

AWS Academy Cloud Developing

# Module 1: Welcome to AWS Academy Cloud Developing

## Sections

1. Course objectives and overview
2. Café business case introduction
3. Roles in cloud computing

## Activities

- AWS Documentation Scavenger Hunt

Module 1: Welcome to AWS Academy Cloud Developing

# Section 1: Course objectives and overview

# Course prerequisites



- Completion of the [AWS Academy Cloud Foundations](#) course, or
- Completion of a similar level of Amazon Web Services (AWS) training or certification, such as having:
  - Passed the AWS Certified Cloud Practitioner certification exam, or
  - Completed the AWS Cloud Practitioner Essentials course, or
  - Completed the AWS Technical Essentials course
- Additionally, it is assumed that you have:
  - A working knowledge of at least one programming language supported by an AWS software development kit (SDK)
  - Experience using an SDK
  - Familiarity with using Windows or Linux, the command line, and application programming interfaces (APIs)
  - Familiarity with virtualization and distributed computing
  - An understanding of version control (for example, Git)
  - An understanding of data storage mechanisms such as SQL and NoSQL databases

# Course objectives



- Recall cloud computing services and models
- Describe developing on AWS
- Write code that interacts with Amazon Simple Storage Service (Amazon S3) by using AWS SDKs
- Explain the role of AWS Identity and Access Management (IAM)
- Write code that interacts with Amazon DynamoDB by using AWS SDKs
- Create a REST API by using Amazon API Gateway
- Create functions with AWS Lambda by using AWS SDKs
- Configure containers
- Explain caching with Amazon CloudFront and Amazon ElastiCache
- Develop solutions with Amazon Simple Queue Service (Amazon SQS) and Amazon Simple Notification Service (Amazon SNS)
- Describe the use of AWS Step Functions
- Explain how to build secure applications
- Identify best practices for deploying applications

# Course outline



- Module 1: Welcome to AWS Academy Cloud Developing (this module)
- Module 2: Introduction to Developing on AWS
- Module 3: Developing Storage Solutions
- Module 4: Securing Access to Cloud Resources
- Module 5: Developing Flexible NoSQL Solutions
- Module 6: Developing REST APIs
- Module 7: Developing Event-Driven Serverless Solutions
- Module 8: Introducing Containers and Container Services
- Module 9: Caching Information for Scalability
- Module 10: Developing with Messaging Services
- Module 11: Defining Workflows to Orchestrate Functions
- Module 12: Developing Secure Applications on AWS
- Module 13: Automating Deployment Using CI/CD Pipelines
- Module 14: Bridging to Certification

# Module 2: Introduction to Developing on AWS



## Module sections

1. Introduction
2. Systems development lifecycle
3. Steps to get started developing on AWS
4. Fundamentals of working with the AWS SDKs

## Module lab

- Exploring CloudShell and the AWS Cloud9 IDE



# Module 3: Developing Storage Solutions



## Module sections

1. Introduction
2. Introducing Amazon S3
3. Creating S3 buckets
4. Working with S3 objects
5. Protecting data and managing access to Amazon S3 resources

## Module lab

- Working with Amazon S3



# Module 4: Securing Access to Cloud Resources



## Module sections

1. Introduction
2. Shared responsibility model
3. Introducing AWS Identity and Access Management (IAM)
4. Authenticating with IAM
5. Authorizing with IAM



# Module 5: Developing Flexible NoSQL Solutions



## Module sections

1. Introduction
2. Introducing AWS database options
3. Key concepts for DynamoDB
4. Partitions and data distribution
5. Secondary indexes
6. Read/write throughput
7. Streams and global tables
8. Backup and restore
9. Basic operations for DynamoDB tables

