AWS Academy Cloud Architecting

Module 01 Student Guide

Version 3.0.3

200-ACACAD-30-EN-SG

Contents

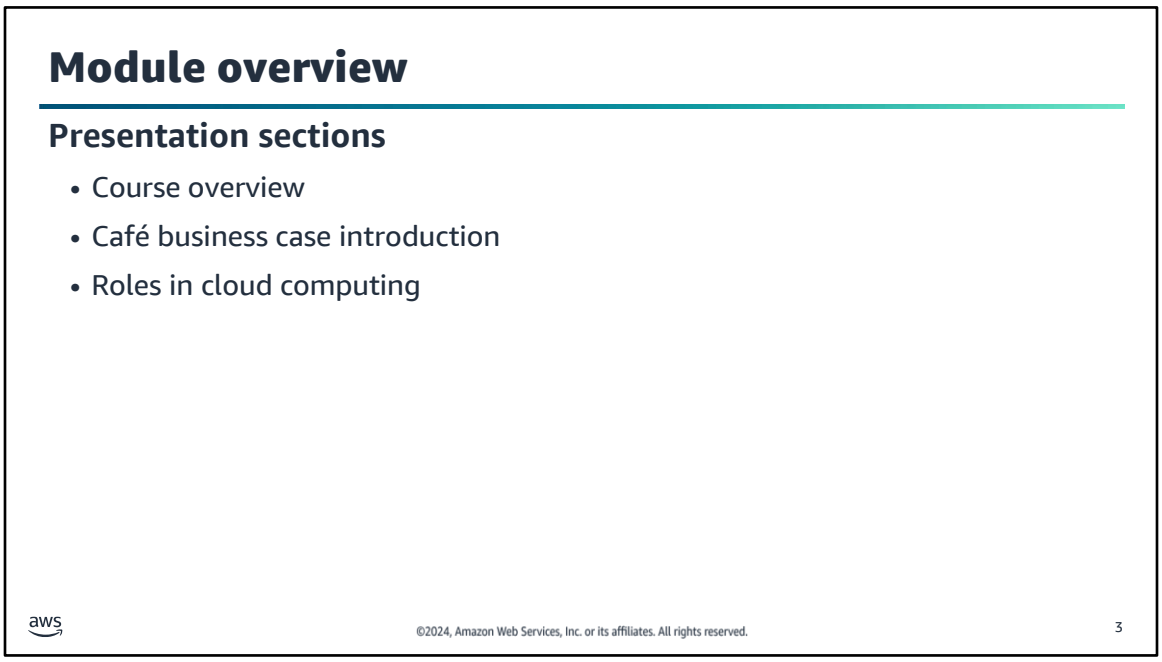
Welcome to AWS Academy Cloud Architecting module. This module provides an overview of the course.

Module objectives

This module prepares you to do the following:

- Recognize the basic elements of the café business case.
- Describe the role of a cloud architect.

2



The objectives of this module are presented across the sections listed on this slide.

Course objectives

- Apply Amazon Web Services (AWS) architectural principles and best practices to make architectural decisions.
- Use appropriate AWS services and features to make infrastructure scalable, reliable, and highly available.
- Choose AWS managed services to enable greater flexibility and resiliency in an infrastructure.
- Increase performance and reduce cost of a cloud infrastructure built on AWS.
- Use AWS services and features to secure user, application, and data access.
- Apply best practices from the AWS Well-Architected Framework to improve architectures that use AWS solutions.

