

AWS Developer: Serverless Architecture and Monitoring

BUILDING THE FOUNDATIONS OF SERVERLESS
ARCHITECTURE IN AWS



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Serverless

Innovations in Cloud Monitoring



X-Ray



CloudWatch
Alarms

Overview

A brief history of Serverless

The pillars of Serverless architecture

A worthy demo project

Module Overview

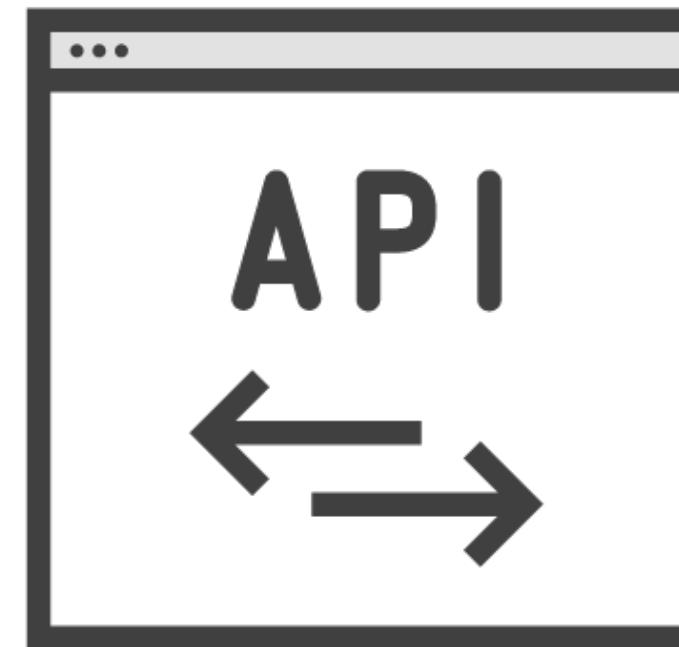
Going Serverless in AWS with Lambda



Security, Stability, and Performance
with Lambda

Module Overview

Sourcing Serverless Events in AWS with API Gateway and Kinesis



API Gateway



Kinesis Streams

Module Overview

Monitoring Applications in AWS with X-Ray and CloudWatch



X-Ray



CloudWatch
Alarms

Updates to the AWS Developer Certification Exam

AWS released a refresh of the
Developer Associate Certification
Exam in June 2018

AWS Certified Developer Path at Pluralsight

The screenshot shows the course page for "AWS Developer: Getting Started" by Ryan Lewis. The course is part of the AWS Certified Developer - Associate Path. It has a rating of 4.5 stars (267 reviews) and a duration of 4h 6m. The course info section indicates it is a Beginner level course.

AWS Developer: Getting Started

The screenshot shows the course page for "AWS Developer: Designing and Developing" by Ryan Lewis. The course is part of the AWS Certified Developer - Associate Path. It has a rating of 4.5 stars (39 reviews) and a duration of 4h 20m. The course info section indicates it is an Intermediate level course.

AWS Developer: Designing and Developing

The screenshot shows the course page for "AWS Developer: Deployment and Security" by Ryan Lewis. The course is part of the AWS Certified Developer - Associate Path. It has a rating of 4.5 stars (13 reviews) and a duration of 2h 32m. The course info section indicates it is an Advanced level course.

AWS Developer: Deployment and Security

The screenshot shows the course page for "AWS Developer: Serverless Architecture and Monitoring" by Ryan Lewis. The course is part of the AWS Certified Developer - Associate Path. It has a rating of 4.5 stars (11 reviews) and a duration of 1h 36m. The course info section indicates it is an Intermediate level course. A large, stylized red starburst graphic with the text "This Course!" is overlaid on the right side of the page.

AWS Developer: Serverless Architecture and Monitoring

What Is Serverless?

Cloud

Buzzword of
the 2000's





Search or jump to...