## Module lab

- Working with DynamoDB

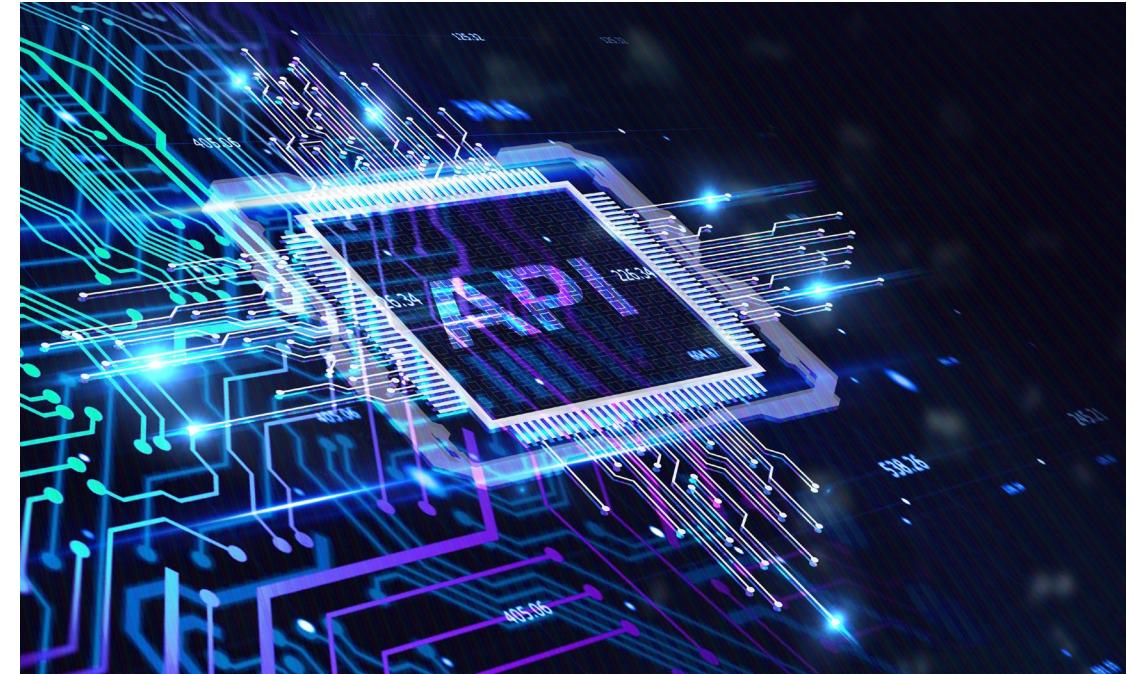


## Module sections

1. Introduction
2. Introducing APIs
3. Introducing Amazon API Gateway
4. Creating a REST API
5. Integrating with API Gateway
6. Deploying an API
7. Controlling access to a REST API
8. Monitoring a REST API
9. Optimizing API Gateway

## Module lab

- Developing REST APIs with API Gateway



# Module 7: Developing Event-Driven Serverless Solutions



## Module sections

1. Introduction
2. Introducing serverless computing
3. Introducing AWS Lambda
4. Invoking Lambda functions
5. Setting permissions for Lambda
6. Authoring and configuring Lambda functions
7. Deploying Lambda functions
8. Monitoring and debugging tools for application developers

