*AWS (*Amazon Web Services)

Introduction to Cloud Computing and AWS

- Overview of Cloud Computing: Concepts, benefits, and deployment models
- Introduction to AWS: History, global infrastructure, and core services
- AWS Free Tier: Account setup, billing and cost management basics

AWS Global Infrastructure

- Regions, Availability Zones, and Edge Locations
- AWS Data Centers: Design principles and operational excellence
- AWS Well-Architected Framework: Designing resilient and efficient cloud architectures

AWS Identity and Access Management (IAM)

- IAM Overview: Users, Groups, Roles, and Policies
- IAM Best Practices: Security principles, least privilege access
- Multi-factor Authentication (MFA) and IAM Policy Examples

Compute Services

- Amazon EC2 (Elastic Compute Cloud): Instance types, AMIs, and launching instances

- Auto Scaling: Configuring Auto Scaling groups, policies, and scaling strategies
- AWS Lambda: Serverless computing, event-driven architecture, and functions

Storage Services

- Amazon S3 (Simple Storage Service): Object storage, buckets, and permissions
- Amazon EBS (Elastic Block Store): Volume types, snapshots, and attaching volumes
- Amazon Glacier: Archival storage, retrieval options, and data lifecycle

Networking and Content Delivery

- Amazon VPC (Virtual Private Cloud): Subnets, route tables, and internet gateways
- AWS Direct Connect: Dedicated network connection to AWS
- Amazon CloudFront: Content Delivery Network (CDN) basics and caching strategies

Database Services

- Amazon RDS (Relational Database Service): Managed database solutions, multi-AZ deployments
- Amazon DynamoDB: NoSQL database service, partition keys, and querying
- Amazon ElastiCache: In-memory data store, caching strategies, and use cases

Security and Compliance

- AWS Shared Responsibility Model: Security of the cloud vs. security in the cloud
- AWS Security Services: AWS WAF (Web Application Firewall), AWS Shield, and AWS Inspector
- Compliance Programs and Certifications: GDPR, HIPAA, SOC, and PCI DSS

Monitoring, Logging, and Performance Optimization

- AWS CloudWatch: Monitoring metrics, logs, and alarms
- AWS CloudTrail: Logging API calls, auditing, and compliance
- Performance Optimization: Best practices for improving application and infrastructure performance

Automation and DevOps Tools

- AWS Systems Manager: Automation, parameter store, and session manager
- AWS CloudFormation: Infrastructure as Code (IaC), creating and managing stacks
- AWS CodePipeline, AWS CodeBuild, and AWS CodeDeploy: CI/CD pipelines and automation

Serverless Architecture

- AWS Lambda: Serverless computing, event-driven architecture, and functions
- AWS API Gateway: Creating and managing APIs for serverless applications
- AWS Serverless Application Model (SAM): Defining serverless applications using YAML

Advanced AWS Services

- AWS Kinesis: Streaming data processing and analytics
- AWS Machine Learning Services: Amazon SageMaker, Amazon Comprehend, and Amazon Rekognition
- AWS IoT: Internet of Things services and architectures

Cost Management and Optimization

- AWS Cost Management Tools: AWS Cost Explorer, AWS Budgets, and Cost Allocation Tags
- Cost Optimization Best Practices: Rightsizing instances, reserved instances, and spot instances
- Monitoring and Controlling Costs: Setting up billing alerts and cost allocation reports

AWS Migration and Hybrid Architecture

- AWS Migration Methodology: Assessment, Planning, and Execution phases
- AWS Database Migration Service (DMS) and AWS Server Migration Service (SMS)
- Hybrid Architectures: Connecting on-premises infrastructure with AWS services

Real-world Projects and Case Studies

- Implementing AWS Solutions: Industry-specific case studies and success stories
- Best Practices and Lessons Learned from Real-world Implementations

Career Development and AWS Certifications

- AWS Certification Paths: Overview and preparation tips for AWS Certified Solutions Architect, AWS Certified Developer, and AWS Certified SysOps Administrator
- Building a Career in AWS: Skills development and career opportunities
- Interview Preparation: Common AWS-related interview questions and scenarios