/

Pull requests Issues Marketplace Explore



panicsteve / cloud-to-but

Watch ▾

30

Star

1,289

Fork

838

Code

Issues 12

Pull requests 4

Projects 0

Wiki

Insights

Chrome extension that replaces occurrences of 'the cloud' with 'my butt'

27 commits

1 branch

0 releases

5 contributors

WTFPL

Branch: master ▾

New pull request

Create new file

Upload files

Find file

Clone or download ▾

 panicsteve Update README.md

Latest commit a3d562c on Oct 26, 2017

Source

change break to return

3 years ago

CloudToButt.crx

improved case preservation

6 years ago

LICENSE.txt

Create LICENSE.txt

5 years ago

README.md

Update README.md

a year ago

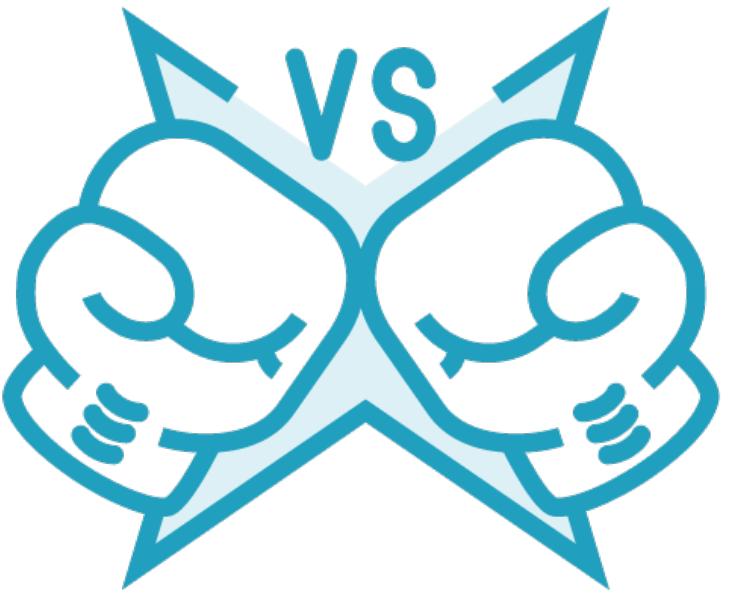
logo.png

added logo

3 years ago

README.md

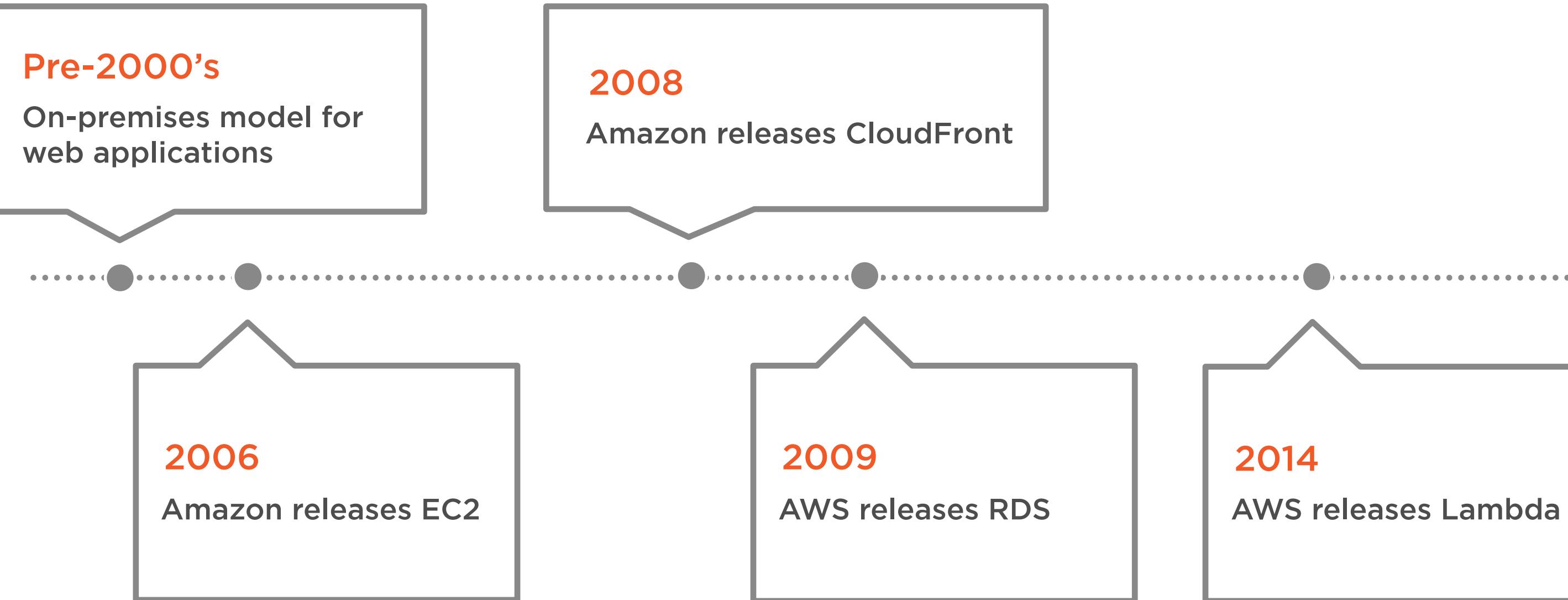
Serverless



Cloud



Ancient Web Infrastructure History



Benefits of Serverless Architecture



No Server
Management



Lower Costs

The platform (AWS) handles instances, scaling, routing, and stability

Serverless Specifics

Pay for What You Use

Pay only when your code runs

**Lambdas don't hold state, so use a database
or cache**

**Resources run in response to events, such as
messaging or HTTP**