## Module lab

- Creating Lambda Functions Using the AWS SDK for Python



# Module 8: Introducing Containers and Container Services

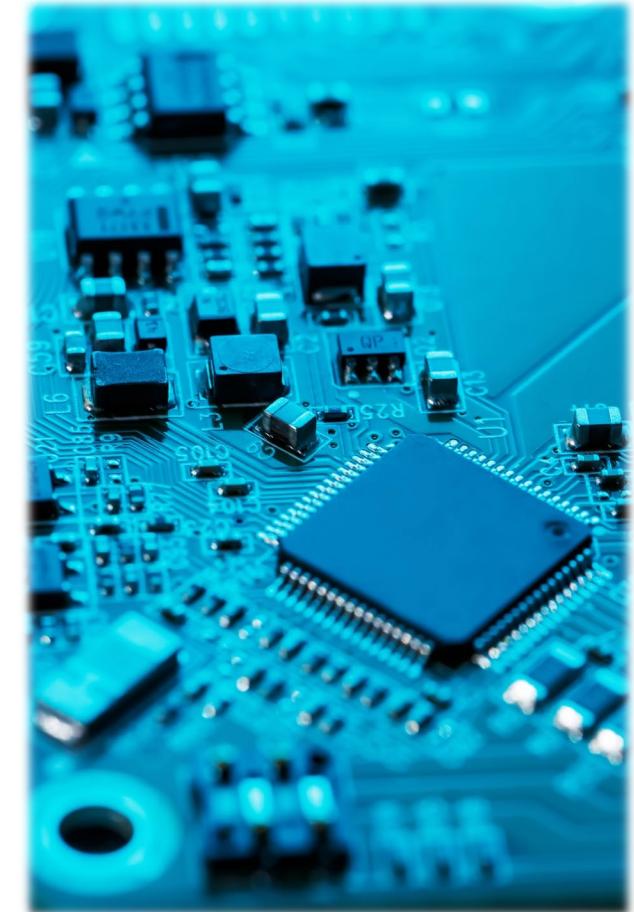


## Module sections

1. Introduction
2. Introducing containers
3. Introducing Docker containers
4. Using containers for microservices
5. Introducing AWS container services
6. Deploying applications with Elastic Beanstalk

## Module labs

- Migrating a Web Application to Docker Containers
- Running Containers on a Managed Service



# Module 9: Caching Information for Scalability

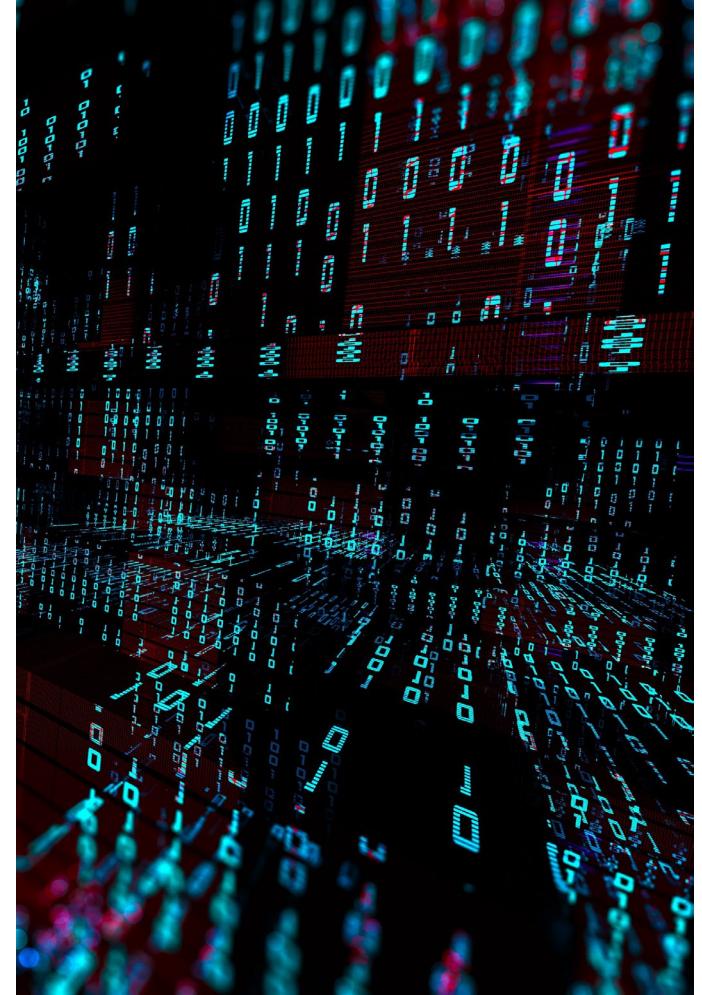


## Module sections

1. Introduction
2. Caching overview
3. Caching with ElastiCache
4. Caching with CloudFront
5. Caching strategies

## Module labs

- Caching Application Data with ElastiCache
- Implementing CloudFront for Caching and Application Security



