DevOps and Cloud Expert Interview Prep Program

- Designed to provide 100% practical-oriented training based on real-time scenarios.

- During the training, 10 Capstone Projects and 10 real-time industry-based use cases will be assigned to master in Cloud Computing and DevOps Technologies.

- **The combined total duration of all modules, capstone projects, and case studies is 152 hours.**

List of Modules

Module 1: AWS Solution Architect (40 Hours)

Introduction to AWS Solution Architect
Overview of AWS services
Role and responsibilities of a Solution Architect
Certification exam overview

AWS Global Infrastructure
Regions and Availability Zones
Edge Locations and CloudFront
AWS Global Accelerator
AWS Direct Connect

Compute Services
Amazon EC2
Amazon ECS
AWS Lambda

Capstone Project:

Project Title	Industry Names	Description
Deployment using AWS	Travel	Creation of a serverless web application using various AWS services such as API Gateway, and Lambda. These services

Lambda services		help in the development of a robust web application that can manage any type of workloads.

Networking and Content Delivery

Amazon VPC

Elastic Load Balancing

Amazon Route 53

Amazon CloudFront

Capstone Project:

Project Title	Industry Names	Description
Setup dedicated VPCs	Insurance	Deployment of Web Applications in Dedicated VPCs on AWS/Azure/GCP. With this project, Learners can able to master in using IAC Tools like Terraform and Ansible

Storage Solutions

Amazon S3

Amazon EBS

Amazon EFS

AWS Storage Gateway

Database Services

Amazon RDS

Amazon DynamoDB

Amazon Aurora

Capstone Project:

Project Title	Industry Names	Description
Automate Backup & Recovery	Finance	The automation of Backup & Recovery involves, process driven approach. Learner can able master in defining Backup & Recovery strategies on AWS, Azure, GCP and also in hybrid multi-cloud platform

Security and Identity

AWS IAM

Amazon Cognito

AWS Organizations

Application Integration

Amazon SQS

Amazon SNS

Management and Governance

AWS CloudFormation

AWS CloudTrail

Monitoring and Analytics

Amazon CloudWatch

AWS CloudTrail

Cost Management

AWS Billing and Cost Management

AWS Budgets

AWS Cost Explorer

AWS Trusted Advisor

High Availability and Fault Tolerance

AWS Auto Scaling

Amazon Route 53

Multi-AZ Deployments

Designing Resilient Architectures

Best practices for fault tolerance

Multi-region architectures

Data replication strategies

Architecting for high availability

Security Best Practices

Network security best practices

Identity and access management

Compliance and governance

Case Studies and Hands-on Labs

Real-world scenarios and solutions

Hands-on exercises for architectural design

Troubleshooting common issues

Best practices for designing scalable architectures

Exam Preparation and Conclusion

Tips for passing the AWS Solution Architect exam

Review of key concepts and skills

Next steps in your AWS certification journey

Conclusion and final thoughts

Module 2: DevOps Specialist (58 Hours)

Introduction to Cloud Computing

Overview of Cloud Computing

Cloud Storage

Types of Cloud Computing

Infrastructure as Code (IaC)

DevOps in the Cloud

AWS vs Azure vs GCP

Capstone Project:

Project Title	Industry Names	Description
E-Commerce Application on GCP	Retail	The Project aims to create a highly scalable E-Commerce Application and deployed in Google Cloud Platform. This involves Containerized microservice based applications deployed using Kubernetes.

DevOps Overview

Evolution of Waterfall, Agile and DevOps

What is DevOps

Why DevOps

Benefits of DevOps

DevOps Stages

DevOps Lifecycle

Various Automation in DevOps

Overview of CICD

Capstone Project:

Project Title	Industry Names	Description
Automate SAAS Applications Deployments	Internet-of-Things	In this Project, Learners are able to understand the SAAS Deployment Model Architecture, Process and Strategies. Automate Build and Deployment on Kubernetes cluster with CI/CD Pipelines using the Azure/AWS/GCP DevOps Services

Fundamentals of Linux Operating System

Overview of Linux

Linux Architecture

Linux Distributions

Basic Linux Commands

File Permission Management

User Creation

Shell Scripts

SSH and VI Utility

Fundamentals of Python scripting

Overview of Python

Features, Benefits, Uses of Python

Installation and Setup of Python Environment

Various Types of Sequences in Python

File Operations

Python Functions

OOPs Concepts

Modules

Errors and Exception Handling

Python Console based application and Web Application using Flask

Deploying and Consuming Python Applications

Capstone Project:

Project Title	Industry Names	Description
Dynamic Blog Sites	Web Development	To create a secure, reliable, usable, and readily available website using AWS. This is implemented used AWS Storage and Internet gateways to process Dynamic User Inputs