Serverless in a Nutshell

**Abstracted
Infrastructure**

Pay for What You Use

Stateless

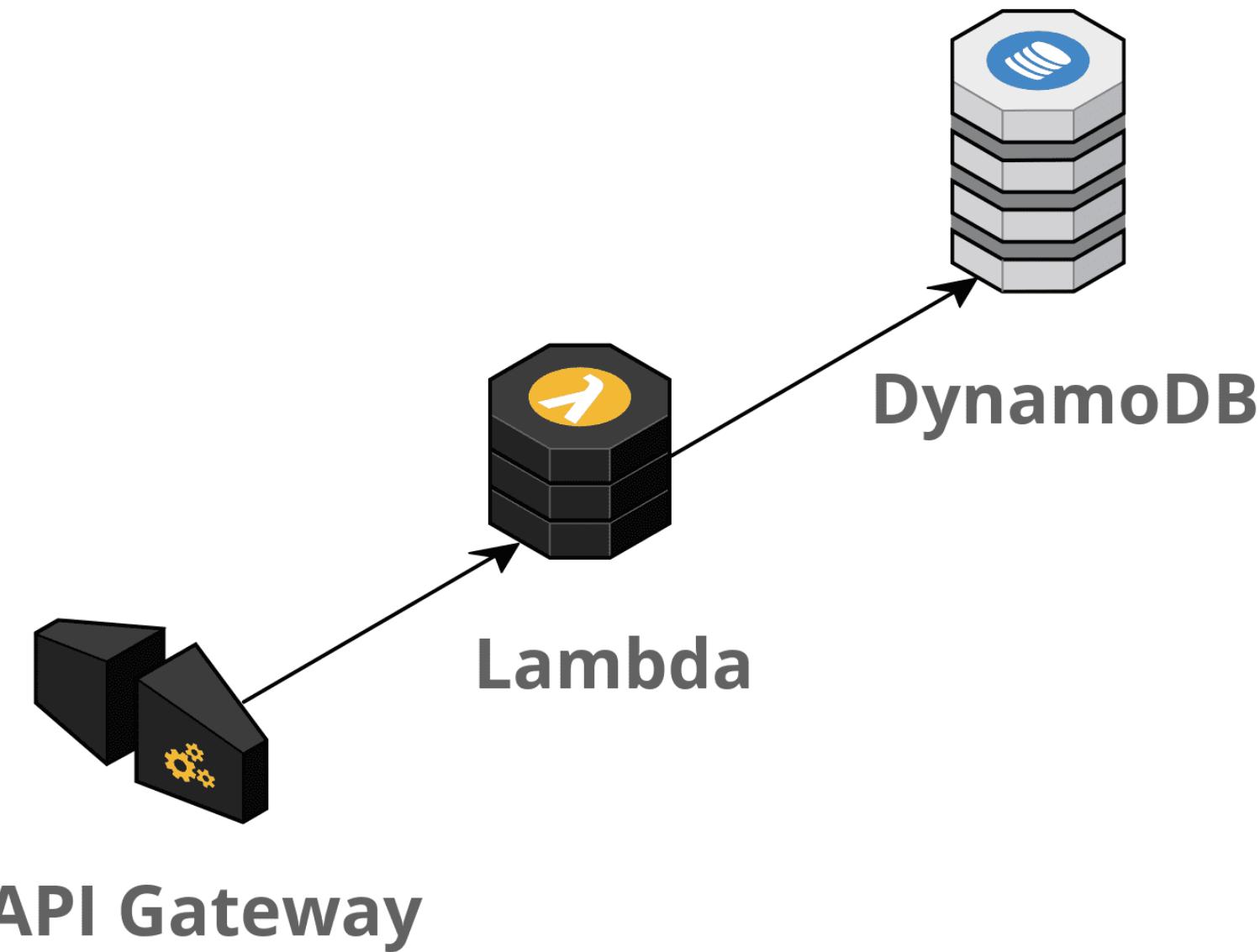
Event Based

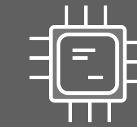
Architecting a Serverless Application

Step 1

Make a Visual Diagram

Visual Diagram Example





Lambda Functions

Consider each individual function you may need



S3 Buckets

Compartamentalize files using buckets or directories



RDS, DynamoDB, or ElastiCache

SQL or NoSQL?

RDS requires a connection, which adds to the execution time of your Lambda function