# Module 10: Developing with Messaging Services



## Module sections

1. Introduction
2. Processing requests asynchronously
3. Introducing Amazon SQS
4. Working with Amazon SQS messages
5. Configuring Amazon SQS queues
6. Introducing Amazon SNS
7. Developing with Amazon SNS
8. Introducing Kinesis Data Streams

## Module lab

- Implementing a Messaging System Using Amazon SNS and Amazon SQS



# Module 11: Defining Workflows to Orchestrate Functions



## Module sections

1. Introduction
2. Coordinating tasks in distributed applications
3. Introducing Step Functions
4. State types
5. Step Functions use cases
6. Step Functions API

## Module lab

- Orchestrating Serverless Functions with Step Functions



# Module 12: Developing Secure Applications on AWS



## Module sections

1. Introduction
2. Securing network connections
3. Authenticating with AWS STS
4. Authenticating with Amazon Cognito

## Module lab

- Implementing Application Authentication Using Amazon Cognito



# Module 13: Automating Deployment Using CI/CD Pipelines

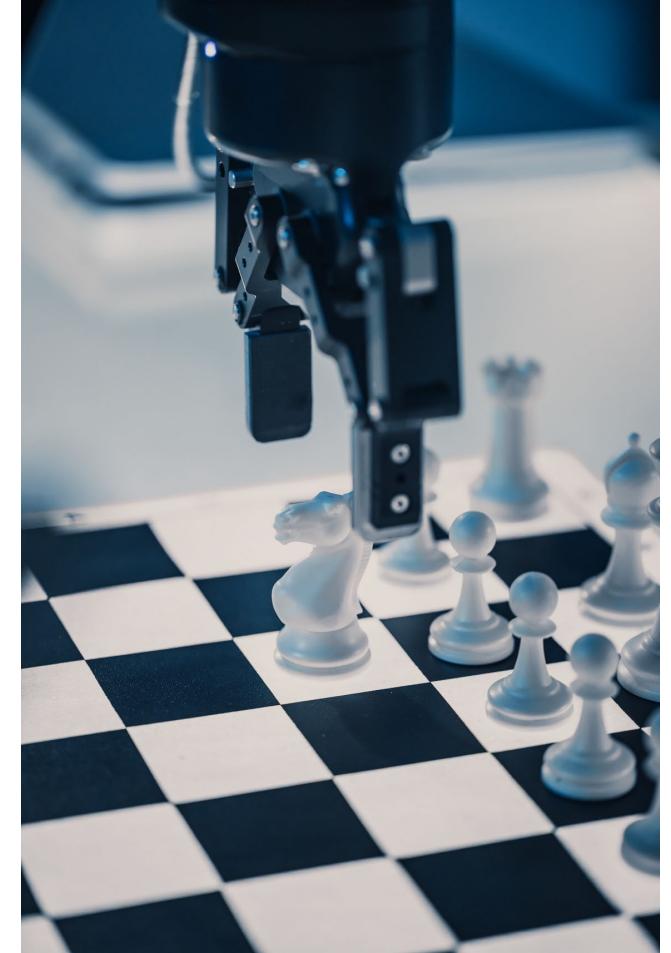


## Module sections

1. Introduction
2. Introducing DevOps
3. Using AWS code services for CI/CD
4. Deploying applications with CloudFormation
5. Deploying applications with AWS SAM

## Module lab

- Automating Application Deployment Using a CI/CD Pipeline



# Module 14: Bridging to Certification



## Module sections

1. Certification and resources
2. Additional resources



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## Section 2: Café business case introduction