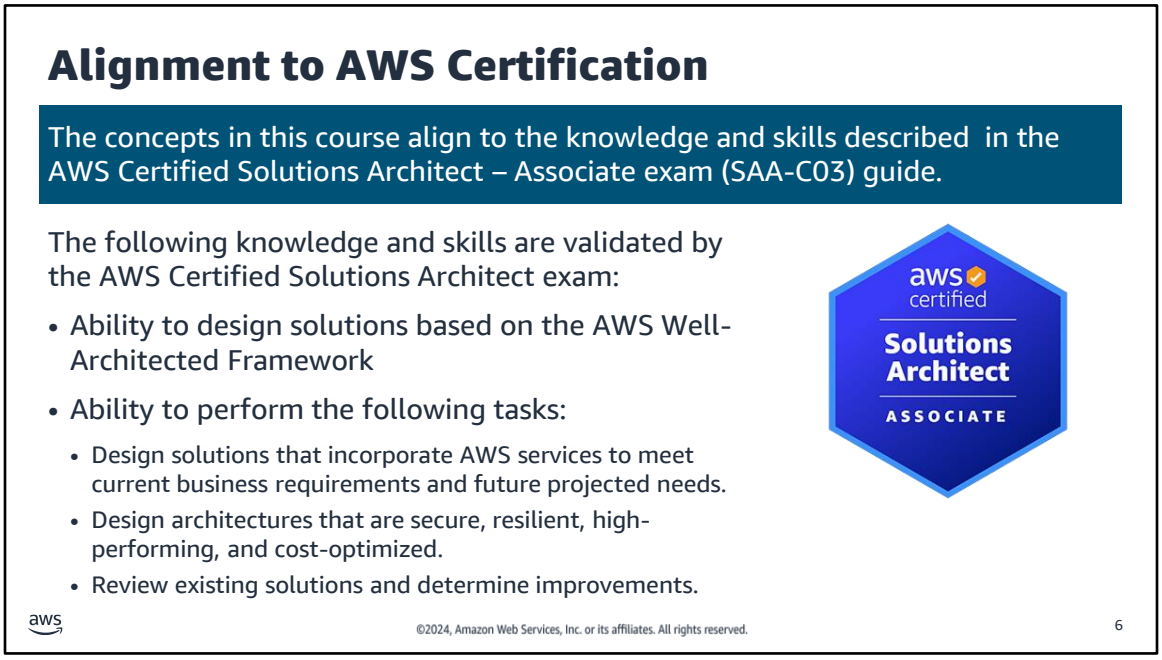
aws

5

Throughout the course, you will learn about the architectural layers, design principles, and Amazon Web Services (AWS) services used in three general architecture patterns as follows:

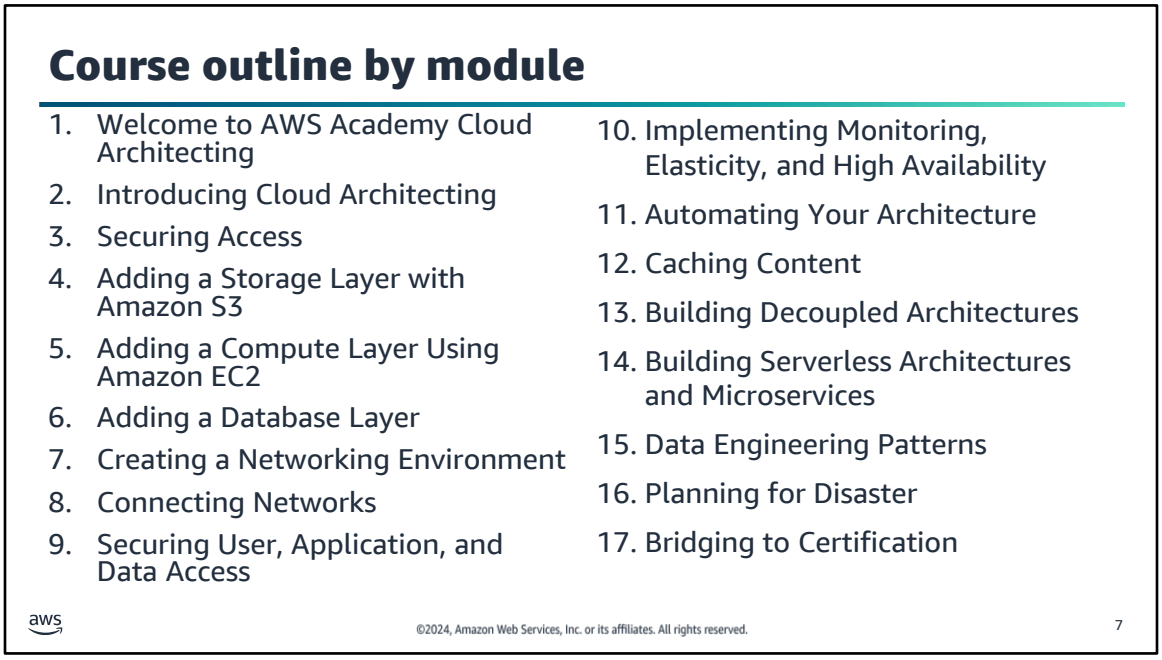
- Three-tier architectures
- Serverless architectures
- Streaming architectures

The objectives of this course are aligned to the knowledge and skills described for taking the AWS Certified Solutions Architect – Associate certification.