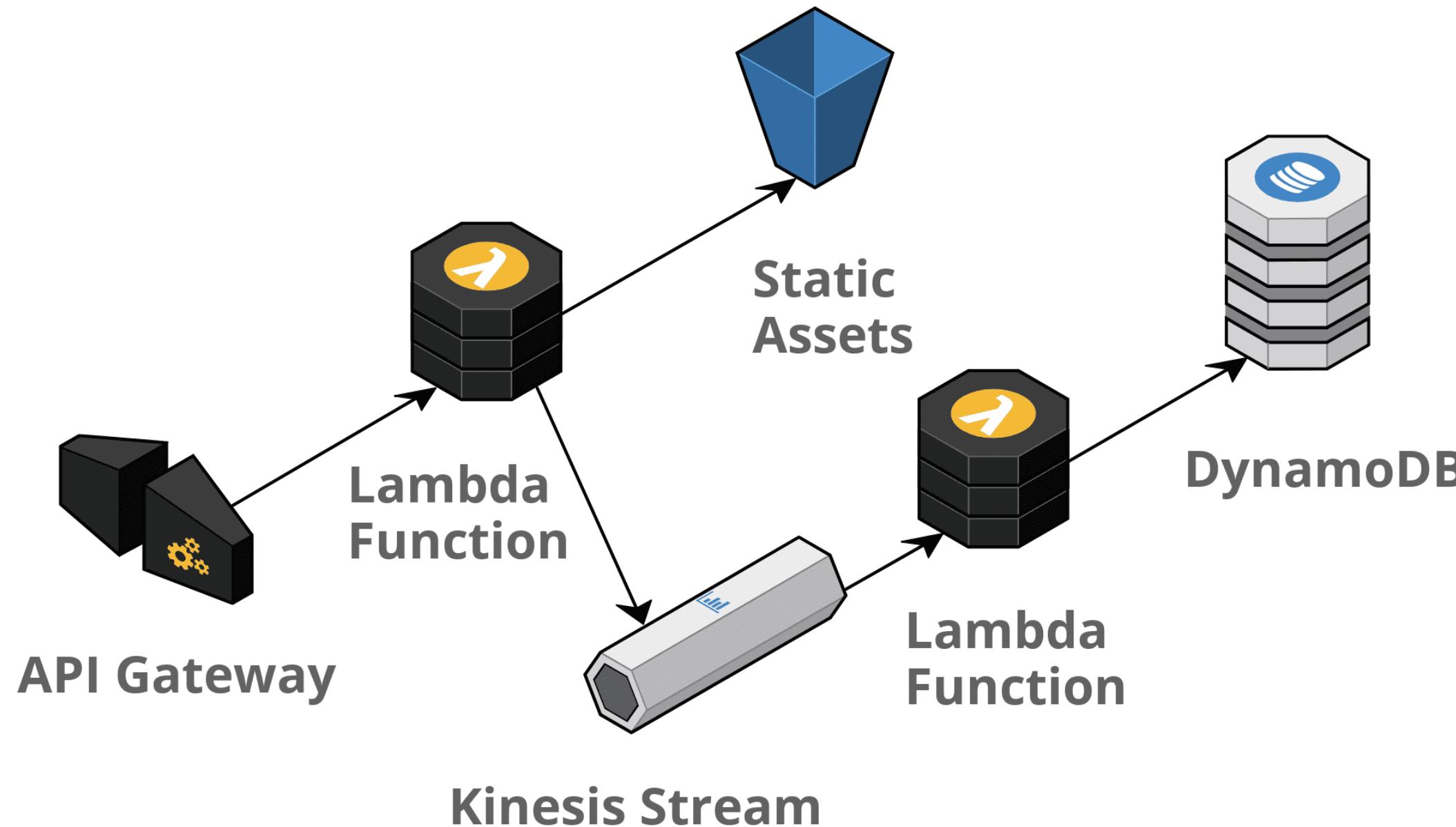
Use RDS Proxy

Various AWS Services

API Gateway for web apps

Kinesis or SQS for messaging

Four Pillars of Serverless at Work



The Serverless Framework

Why Use the Serverless Framework?



Simple and easy deployment



Easy to reproduce architecture



Local execution for development and debugging

More Adventures in the Serverless Framework

The screenshot shows a dark-themed course page on Pluralsight. On the left, there's a vertical sidebar with icons for navigation. The main content area features a large image of a person wearing headphones, with the title "Using the Serverless Framework with Node.js on AWS" overlaid in white. Below the title, it says "by Fernando Medina Corey". A description follows: "The Serverless Framework is the world's leading development framework for building serverless applications. This course teaches you the basics of the framework and how to use it to build event-driven microservice applications that auto-scale." At the bottom of this section are buttons for "Start Course", "Bookmark", and "Add to Channel". Below the main image, there's a navigation bar with links for "Table of contents", "Description", "Transcript", "Exercise files", "Discussion", "Learning Check", and "Recommended". A cookie consent banner at the bottom states "Pluralsight uses cookies. Learn more about your privacy" with a link and an "X". On the right side, the user profile "Ryan" is shown with the email "ryanharrisonlewis@gmail.com". Below the profile, it says "Course author" and shows a photo and name for "Fernando Medina Corey". A bio for Fernando is provided: "Fernando works full time learning the newest trends and tools in application development in order to share them with application developers and architects. He especially enjoys helping others learn...". Further down, "Course info" is listed with "Level: Intermediate", "Rating: ★★★★☆ (35)", "My rating" (with a five-star icon), and "Duration: 1h 38m".

What do you want to learn?

Ryan
ryanharrisonlewis@gmail.com

Course author

Fernando Medina Corey

Fernando works full time learning the newest trends and tools in application development in order to share them with application developers and architects. He especially enjoys helping others learn...