# Café and bakery



# Café owners and staff

## Frank

- Co-owner of café
- Retired from the Navy
- Likes to bake
- Not technical



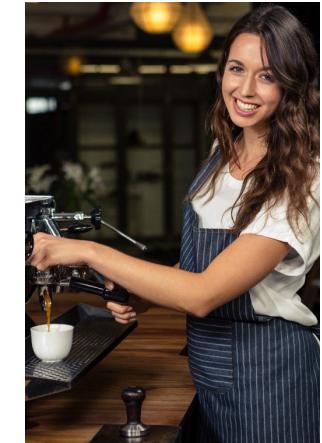
## Martha

- Co-owner of café
- Retired accountant
- Knows how to use spreadsheets, otherwise not technical



## Sofía

- Daughter of Frank and Martha
- Manages the café's supply chain
- Technical skills, including programming, future business administration student
- Started to use AWS



## Nikhil

- Café employee, visual design skills
- Interested in learning cloud computing
- Might take on more responsibilities at the café when Sofía starts her studies at the university



# AWS consultants, café visitors



## Olivia

- An AWS solutions architect
- Technical, with specialties in databases and network technologies



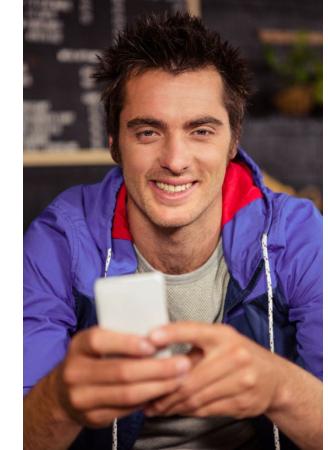
## Faythe

- Developer, experienced with AWS programming interfaces
- Knowledgeable about cloud security



## Mateo

- Systems administrator and engineer
- Likes to find ways to automate and create repeatable solutions
- Knows the importance of backups and disaster recovery in solution design



