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| DevOps Course Outline | 30 days |
| Azure   * Introduction to Azure * Different segments SaaS, PaaS, and IaaS * Azure Regions and Data Centre * Overview of all Azure Services * Azure Portal * Types of OS supported Images by Azure * Virtual Machine instances * Understanding Custom Images * Load balancing, Availability Set and Auto-Scaling * LAB: Creating VMs for diff. OS | 2 Days |
| GCP   * Introduction to the GCP * Understanding GCP region and az * Getting started with GCP compute engine * Understanding machine type and images in google compute engine * Installing http webserver on google compute engine * Understanding internal and external IP address * Understanding custom machine image * Getting started with google cloud engine * Creating a load balancer in GCP * What are managed service in GCP | 2 Days |
| Overview of Linux   * Linux OS – Overview * LAB: Setup CentOS/RHEL Linux in Azure * User Management and password less login * Cronjobs –editing, setting, deleting(Need Discussion) * Software/Package installation –different ways (assuming on CentOS/RHEL) * Logging in/out and the su command * Configure sudo account and permission * Transferring files * Linux Directory Structure * Basic linux commands (awk, sed, grep, piping of command etc, disk using commands * Basic troubleshooting including network troubleshooting * Shell Scripting * LAB: Write a shell in Git and run it on Azure Linux   Networking   * TCP/IP concepts: bitmasks, subnetting, gateways, IP addresses composition (Need Recap) * VLANs * NAT and Private IP Addressing * Firewalls * How does Subnetting work? * CIDR * VPN * Firewalls – Host-based, network-based and virtual | 2 Days |
| **Terraform (IaC)**   * Introduction to IaC * Difference between GUI, CLI and IaC * Terraform Overview * LAB: Setting Up Terraform * Deploying Infrastructure with Terraform * Read, Generate, Modify Configurations * Terraform Provisioners * Terraform commands & state files. * Destroying Infra with Terraform * Understanding Attributes and Output Values in Terraform * Understanding Provisioners in Terraform * Understanding terraform HCL * Terraform Variable * Lab: Passing variables and using same in code * Terraform Variable Types * Outputting attributes * Lab: Checking output attributes * Data Sources * Terraform Modules * Interpolation * Conditionals * For & For-Each loop * LAB: For condition and Loops * Understanding DRY principle * Remote State Management with Terraform * Templates * Terraform Project Structure * Challenges with State File locking * Terraform with Configuration management tools | 3 Days |
| **Ansible - Introduction & Implementation**   * Overview of Ansible Architecture * Overview of Ansible Deployments * Describing Ansible Inventory * Deploying Ansible * Installing Ansible * Managing Ansible Configuration Files * Running Ad Hoc Commands * Managing Dynamic Inventory * Writing YAML Files * Implementing Modules * Implementing Ansible Playbooks   **Managing Variables and Inclusions**   * Managing Variables * Managing Facts * Managing Inclusions * Constructing Flow Control * Implementing Handlers * Automation with Ansible * Implementing Tags * Handling Errors * Learn about retrieving data from external sources using Lookups.   **Implementing Roles**   * Describing Role Structure * Creating Roles * Develop and re-use custom Roles * Deploying Roles with Ansible Galaxy * Share work with Ansible Community using Ansible Galaxy * Optimizing Ansible * Configuring Connection Types * Configuring Delegation Configuring Parallelism   **Ansible Vault**   * Implementing Ansible Vault Configuring Ansible Vault * Executing with Ansible Vault * Ansible Playbooks * Develop Ansible Playbooks for advanced use cases * Nested Playbooks * Use Dynamic Inventory in playbooks * Need Design discussions on Below Topics based on the practical need we can project in Orchestration Area. * Creating Playbooks for Kubernetes Cluster Deployment using Ansible * Creating Playbooks for Container Orchestration | 4 Days |
| **Micro service Architecture (Docker and Kubernetes)**  **Containerization Concepts using Docker**   * Introduction to Docker * What are containers * Why use containers * Docker Support for Different OS * Docker installation * Container’s overview * Container Management commands   **Introduction to Docker Components**   * Docker Hub (public repo) * Docker Trusted Registry (Private repo) * Docker Engine * Docker Container * Docker Image * Docker Compose * Docker Swarm * Docker Services * Docker networking * Volumes in containers * Basic docker file scanning tools * Snyk * Docker image scan * Image registry * Setup Repository * Nexus * Docker hub * AWS Elastic Container Service * Docker composes   **Docker Images**   * Image? What is it in Docker World? * Official Docker Image Specification * Centre for Images: The Docker Hub (Public) * List of Official Docker Images * Working with Images: image layers, tagging, Pushing to