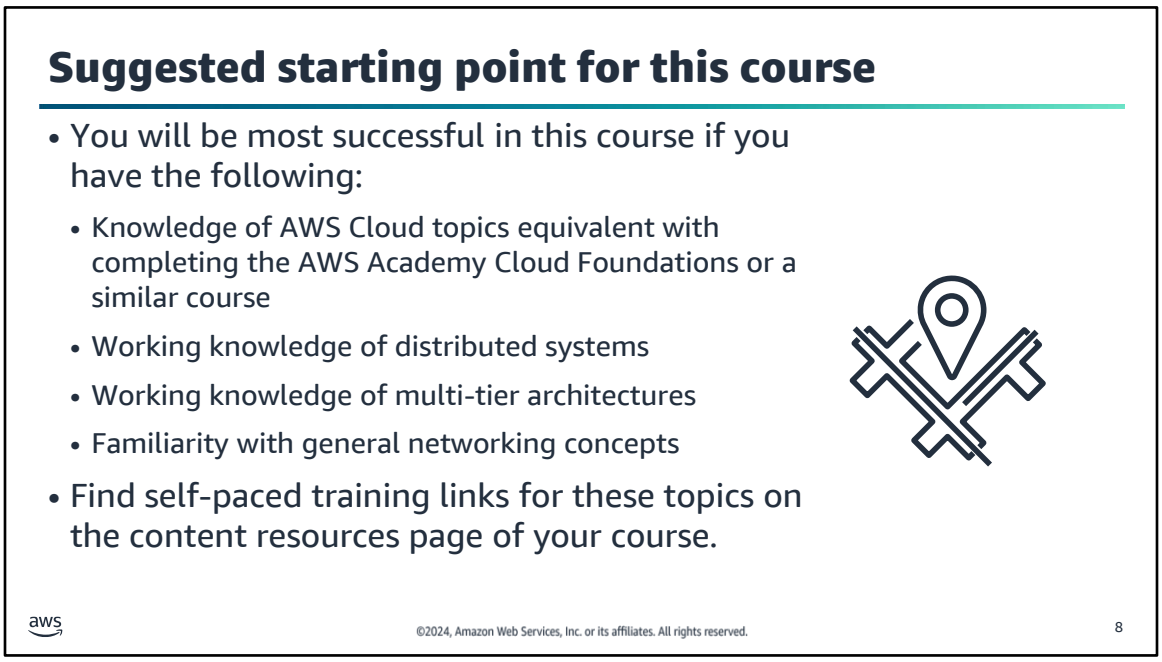


This course is not an exam preparation course. However, the lectures and labs are designed to align with the knowledge and skills described in the AWS Certified Solutions Architect – Associate exam (SAA-C03) guide.

This slide summarizes the expected experience and knowledge for a candidate taking the SAA-C03 exam. Additional details are provided in the Bridging to Certification module, and there are links to exam resources in the content resources section of your course.



The course is presented across 17 modules. Modules 2 and 3 provide a review of foundational cloud concepts. Modules 4 through 8 focus on a particular architectural layer. Modules 9 through 16 focus on design principles and best practices that apply across layers to build secure, high-performing, resilient, and cost-effective cloud architectures. The final module presents information about how to prepare for the AWS Certified Solutions Architect – Associate exam.