# You will build solutions for the café in the labs in this course

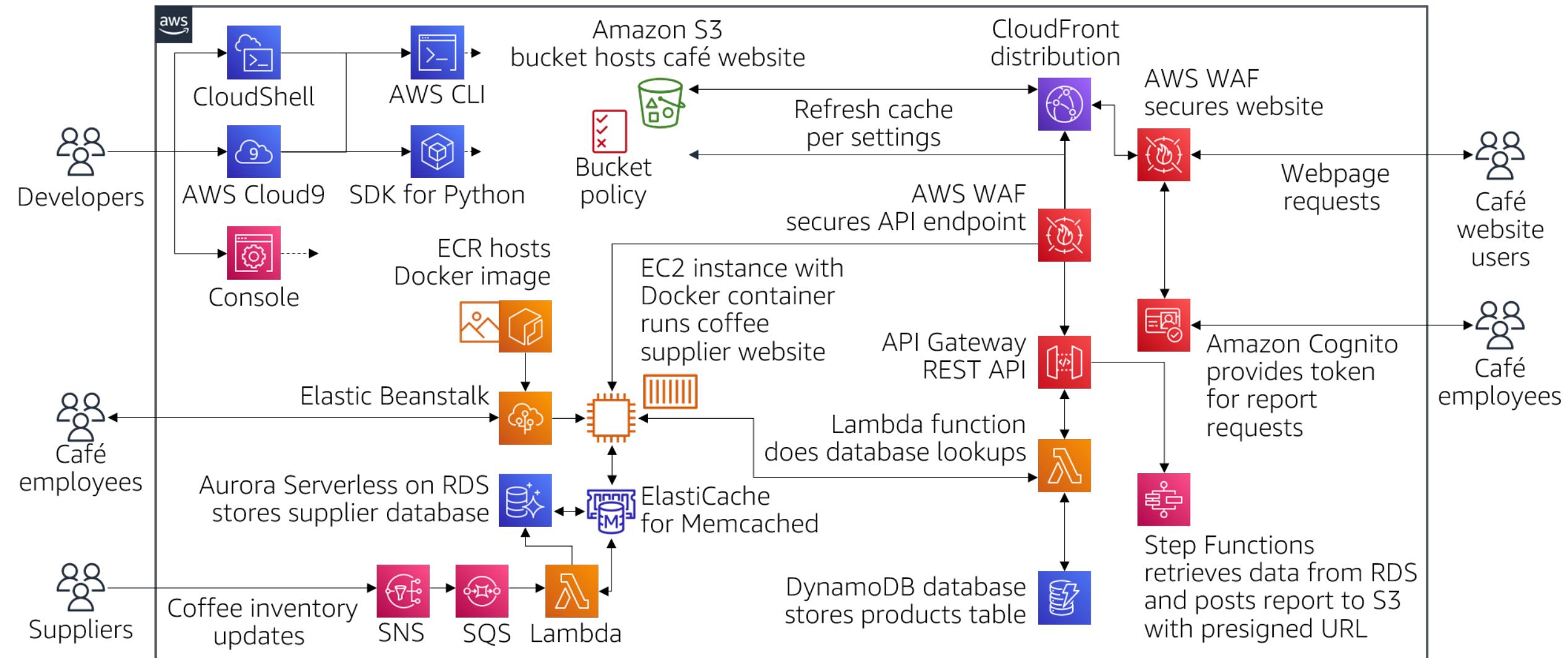


The café has business needs that can be solved with cloud development.



The café employees and the consultants often socialize and share cloud architecture ideas.

# The café application that you will build



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## Section 3: Roles in cloud computing

# Roles in cloud computing: IT professional



## Characteristics

- Generalist, might manage an application
- Often manages a production environment
- Highly technical
- Might have significant or limited experience in cloud technologies
- Might specialize in one area (such as security or storage)

Job titles: IT administrator, systems administrator, network administrator

# Roles in cloud computing: IT leader



## Characteristics

- Leads a team of IT professionals
- Responsible for day-to-day operations
- Manages a budget, and stays informed about and chooses new technologies
- Hands on during early stages of a project, then delegates the team to take over

Job titles: IT manager, IT director, IT supervisor

# Roles in cloud computing: DevOps engineer



## Characteristics

- Builds out the infrastructure that applications run on, often in the cloud
- Follows the guidelines of the cloud architect
- Prefers experimenting and trying things out rather than a lot of reading

Job titles: DevOps engineer, reliability engineer, build engineer

# Roles in cloud computing: Cloud architect



## Characteristics

- Stays up to date with new technologies and helps decide which to use
- Provides documentation, processes, and tooling to developers
- Gives developers freedom to innovate
- Common challenges include:
  - Resource management
  - Cost optimization
  - Defining best practices for performance, reliability, and security