Version Control System using - Git and GitHub

Overview of Version Control System

Central vs Distributed Version Control System

Introduction to Git

Installation and setting up Git

Important Git Commands

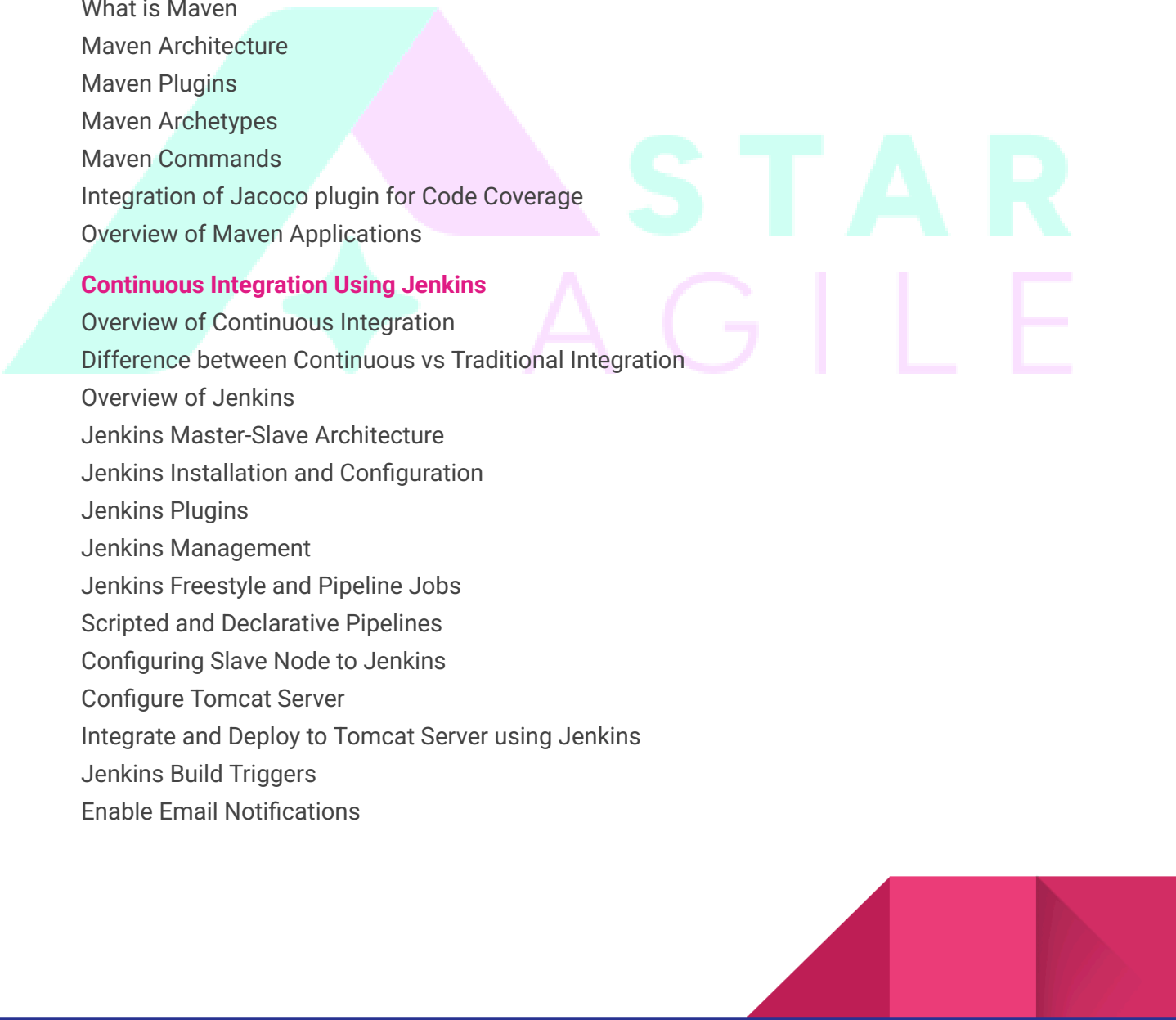Creating and Managing git Repositories

Git File Workflow

GIT-IGNORE

GIT Misc Commands

Reverting and Resetting

GIT Branching Strategies

Working with GIT Branching

Branching, Merging

Rebase and Squash

GIT Stash

Introduction to GitHub

Managing Remote Repositories

Handling Github repositories using Visual Studio Code

Understanding and Using Build Tools

Overview of Various Build Tools

What is Maven

Maven Architecture

Maven Plugins

Maven Archetypes

Maven Commands

Integration of Jacoco plugin for Code Coverage

Overview of Maven Applications

Continuous Integration Using Jenkins

Overview of Continuous Integration

Difference between Continuous vs Traditional Integration

Overview of Jenkins

Jenkins Master-Slave Architecture

Jenkins Installation and Configuration

Jenkins Plugins

Jenkins Management

Jenkins Freestyle and Pipeline Jobs

Scripted and Declarative Pipelines

Configuring Slave Node to Jenkins

Configure Tomcat Server

Integrate and Deploy to Tomcat Server using Jenkins

Jenkins Build Triggers

Enable Email Notifications

Capstone Project:

Project Title	Industry Names	Description
Automated Continuous Monitoring	E-Commerce	The project aims to create a highly available production environment using AWS/Azure/GCP Monitoring services with proactive alert management and automated webhooks.