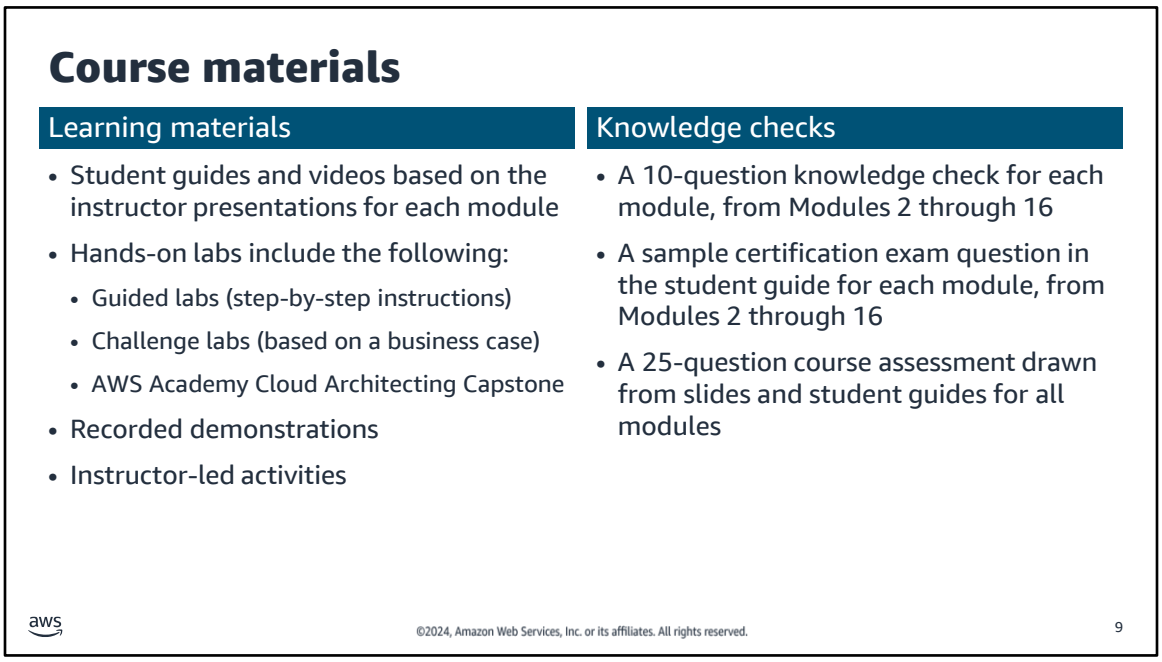
As the previous slide notes, Modules 2 and 3, Introducing Cloud Architecting and Securing Access, should be a review of concepts you learned previously. You might have learned about these concepts through the AWS Academy Cloud Foundations course or through your own experience learning about the AWS Cloud. As such, these modules do not go very deep into the details.

This course seeks to build cloud compute architecture knowledge on top of your general web-based architecture knowledge. There are no modules or sections focused on general web-based architecture concepts, like building distributed systems, multi-tier architectures, and internet-based networks.

If you think you need a refresher or want to spend more time on these topics, try one of the self-paced learning options listed on the content resources page of your course. These options include courses from AWS Educate, which exists outside of this course.

To access AWS Educate, you need to register for an AWS Educate account. It can take up to a day for your account to be verified. There is no charge for AWS Educate, and learners as young as 13 years of age can register. All you need is an email address; you do not need a credit card. With AWS Educate, learners can choose training content based on their knowledge, goals, and interests. They can find a variety of information on foundational topics.

For instructions on how to register for an AWS Educate account, refer to the *Accessing AWS Educate ructions* PDF included with your course resources.



Each module begins with an introduction to the key questions and decisions an architect must consider when building out the relevant layer of their cloud architecture for these common patterns. There is a student guide for each lecture module and videos that reinforce the key concepts in each module.

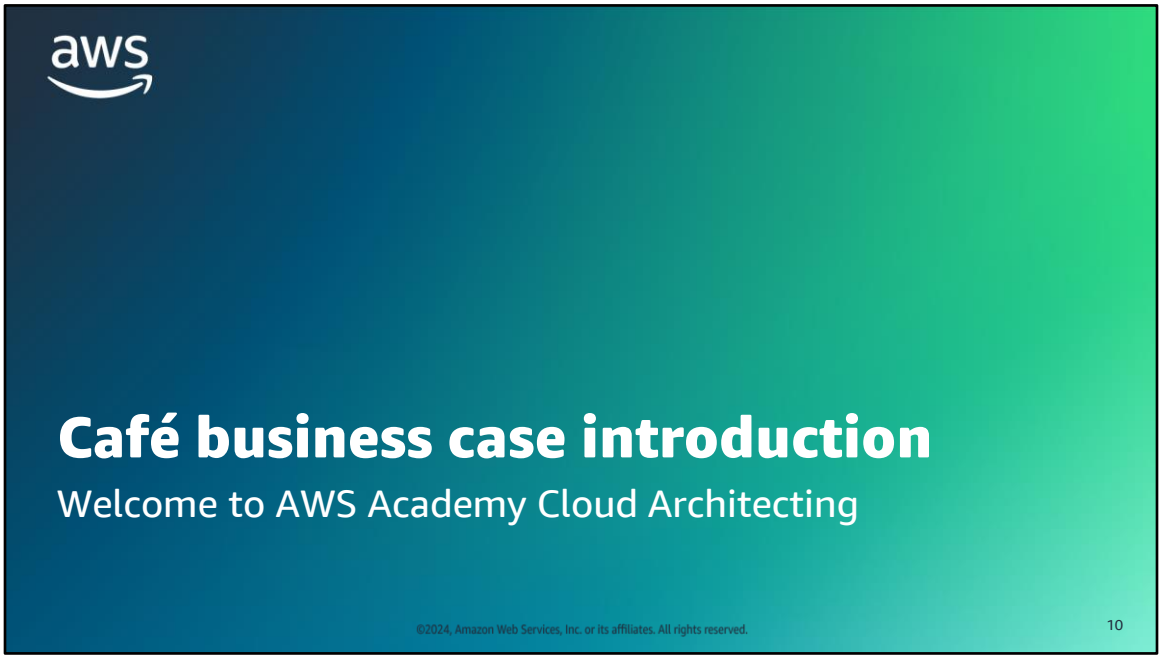
The labs in the course will give you the opportunity to apply your learning in each module through a hands-on AWS environment. Guided labs provide you with step-by-step instructions to help you gain experience in creating and configuring AWS resources in the different AWS service areas. The challenge (café) labs contain sections that do not provide full click-level guidance or detailed step-by-step instructions. Instead, you are challenged to apply the skills you gained from the guided labs and the concepts presented in the lectures.