Job titles: cloud architect, systems engineer, systems analyst

# Roles in cloud computing: Developer



## Characteristics

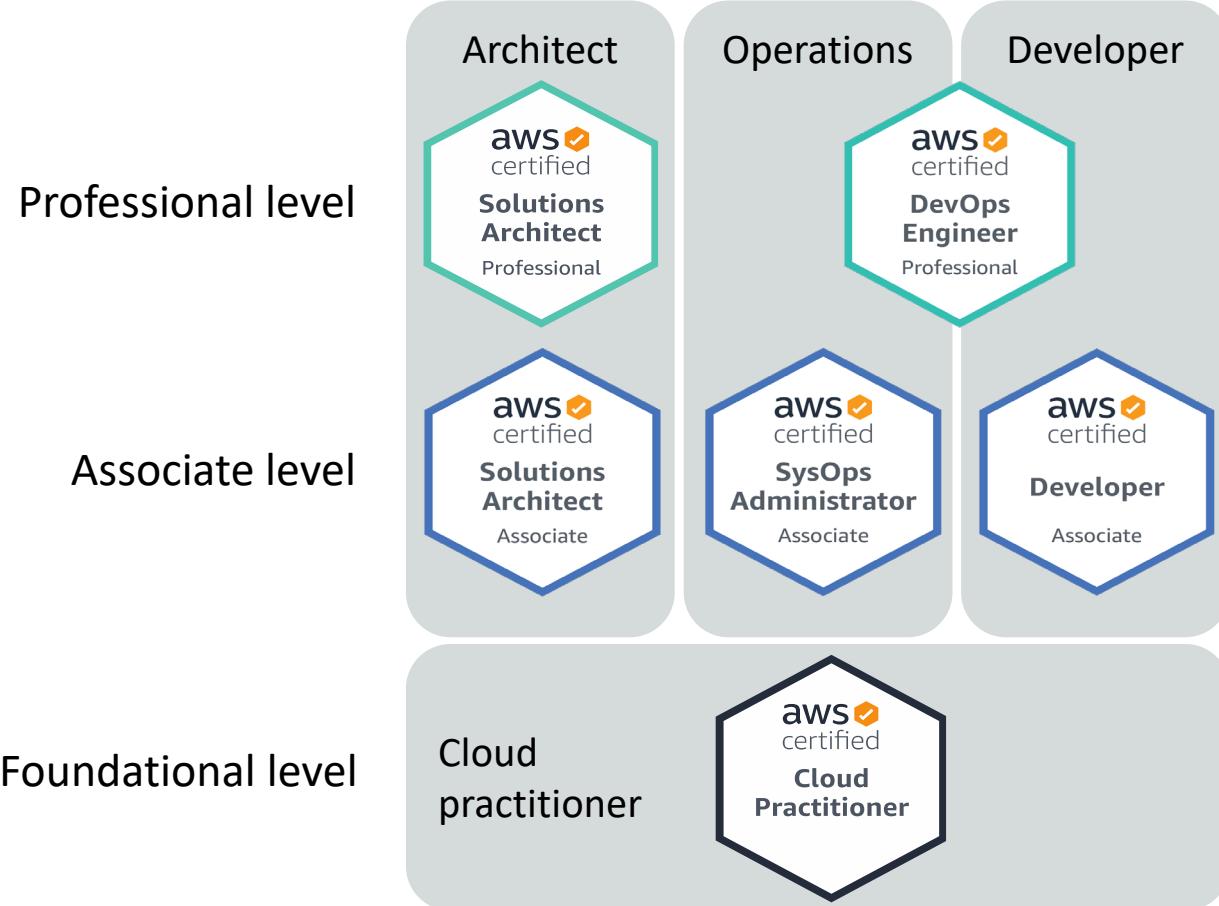
- Writes, tests, and fixes code
- Thinks about projects at the application level
- Likes sample code
- Works with APIs and SDKs

Job titles: software developer, systems architect, software development manager

# AWS Certification exams



Role-based certifications align to the following roles and levels:



Specialty certifications align to domain expertise in the following areas:



# Activity: AWS Documentation Scavenger Hunt



# AWS Documentation Scavenger Hunt



1. Which section of the website contains links to the supported AWS SDKs and toolkits?
2. How would you navigate to the method for creating an S3 bucket in the AWS SDK for Python (Boto3)?
3. How would you navigate to the Getting Started topic in the AWS Documentation for IAM?
4. Which section of the website has a tutorial on how to build a serverless application?
5. Which section of the website provides a link to AWS technical whitepapers?

<https://docs.aws.amazon.com>

Module 1: Welcome to AWS Academy Cloud Developing

# Module wrap-up

In summary, in this module, you learned to:

- Identify course prerequisites and objectives
- Recognize the café business case
- Identify roles in cloud computing
- Familiarize yourself with AWS documentation

# Thank you