Containerization, Docker, and Docker Hub

Introduction to Virtualization and Containerization

What is Containerization

Docker Architecture

Overview of Docker Hub

Docker Installation

Docker Commands

Container Modes

Port Binding

Docker file

Managing Docker Images

Running and Managing Containers

Docker Volume

Docker Compose

Overview of Docker Swarm

Container Orchestration Tool - Kubernetes

Overview of Container Orchestration

Different between Docker swarm and Kubernetes Cluster

Kubernetes Architecture

Installation of Kubernetes – Minikube and EKS

Kubernetes Nodes

Kubernetes Pods

Kubernetes Deployments

Rolling updates and rollbacks

Scaling up and down of the application

Services in Kubernetes

Kubernetes HostPath Volume

Namespaces

Configuration Automation using Ansible

Overview of Configuration Automation

Introduction to Ansible

Ansible Architecture

Components of Ansible

Installation and Configuration of Ansible

Ansible ad-hoc commands

Ansible Playbooks

Ansible Variables

Ansible Handlers

Ansible Role using Ansible Galaxy

Terraform Overview

Introduction to Terraform

Terraform Vs Ansible

Terraform Architecture

Terraform Configuration

Terraform Commands

Managing Terraform Resources

Terraform End to End Project

Capstone Project:

Project Title	Industry Names	Description
Dynamic Infra-Structure Management	Data Science	Learners can able to use Terraform and Ansible on AWS/Azure/GCP to create highly reliable dynamic infra-structure

Continuous Monitoring using Prometheus and Grafana

Overview of continuous monitoring

Continuous monitoring tools in DevOps

Installation and Configuration of Prometheus and Grafana

Prometheus Architecture

Monitoring using Prometheus

Dashboard visualization using Grafana

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Module 3: Microsoft Azure Cloud - Specialist (24 Hours)

Describe Azure Cloud concepts

Describe Azure cloud service types

Describe Azure architecture and services

Describe the core architectural components of Azure

Describe Azure compute and networking services

Describe Azure storage services

Describe Azure identity, access, and security

Describe cost management in Azure

Describe features and tools in Azure for governance and compliance

Describe features and tools for managing and deploying Azure resources

Describe monitoring tools in Azure

Capstone Project:

Project Title	Industry Names	Description
Deploy Web Applications on Azure	Banking	This is to create a secured application deployment on Azure Cloud Platform using Containers

Module 4: Google Cloud - Specialist (24 Hours)

Setting up a cloud solution environment

Setting up cloud projects and accounts

Installing and configuring the command line interface (CLI), specifically the Cloud SDK

Planning and configuring a cloud solution

Planning and estimating Google Cloud product use using the Pricing Calculator

Planning and configuring compute resources

Planning and configuring data storage options

Planning and configuring network resources

Deploying and implementing a cloud solution

Deploying and implementing Compute Engine resources

Deploying and implementing Google Kubernetes Engine resources

Deploying and implementing Cloud Run and Cloud Functions resources

Deploying and implementing data solutions

Deploying and implementing networking resources

Deploying a solution using Cloud Marketplace

Implementing resources via infrastructure as code

Ensuring successful operation of a cloud solution

Managing Compute Engine resources

Managing Google Kubernetes Engine resources

Managing storage and database solutions

Managing networking resources

Monitoring and logging

Configuring access and security

Managing Identity and Access Management

Managing service accounts

Viewing audit logs

Capstone Project:

Project Title	Industry Names	Description
Automates Cost Optimization	Telecomm	Learners will be able deploy dynamic web applications and automate the cost optimization, using Kubernetes services on AWS/Azure/GCP to deploy highly available and scalable applications

Module 5: Artificial Intelligence on Cloud and DevOps - Associate (6 Hours)

AI for Cloud and DevOps

AI based Cloud Infra-Structure Monitoring and Deployments

AI based DevOps Process Enablement, Collaboration and Security Management

Application performance Optimization and Cost Reduction using AI

Expertise in Cloud Computing and DevOps Technologies using Industry based Case Studies:

1. Paypal
2. Uber
3. Netflix
4. Telecom
5. Amazon
6. Banking
7. Healthcare
8. Insurance
9. Legacy Modernization
10. AWS Cloud Adoptions