1. Introduction to AWS

- **What is AWS?**
    - Overview of Cloud Computing
    - Benefits of AWS
    - Key AWS Global Infrastructure: Regions, Availability Zones, and Edge Locations
- **AWS Free Tier Overview**

2. Core AWS Services

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a. Compute

- Amazon EC2 (Elastic Compute Cloud)
- AWS Lambda (Serverless Computing)
- Elastic Beanstalk (Managed Application Deployment)
- Auto Scaling and Load Balancing
    - Elastic Load Balancer (ELB)

b. Storage

- Amazon S3 (Simple Storage Service)
  - Buckets, Object Storage, and Versioning
- Amazon EBS (Elastic Block Store)
- Amazon EFS (Elastic File System)
- Amazon Glacier and S3 Glacier Deep Archive (Cold Storage)

c. Database

- Amazon RDS (Relational Database Service)
  - MySQL, PostgreSQL, MariaDB, Oracle, SQL Server
- Amazon DynamoDB (NoSQL Database)
- Amazon Redshift (Data Warehousing)
- Amazon Aurora

d. Networking

- Amazon VPC (Virtual Private Cloud)
  - Subnets, Route Tables, Internet Gateways, NAT Gateways

- Elastic IPs and Security Groups

- Route 53 (DNS Service)

- AWS Direct Connect

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3. Identity, Access, and Security

- AWS IAM (Identity and Access Management)

  - Users, Groups, Roles, and Policies

- AWS Organizations (Managing Multiple Accounts)

- AWS Shield and WAF (Web Application Firewall)

- Amazon Cognito (User Authentication)

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4. Monitoring and Management

- Amazon CloudWatch (Monitoring and Alerts)

- AWS CloudTrail (API Activity Logs)

- AWS Config (Resource Configuration Tracking)

5. Advanced AWS Services

a. Machine Learning and AI

- Amazon SageMaker
- AWS Rekognition (Image and Video Analysis)
- Amazon Polly (Text-to-Speech)
- Amazon Comprehend (Natural Language Processing)

b. Big Data and Analytics

- Amazon Kinesis
- Amazon EMR (Elastic MapReduce)
- AWS Glue (ETL)

c. Containers and Kubernetes

- Amazon ECS (Elastic Container Service)
- Amazon EKS (Elastic Kubernetes Service)
- AWS Fargate

7. AWS Cost Management

- AWS Pricing Calculator

- AWS Cost Explorer

- AWS Budgets

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8. Architecting on AWS

- AWS Well-Architected Framework

  - Five Pillars: Operational Excellence, Security, Reliability, Performance Efficiency, Cost Optimization

- Design Patterns and Best Practices

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9. Specialized AWS Services

- AWS IoT Core

- AWS Media Services (Elemental, MediaConnect, MediaStore)

- AWS Game Tech

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10. Certification Preparation

Foundational

- AWS Certified Cloud Practitioner

Associate-Level

- AWS Certified Solutions Architect – Associate

- AWS Certified Developer – Associate

Professional and Specialty

- AWS Certified Solutions Architect – Professional

- AWS Certified Security – Specialty

AWS SERVICES

- AMAZON EC2

TASK 1 : Launch and connect with the ubuntu and linux ec2 instances (instance connect and ssh)

TASK 2 : Creating ,attaching and managing the ebs volumes

TASK 3 :   Create and manage EBS snapshots

TASK 4 :   Create and manage AMI's

TASK 5 : Launch a webserver on EC2 ,create and attach ebs volumes and set up an auto scaling and load balancing with ec2

PROJECT : ● Launch two EC2 instances (each of both Linux and Windows AMI) in different Availability Zones to ensure high availability. One will be used for the web server, and the other for the database server. ● Configure the web server instance with an appropriate instance type based on the expected traffic and the resources the web application requires. ● Secure the instances using Security Groups, allowing only the necessary traffic (e.g., HTTP/HTTPS for the web server, and specific IP/port for the database)

- AMAZON VPC

TASK 1 : Create a custom VPC and its resources and launch instances in subnets

TASK 2 : Add a NAT Gateway to an existing VPC

TASK 3 : Configure VPC Peering

TASK 4 : Create an VPC ENDPOINT

TASK 5 : Create and coonect Transit Gateway Peering

PROJECT : Design multiple VPC architectures that ensure high availability, scalability, and security for the e-commerce platform. The design should support future expansion to multiple regions while maintaining optimal performance for customers.