Build a Serverless, Location-Aware, Search & Recommendations-Enabled Application Instructor Guide

Version 1.0

AWS-300-SLS-10-EN

Corrections or feedback on the course, please email us at:
aws-course-feedback@amazon.com.
For all other questions, contact us at:
https://aws.amazon.com/contact-us/aws-training/.

Contents

Introduction

Course Description

Build a Serverless, Location-Aware, Search & Recommendations–Enabled Application provides an opportunity for you to build a real-time analytics and geospatial search application using Amazon Elasticsearch Service (ES), Amazon DynamoDB, DynamoDB Streams, Amazon API Gateway, AWS Lambda, and Amazon Simple Storage Service. In this bootcamp, you walk through a real-world location-aware social application that displays information generated from a model created with Amazon Machine Learning. The application also allows users to search within a geographic boundary and update the map with real-time information. In addition, the course covers best practices for processing and analyzing data, such as the lambda data processing pattern and automating development process, using Swagger, Grunt, and the AWS SDK.

Course Objectives

This course teaches you how to:

- Store and read data using Amazon DynamoDB.
- Analyze and index data using DynamoDB Steams.
- Perform location-based queries using Amazon Elasticsearch.
- Build REST API's with API Gateway and AWS Lambda.
- Train and invoke a model for real-time recommendations using Amazon Machine Learning.

Learning Objectives

Intended Audience

This course is intended for:

- Solutions Architects
- Data Scientists
- Developers

Delivery Method

This course will be delivered through a mix of:

- Instructor-Led Training (ILT)
- Hands-on Labs

Course Errata

The following URL hosts the errata for the course, which contains corrections and advice for teaching. Please check the errata every time before you teach, because it may have been updated.

- Instructor Errata
- Student Errata

If you would like to add anything to the errata, please send detailed information to aws-course-feedback@amazon.com.

Preparing to Teach This Course

This section is included to help trainers prepare themselves for teaching *Build a Serverless, Location-Aware, Search & Recommendations-Enabled Application.*

Frequently Asked Questions

The following URL hosts the FAQs document for the course. These questions include the frequently asked by students and customers when discussing topics related to developing with services in the AWS cloud. Always review the FAQs document before teaching the course to familiarize yourself with any updates to the course materials.

- FAQs

Agenda

Here is a list of the tasks, modules, and labs that you should cover during this one day course. We have included time estimates to assist you.

Remember, on average classes start at 9:00 AM and end around 5:00 PM. Be sure to account for breaks (2 x 15 minutes) and lunch (1 hour).

Task/Module/Lab	Time Estimate (minutes)
Module 00: Welcome/Course Introduction	5
Instructor-Led Demo: Walkthrough of Lab Solution	5
Module 1: Building and Designing the API Backend	65
Lab 1 (Part 1): Design and Build the API Backend	60
Module 2: Building a Serverless Web Application	60
Lab 1 (Part 2): Build a Serverless Web Application	60
Module 3: An Introduction to Data Science Using Amazon Machine Learning	60
Lab 1 (Part 3): An Introduction to Machine Learning	60

Module 00: Course Introduction

This module introduces the course and presents the overall module layout.

At the end of this module, the student will be able to:

- Understand the layout of the course modules
- Understand the overall concept of what they will build in the hand-on lab

Module 01: Designing and Building the API Backend

This module introduces the concept of building APIs.

At the end of this module, the student will be able to:

- Use Amazon API Gateway to define an API
- Create AWS Lambda functions for custom logic
- Use Amazon DynamoDB for storing retrieval data
- Use Amazon DynamoDB Streams to update Amazon Elasticsearch Service
- Perform geospatial queries using Amazon Elasticsearch Service

Module 02: Building a Serverless Web Application

This module introduces the concepts of serverless computing.

At the end of this module, the student will be able to:

- Understand what serverless computing is
- Understand concepts of running highly available and scalable architectures without managing EC2 instances
- Understand the cost benefits of matching a revenue model with projected spend using serverless computing

Module 03: An Introduction to Data Science Using Amazon Machine Learning

This module introduces the student to concepts of Amazon Machine Learning.

At the end of this module, the student will be able to:

- Understand the fundamentals of machine learning
- Understand how to apply a basic machine learning model to a geospatial data set

About the Labs

It is important to pre-warm (hot lab) the lab at least 30 minutes before the estimated start time but no earlier than 2 hours before the start time. QwikLabs Hot Labs expire after 2 hours.

The lab is hosted in qwikLABS. Direct students to the appropriate qwikLABS URL, and have them create an account, sign in, and select the virtual classroom.

One lab is used throughout the entire day in this course.

Lab 1 (Part 1): Design and Build the API Backend

The first part of the lab walks the student through creating an API using API Gateway and linking it to AWS Lambda functions.

The student will:

- Set up an API using Amazon API Gateway
- Connect the API to an AWS Lambda Function
- Update indices and search data from Amazon Elasticsearch Service
- Update and read data from Amazon DynamoDB

Lab 1 (Part 2): Build a Serverless Web Application

The second part of the lab walks the student through developing and eploying a web application to Amazon S3 to visualize geospatial data.

The student will:

- Download and customize web application files for mapping data
- Set up a Node.js development and testing environment
- Modify config.js to include the URL of the API Gateway created earlier
- Upload web application files to an S3 bucket
- Create and apply a bucket policy to allow public access to the S3 bucket

Lab 1 (Part 3): An Introduction to Machine Learning

The third part of the lab walks the student through creating and evaluating a machine learning model based on an example dataset.

The student will:

- Download a data set used to train a model in Amazon Machine Learning
- Examine and understand the attributes used to train the model in Amazon Machine Learning
- Train and evaluate the model using Amazon Machine Learning
- Make batch predictions using the model

Appendix A: Course Change Log

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First release of bootcamp as ILT.