CODING CREATROS

Docker Course Content

1. Introduction

- What is Application Stack
- Challenges with Deployments
- What is Virtualization
- Problems with Virtualization
- Containerization Introduction
- What is Docker
- Docker features
- Applying the Solution with Docker

2. Docker Installation

- Install Docker
- Start docker Service
- Stop docker
- Uninstall docker
- ECS introduction

3. Docker Architecture

- Docker Client
- Docker Engine
- Dockerfile
- Docker Images
- Docker Hub
- Docker Containers
- Docker Hub Acc Creation

4. Docker Commands

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

5. Writing Docker File

- Creating Docker File
- Visual Source Code IDE
- Understanding the Instructions used in Docker file
  - o FROM
  - o MAINTAINER
  - o COPY
  - o ADD
  - o RUN
  - o CMD
  - o ENTRYPOINT
  - o VOLUME

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Docker Course Content

6. Docker Images

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

7. Docker Containers

- Running Docker Containers from Images
- Listing Running Containers
- Container Lifecycle
- Start,Stop and Restart Containers
- Removing the Containers
- Container With Dependencies-Muti Containers
- Starting Containers in shell
- Running Containers in Bash Mode using IT flag
- Container Isolation

8. Docker Volume

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

9. Docker Compose

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

10. Docker Swarm

- Container orchestration
- Features of docker swarm
- Docker swarm node manager
- Create worker nodes
- Run containers on swarm
- Scaling the services

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Kubernetes (K8S) Course Content

1. Introduction

- What is Containerization
- What is Orchestration
- Orchestration Tools
- Docker Swarm vs K8S
- K8S Introduction
- Kubernetes Features
- K8S terminology

2. K8S Architecture

- Master Node
- Worker Nodes
- Control Plane
- API Server
- Schedular
- Controller Manager
- Etcd
- Kubelet
- Kube-proxy
- Runtime Engine
- PODs
- Containers
- Kubectl
- Workflow

3. Environment Setup

- How to setup Cluster
- Self-Managed Cluster
- Provider Managed Cluster
- Mini Kube (Single Node Cluster)
- Kubeadm (Multi Node Cluster)
- Mini Kube Vs Kubeadm
- K8S HA Setup
- AWS EKS

4. PODS Life Cycle

- PODS Introduction
- POD creation types
- Interactive POD creation
- Declarative POD creation
- POD Manifest file
- Kubectl Commands
- Playing PODS
- Manifest Syntax
- Best Practices
- Static PODS
- POD re-creation
- POD deletion
- POD Labels
- POD Template

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5. K8S Namespaces

- What is Namespace
- Default Namespaces
- Custom Namespaces
- Playing with k8s namespaces

6. K8S Services

- What is k8s service Why
- we need K8S service How
- to create k8s service
- Types of services
    - ClusterIP
    - NodePort
    - LoadBalancer
- Service Manfifest
- Service commands
- Labels & Selectors
- POD expose outside cluster

7. K8S Objects

- ReplicationController
- ReplicaSet
- RC Vs RS
- Mutli Selectors
- DaemonSets
- When to use DaemeontSet
- StatefulSets
- Deployment
- Rollout & Rollback
- Deployment Strategies
    - Recreate
    - Rolling Update
    - Blue / Green

8. K8S Auto Scaling

- What is Auto Scaling
- Horizontal Scaling
- Vertical Scaling
- HPA (Horizontal POD Autoscaling)
- VPA (Vertical POD Autoscaling)
- Node Auto Scaling
- Metric Server
- Load Simulation
- Busy Box
- Watch PODS with HPA

9. K8S Volumes

- Volumes Introduction
- Why we need volumes
- Types of K8s volumes
    - Host Path
    - emptyDir
    - Persistent Volumes
    - NFS
    - Cloud Volumes
    - ConfigMap

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10. Essentials

- ConfigMaps
- Secrects
- Rbac
- Taints
- Tolerations

11. EKS Cluster

- AWS intro EKS Setup
- Playing with EKS cluster
- Ingress Destroying
- Cluster
-

12. HELM Charts

- What is Helm
- Helm Architecture
- Helm Setup
- Helm Implementation
- Helm Limitation

13. Prometheus

- What is Prometheus
- Integration with Workloads
- Prometheus Setup
- Explore Metrics
- Prometheus Usecases

14. Project Setup

- Spring Boot App Deployment
- Python Flask App Deployment
- Interview Questions

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