The AWS Academy Cloud Architecting Capstone is an additional lab experience where you can apply your learning without detailed guidance. The capstone is delivered through the same lab environment as the other labs, but the environment for the capstone is long lived. This means you can work on the lab over multiple days and pick up where you left off.

Recorded demonstrations are included in the course to illustrate some topics. These videos are included in your module materials, and your student guide includes introductory slides to indicate where the demonstrations fit in the lecture.

Your instructor might include instructor-led activities to complement the lecture. Introductory slides are included in your student guide. Additional information and materials for each activity will be provided as needed based on the activity.

Throughout the course, you will have opportunities to check your understanding of the materials presented. Each module, except the first and last modules, includes a 10-question knowledge check and a sample exam question for discussion. The course also includes a 25-question assessment that incorporates content from across the course. You can retry both the knowledge checks and the course assessment as many times as needed.



The challenge labs in this course are built around a fictional business case. The business case provides a way to explore cloud computing topics in the context of relatable business needs. This scenario is intended to provide an example of the real-world applicability of technical concepts that you will learn. This section introduces the business case.

Café business scenario

- Frank and Martha opened a café and bakery in their retirement.
- Their staff and a few AWS consultants who are also customers are helping them use the cloud to address the needs of their growing business.

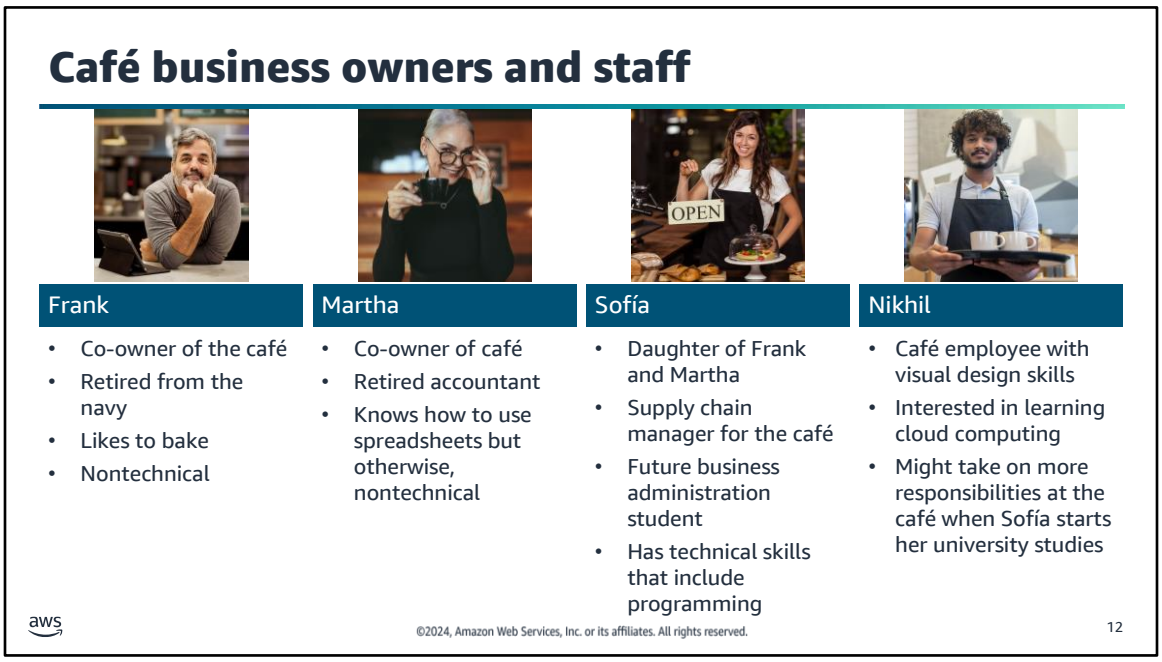
11

Frank and Martha dreamed of opening a café and bakery in retirement. They were not ready to stop working entirely. They wanted to do something that incorporated their love of baking and supplemented their income.