Docker Hub * Building Images: The Dockerfile Basics * Build Your Own Dockerfile and Run Containers   **DOCKER NETWORKING**   * Overview * Data-Link Layer Details * Network Layer Details * Hostnames and DNS * Local Host <--> Container * Container <--> Container * Container <--> Container: Links * Remote Host <--> Container   **DOCKER VOLUMES**   * Volume Concepts * Creating and Using Volumes * Changing Data in Volumes * Removing Volumes * Backing up Volumes   **Docker Containers & Internals**   * Container VS. VM * Detached and Interactive Modes * What Happens When We Run a Container? * Getting a Shell Inside Containers * Container Lifetime & Persistent Data Using Volumes * Docker container Networking, default & user defined networks | 3 Days |
| **Kubernetes**   * Introduction of Kubernetes * What Is Kubernetes? * Kubernetes What and Why * Kubernetes Architecture * Kubernetes Big Picture View * Kubernetes Masters * Kubernetes Nodes   **Kubernetes cont..**   * The Declarative Model and Desired State * Kubernetes Pods * Stable Networking with Kubernetes Services * Game Changing Deployments * The Kubernetes API and API Server * Getting kubectl * LAB: Setup Kubernetes with Kubeadm and create resources * Api Server * Scheduler * Controller Manager * etcd - the cluster brain * Getting K8s in the Cloud * Working with Pods * App Deployment Workflow * Creating a Pod Manifest * Deploying a Pod * Deployment vs StatefulSet   **Kubernetes cont..1**   * Scaling database applications: Master and Worker Pods * Pod state, Pod Identifier * 2 Pod endpoints * Introduction to YAML * Kubernetes Deployment Theory * Creating a Deployment YAML * Deploying a Deployment * Different deployment strategy * Self-healing and Scaling * Rolling Updates and Rollbacks * Application health check   **Kubernetes cont..2**   * Cluster IP Services * Multi-Port Services * Headless Services * Node Port Services * Load Balancer Services * Helm - Package Manager * Introduction to ECS, EKS * Kubernetes container security * LAB: Creating k8s services and custom helm charts | 5 Days |
| **GCP and Azure (Docker and Kubernetes Related services)**   * GKE * GCR * ACR * AKS * Understanding DevOps in GCP / Azure * Create simple pipeline * Configure permissions in the source control repository * Implementing workflow hooks * Organize the repository with git-tags * LAB: setting a pipeline to deploy website on a VM | 2 Days |
| **Jenkins**   * Getting started with Jenkins * Overview * How to Take this Course and How to Get Support * About Continuous Integration * Introduction to Jenkins and the History of Jenkins * Install Java * Install Jenkins * Jenkins’ Architecture and Terms of Jenkins * Overview of Jenkins UI: * Dashboard and Menus * Create Our First Jenkins Job * Run our First Jenkins Job * Email configuration, Global Security, Master-Slave Architecture.   **Build Tools – Maven**   * Java Compiler * Maven Life Cycle * Maven Installation * Maven build requirements * Maven POM XML File   **Continuous Integration (CI) with Jenkins**   * Install Git and Jenkins GitHub Plugin * Install Maven on Our Local Box * Configure Jenkins to Work with Java, Git and Maven * Text Direction: Create our First Maven-based Jenkins Project * Create our First Maven-based Jenkins Project * CI Pipeline * Compile * CodeReview * UnitTest * CodeCoverage * Package * Integration with JFrog and Sonar * Run our First Jenkins Build and Jenkins Workspace * Trouble Shooting: Run our First Jenkins Build and Jenkins Workspace * Triggers in Jenkins   **Continuous Delivery with Jenkins**   * Archive Build Artifacts * Install and Configure Tomcat as the Staging Environment * The latest Deploy to Container plug-in * Jenkins Build Pipeline * Parallel Jenkins Build * Master and slave * Deployment | 3 Days |
| **CI Advance**   * What is Build and Release management * Build and release management tools * Continuous Integration, Continuous Delivery and Deployment Concepts Branching strategy: Gitflow   **CI Advance cont..1**   * Introduction to Maven & Grunt as build tools with examples and exercises. * Build process using traditional tomcat based and docker container based * Build best practices * Sonarqube integration in CI pipeline, administration * CI concepts and typical phases and talk on How Jenkins fits * Static security check (Checkmarx)   **CI Advance cont..2**   * Unit testing (junit for java, jasmine for frontend etc) * Code coverage * Sonarqube code quality * Functional testing automation overview * Performance testing automation overview * Accessibility testing automation overview * Dynamic security testing overview | 2 Days |
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| **Cloud Inhouse Monitoring tools**   * Cloud In-House Monitoring tools * Azure Monitoring Tools * GCP monitoring tools | 1 Day |
| **Serverless Architecture**   * Infrastructure monitoring Intro * Nagios Core vs XI * Build Serverless Application in Google Cloud | 1 Day |
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