

Building Applications with Serverless Architectures

Scenario

ABCBooks is rolling out a new web-based application for its book collection to complement its existing book database application. The company has opted for Amazon DynamoDB and a serverless architecture using AWS Lambda for this implementation.

The application is designed to perform four key functions:

1. Display all books in the database to users.
2. Enable users to add or delete database entries.
3. Allow updates to non-key attributes of any book.
4. Secure the application by integrating Amazon Cognito for user authorization.

You are responsible for creating and implementing these functionalities, leveraging Amazon DynamoDB, AWS Lambda, and Amazon API Gateway. The front-end website can be developed using your preferred programming language. The final step will involve securing the application by integrating Amazon Cognito to authorize users.

The books collection application will have the following components:

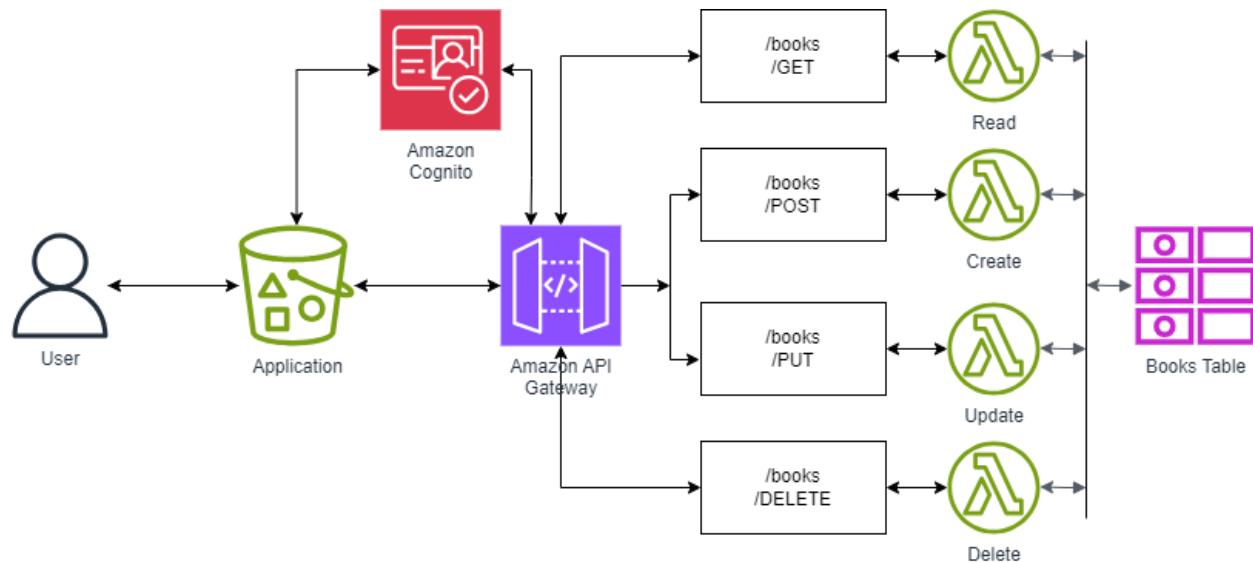
1. A static front-end written in HTML/JavaScript or in Python hosted on Amazon S3.
2. A serverless backend leveraging Amazon API Gateway, AWS Lambda, and Amazon Cognito.
3. A DynamoDB table for the persistence layer.

Project objectives

After completing this project, you should be able to:

- Create and implement front-end user interface that interacts with other AWS services.
- Create and deploy Lambda functions written in Python to perform operations on a DynamoDB table.
- Leverage DynamoDB conditional expressions.
- Create and deploy API Gateway endpoints to proxy Lambda functions.
- Create and configure Amazon Cognito user pools for authentication.
- Implement a serverless architecture on AWS

Application architecture



Initial data set

An initial data set will be provided to you for the application to use. This initial data set is provided in the books.json file. This sample data can be loaded into Books table in DynamoDB via script.


Books collection application user interface

1. Sign in process using Amazon Cognito



Log-in to the Book Application


2. Books collection application dashboard

 ABCBooks Sign out

Book Collection


Create, Read, Update, or Delete a book

Add Book



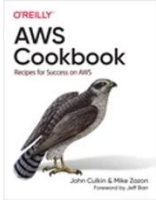
Automating DevOps with GitLab CI/CD Pipelines
2023 | Pact Publishing
Christopher Cowell, Nicholas Lotz and Chris Timberlake

Edit Delete



Amazon Web Services in Action
2023 | Manning Publishing
Michael Wittig and Andreas Wittig

Edit Delete



AWS Cookbook
2021 | O'Reilly Media
John Culkin and Mike Zazon

Edit Delete

3. Adding a book



Add Book

Title

Authors

Publisher

Year

Cancel

Save

4. Edit a book



Edit Book

Title	Authors
<input type="text" value="AWS Cookbook"/>	<input type="text" value="John Culkin and Mike Zazon"/>
Publisher	Year
<input type="text" value="O'Reilly Media"/>	<input type="text" value="2021"/>
<input type="button" value="Cancel"/>	<input type="button" value="Save"/>

5. Delete a book