To make their dreams a reality, Frank and Martha recently opened a café and bakery at the base of their building. Since opening the café and bakery, they enjoy interacting with the people in their neighborhood. They also support community events with their baked goods and coffees.

Frank and Martha have experienced an increase in local business. They also sometimes receive inquiries for products from business travelers and tourists who pass through the area. Together with their staff and café visitors (some of whom are AWS consultants), they discover how cloud computing can help their business grow.

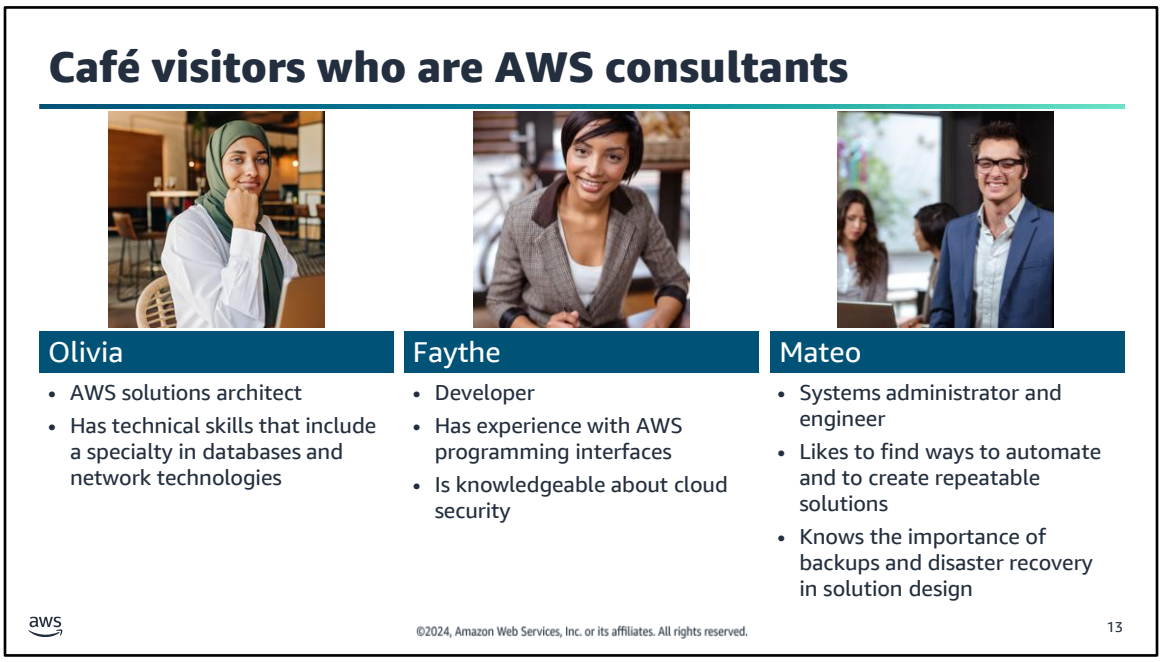
In each of the challenge (café) labs, you take on the role of the café staff, and receive advice and assistance from AWS consultants who occasionally pass through the café. You will architect cloud solutions that help fulfill the business needs of the café. The next slides introduce the personas involved in the café business scenario.



Frank is a great baker, but aside from taking selfies of his creations, he's not very technical. His partner, Martha, is a retired account and is familiar with using spreadsheets, but otherwise, she does not have a technical background. Sofía is the daughter of Frank and Martha. She runs the day-to-day operations of the café, which include managing the supply chain for sourcing ingredients and tracking inventory. She took some programming classes in secondary school and plans to start working toward a university degree in business administration later this year.

Nikhil works at the café part time. He works behind the counter, serving customers and doing other tasks under Sofía's supervision. He finished secondary school and has some experience with visual design. He wants to learn more about web development and cloud computing. He plans to get a university degree that builds on his existing design skills and teaches him cloud computing skills.

Sofía recently learned about AWS. She talked to her parents about how they might use AWS services to automate some aspects of the café business. She explained how AWS services can help reduce manual administrative work and improve the customer experience.



