Course Content

Course Description:
In this course, you will cover the real-world scenario of taking a legacy, on-premises monolithic application and refactoring it into a serverless microservices architecture. This three-day advanced course covers advanced development topics such as architecting for a cloud-native environment; deconstructing on-premises, legacy applications, and repackaging them into cloud-based, cloud-native architectures; and applying the tenets of the Twelve-Factor Application methodology.

Course Objectives:
In this course, you will:
- Analyze a monolithic application architecture to determine logical or programmatic break points where the application can be broken up across different AWS services
- Apply Twelve-Factor Application manifesto concepts and steps while migrating from a monolithic architecture
- Recommend the appropriate AWS services to develop a microservices based cloud-native application
- Use the AWS API, CLI, and SDKs to monitor and manage AWS services
- Migrate a monolithic application to a microservices application using the 6 Rs of migration
- Explain the SysOps and DevOps interdependencies necessary to deploy a microservices application in AWS

Prerequisites:
Developing on AWS (recommended)

Target Audience:
This course is intended for experienced software developers who are already familiar with AWS services.

Topics:

Lesson 1: The cloud journey
- Common off-cloud architecture
- Introduction to Cloud Air
- Monolithic architecture

- Migration to the cloud
- Guardrails
- The six R's of migration
- The Twelve-Factor Application Methodology

Advanced Developing on AWS

- Architectural styles and patterns
- Overview of AWS Services
- Interfacing with AWS Services
- Authentication
- Infrastructure as code and Elastic Beanstalk

Demonstration: Walk through creating base infrastructure with AWS CloudFormation in the AWS console

Lab: Deploy your monolith application using AWS Elastic Beanstalk

Lesson 2: Gaining Agility
- DevOps
- CI/CD
- Application configuration
- Secrets management
- CI/CD Services in AWS

Demonstration: Demo AWS Secrets Manager

Lesson 3: Monolith to MicroServices
- Microservices
- Serverless
- A look at Cloud Air
- Microservices using Lambda and API Gateway
- SAM
- Strangling the Monolith

Lab: Using AWS Lambda to develop microservices

Lesson 4: Polyglot Persistence & Distributed Complexity
- Polyglot persistence
- DynamoDB best practices
- Distributed complexity
- Step functions

Lesson 5: Resilience and Scale
- Decentralized data stores
- Amazon SQS
- Amazon SNS
- Amazon Kinesis Streams
- AWS IoT Message Broker
- Serverless event bus
- Event sourcing and CQRS
- Designing for resilience in the cloud

Lab: Exploring the AWS messaging options

Lesson 6: Security and Observability
- Serverless Compute with AWS Lambda
- Authentication with Amazon Cognito
- Debugging and traceability

Lab: Developing microservices on AWS

Lab: Automating deployments with Cloud Formation

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