Writing the Microservice Specific Docker file
* Building the Microservices and MySQL Containers as Muti Container Orchestration using Docker Compose
* **Continuous Integration and Deployment with AWS**
* Medilab Preclininc Application Overview(Front end and Backend)
* Github Setup
* Jenkins CI Setup
* Jenkins Build Script Configuration
* Automatic Build Creation
* About AWS
* AWS Ec2 Instances
* AWS Elastic Beanstalk
* Exposing Ports Through the Dockerfile
* Production Multi-Container Deployments
* Production Dockerfiles
* Multiple Nginx Instances
* Nginx fix for React Router
* Altering Nginx's Listen Port
* Github and Jenkins CI Setup
* Jenkins Configuration Setup
* Pushing Images to Docker Hub
* Successful Image Building
* Multi-Container Deployments to AWS
* Multi-Container Definition Files and Linking
  + Microservice Container
  + MySQL Container
* Adding Container Definitions to DockerRun
* Creating the EB Environment
* Managed Data Service Providers
* Overview of AWS VPC's and Security Groups
* RDS Database Creation
* Creating a Custom Security Group
* Applying Security Groups to Resources
* Setting Environment Variables
* IAM Keys for Deployment
* Jenkins Deploy Script
* Container Memory Allocations
* Verifying Deployment