Three frequent café visitors who are friends of Sofía and Nikhil are AWS consultants. They often chat about their interests in technology and the cloud.

Olivia is an AWS solutions architect (SA) who recently moved to the downtown area. Through their conversations, Sofía learned that Olivia is an expert in AWS and cloud technologies. Olivia previously worked as a network engineer, and she also has a strong background in database technologies.

Faythe is an AWS developer who recently completed an AWS internship program. She likes to use her programming skills to apply the appropriate technology to a business problem. She recently achieved the AWS Certified Security – Specialty and is interested in developing big data solutions. She often stops by the café for some of Frank's baked goods.

Mateo usually grabs a coffee at the café on his way to work. He is an experienced AWS SysOps engineer. He is skilled at bringing automation and fault tolerance to the solutions that he builds. Mateo also likes to design for backup and disaster recovery. He previously worked as a developer and has been mentoring Faythe since she started as an intern with AWS. Mateo enjoys helping anyone who is interested in learning.

The evolving café architecture

Version	Business Reason for Update	Technical Requirements and Architecture Update
V1	Build a static website for a small business.	Host the website on Amazon S3.
V2	Update the website to support dynamic content and online ordering.	Deploy the web application and database on Amazon EC2.
V3	Reduce the effort to maintain the database and secure its data.	Separate web and database layers. Migrate the database to Amazon RDS on a private subnet.
V4	Enhance the security of the web application.	Use Amazon VPC features to configure and secure public and private subnets.
V5	Ensure that the website can handle an expected increase in traffic and remain highly available and resilient to failure.	Add a load balancer, implement auto scaling on the EC2 instances, and distribute compute and database instances across two Availability Zones.
V6	Automate deployments so that the café can consistently deploy, manage, and update café resources across Regions.	Build a version-controlled CloudFormation template to deploy the network and application layers. Deploy the CloudFormation stack to another Region.
V7	Add reporting capabilities while reducing the operational and maintenance burden, improving performance, and reducing costs.	Deploy Lambda functions that connect to the Amazon RDS database and generate a report based on a schedule.

 14

Across the challenge labs in the course, you help Frank and Martha evolve their cloud architecture. You take it from a simple static website in the cloud to a secure, scalable, and resilient cloud-based application that helps them optimize costs. This table summarizes the updates you make in each challenge lab.

This section introduces a few roles in cloud computing and describes the types of work each role would typically do.

You might want to start your career in cloud computing or transition your career to a cloud computing role. Maybe you want to work in an organization where some employees have cloud computing responsibilities. For any of these reasons, it is helpful to understand the common job titles or roles that individuals, teams, or departments perform.

IT professional

Common skills and responsibilities include the following:

- Act as a generalist and might manage an application
- Often manage 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 include the following:

- IT administrator
- Systems administrator
- Network administrator

aws

16

IT professionals are generalists. They typically have a broad range of skills. For example, they might manage the infrastructure for an entire application and have a strong understanding of the components that make up the solution. However, they might not always have detailed knowledge of any one service that is part of the application. IT professionals are typically highly technical.

IT leader

Common skills and responsibilities include the following:

- Lead a team of IT professionals
- Responsible for day-to-day operations
- Manage a budget, stay informed about technologies, and choose new technologies
- Hands on during the early stages of a project, and then delegate the team to take over

Job titles include the following:

- IT manager
- IT director
- IT supervisor

aws

17

IT leaders are managers. They typically lead a team of IT professionals and decide on the type of technology to use for a project. They might be significantly involved in the implementation details early in the project lifecycle. Then, they delegate the team to handle the details as the project gets closer to completion.

Developer

Common skills and responsibilities include the followoing:

- Write, test, and fix code
- Think about projects at the application level
- Work with APIs and SDKs
- Might use sample code
- Might specialize in one area (such as security or storage)

Job titles include the following:

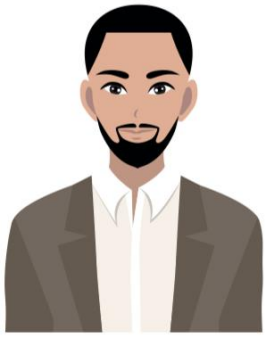
- Software developer
- System architect
- Software development manager

aws

18

Another common role in cloud computing is the developer role. Developers work with code. They work on the details—writing, testing, and fixing the code that makes an application work. Developers build and consume documentation and code repositories to accelerate projects. They work with APIs and SDKs.

