**Amazon EC2**

Amazon Elastic Compute Cloud (EC2) and Its Benefits

Amazon Machine Image (AMI)

**Hands-On:**

Creating an EC2 instance

Creating a Custom AMI

Host your website inside your EC2 Instance

**AWS Storage Options**

Simple Storage Service (S3) and Its Components

Working of S3

Lifecycle Policy of S3 Bucket

AWS Backup

S3 Batch Operation

**Hands On:**

Hosting a Static Website on Amazon S3

Accessing a static website through CloudFront

File Share via AWS Storage Gateway

**Networking using AWS**

IP Address

Elastic Load Balancer and its types

Working on Route 53

Various Routing Policies

**Hands-On:**

Create a Classic Load Balancer

Create a Network Load Balancer

Work with Application Load Balancer

Maintaining the User Experience with Low Latency

Using Route 53 Traffic Flow Feature

**AWS Database Services**

RDS IAM Authentication

DynamoDB

ElastiCache: Working,

Redis

**Hands-On:**

Storing Application Data in MySQL DB using Amazon RDS

Perform CRUD operations on No-SQL Database

Caching data using Amazon ElastiCache

**Identity and Security Management in AWS**

User management through Identity Access Management (IAM)

Security Token Services

Best practices for IAM

Access billing and create alerts on billing

**Hands-On:**

Create new users who can log in to the AWS console

Create a role for an application to access S3

**Monitoring Resources and Governance in AWS**

AWS CloudWatch

AWS Auto Scaling

**Hands-On:•**

Auto-Scaling and Scaling policy

**Application Services, Serverless Computing and Provisioning Infrastructure**

Demonstrate the working of SNS

SQS: Work with SQS, ASG with SQS

AWS Simple Notification Service (SNS)

AWS Lambda

**Hands-On:•**

Send an Email(SES) on the addition of user data(Lambda) in the DynamoDB table.

Monitor status of EC2 instance using a combination of EventBridge and SNS.

Manage tightly coupled architecture using Amazon SQS.

Create Cloud Formation templates using both JSON and YAML

Deploy a Web Application with DynamoDB using Beanstalk

**Development with AWS Services**

Write code for serverless applications.

• Compare and contrast server-based vs. serverless model (e.g., micro services, stateless nature of serverless applications, scaling serverless applications, and decoupling layers of serverless applications)

• Configure AWS Lambda functions by defining environment variables and parameters (e.g., memory, time out, runtime, handler)

• Create an API endpoint using Amazon API Gateway

• Create and test appropriate API actions like GET, POST using the API endpoint

• Apply Amazon DynamoDB concepts (e.g., tables, items, and attributes)

• Compute read/write capacity units for Amazon DynamoDB based on application requirements

• Associate an AWS Lambda function with an AWS event source (e.g., Amazon API Gateway, Amazon CloudWatch event, Amazon S3 events, Amazon Kinesis)

• Invoke an AWS Lambda function synchronously and asynchronously 3.2 Translate functional requirements into application design.

• Determine real-time vs. batch processing for a given use case

• Determine use of synchronous vs. asynchronous for a given use case

• Determine use of event vs. schedule/poll for a given use case

• Account for tradeoffs for consistency models in an application design Version 2.1 DVA-C01 5 | PAGE 3.3 Implement application design into application code.

• Write code to utilize messaging services (e.g., SQS, SNS)

• Use Amazon ElastiCache to create a database cache

• Use Amazon DynamoDB to index objects in Amazon S3

• Write a stateless AWS Lambda function

• Write a web application with stateless web servers (Externalize state) 3.4 Write code that interacts with AWS services by using APIs, SDKs, and AWS CLI.

• Choose the appropriate APIs, software development kits (SDKs), and CLI commands for the code components

• Write resilient code that deals with failures or exceptions (i.e., retries with exponential back off and jitter)

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