DevOps engineer



Common skills and responsibilities include the following:

- Build out the infrastructure that applications run on, often in the cloud
- Follow the guidelines of the cloud architect
- Experiment to improve deployments

Job titles include the following:

- DevOps engineer
- Build engineer
- Reliability engineer

aws

19

Development Operations (DevOps) engineers build out the infrastructure that applications run on. They often create or improve on the code that installs and configures servers and application deployments. DevOps staff often experiment with the infrastructure and code. Sometimes, they learn by doing. They create repeatable deployment solutions, and they work to apply engineering skills to the business needs of operations teams.

Cloud architect

Common skills and responsibilities include the following:

- Stay up to date with new technologies and help decide which ones to use
- Provide documentation, processes, and tooling to developers
- Give developers freedom to innovate
- Resolve challenges using best practices for cost optimization, performance, reliability, and security

Job titles include the following:

- Cloud architect
- Systems engineer
- Systems analyst

aws

20

Cloud architects spend their time reading and staying up to date with the latest developments and trends in cloud computing. They are responsible for the design architecture of applications and selecting which technologies to use to meet the needs of a technical business objective. They should be aware of the capabilities of the many cloud service options that are available. This will help them decide which ones to adopt given a specific set of business requirements.

Cloud architects provide guidance to developers through architectural diagrams and documentation. They also provide tooling, but they give the development team room to innovate if needed to meet the success criteria.

Common challenges for the cloud architect role include resource management, cost optimization, and defining best practices for performance, reliability, and security.

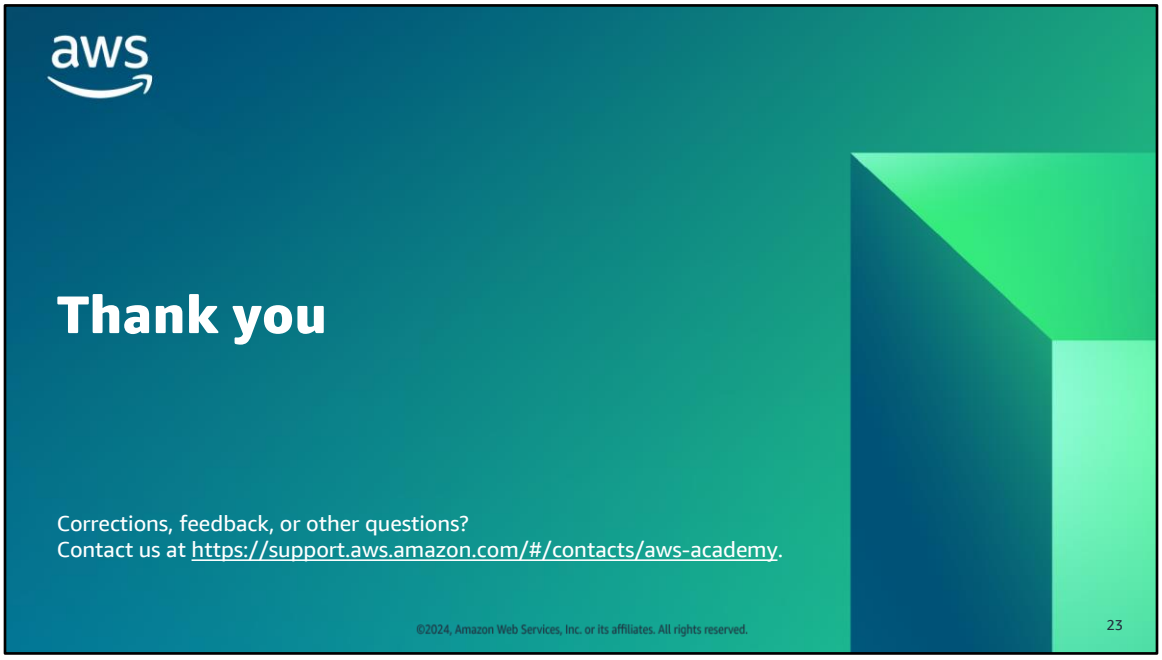
The responsibilities of cloud architects closely align with the pillars of the AWS Well-Architected Framework, which is discussed in detail in this course. The cloud architect role is the perspective you will take as you progress through this course.

This section summarizes the topics discussed in this module.

Module summary

This module prepared you to do the following:

- Recognize the basic elements of the café business case.
- Describe the role of a cloud architect.



That concludes this module. The content resources page of your course includes links to additional resources that are related to this module.