Course info

Level: Intermediate

Rating: ★★★★☆ (35)

My rating: ★★★★★

Duration: 1h 38m

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Bookmark

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Table of contents

Description

Transcript

Exercise files

Discussion

Learning Check

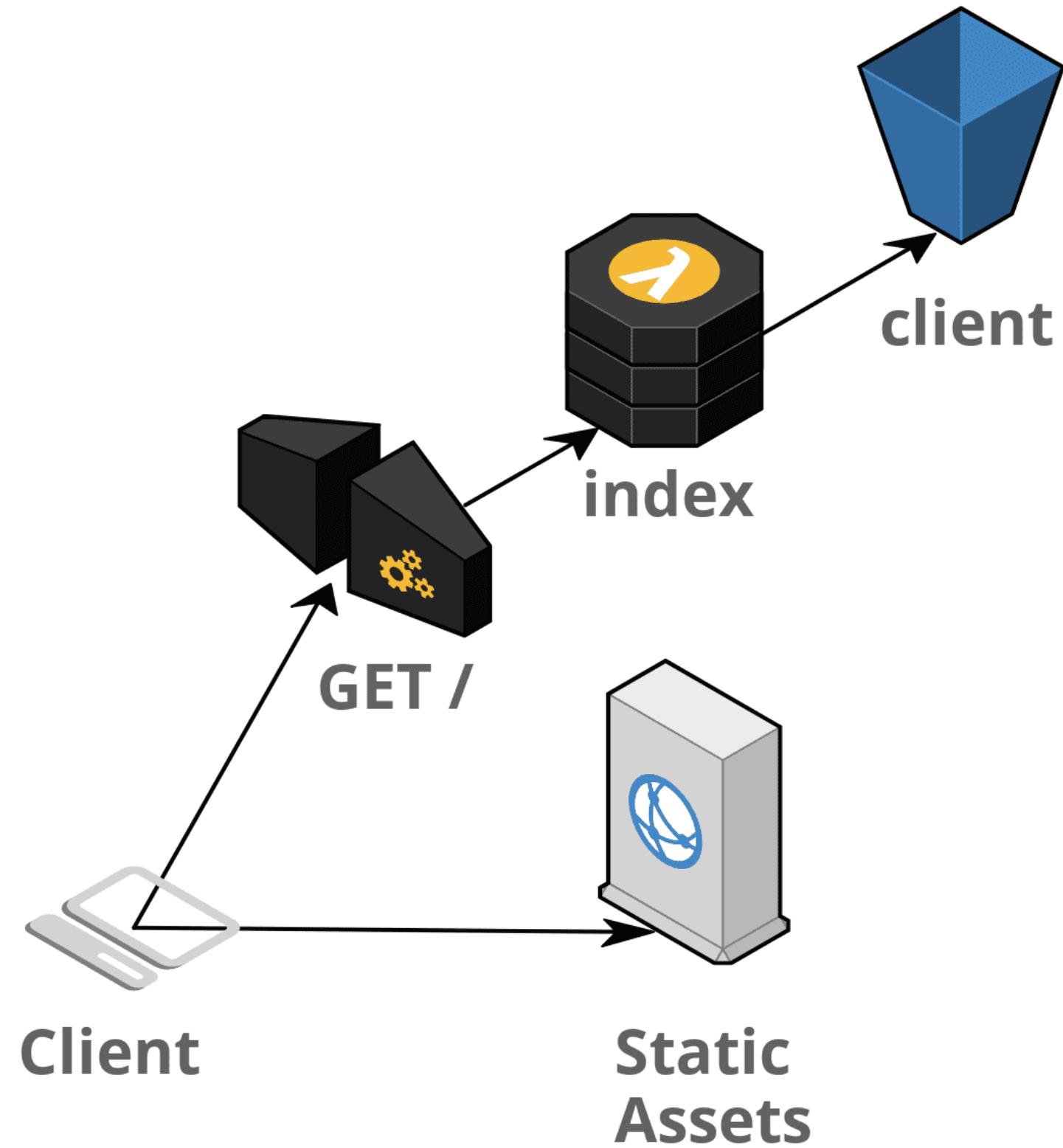
Recommended

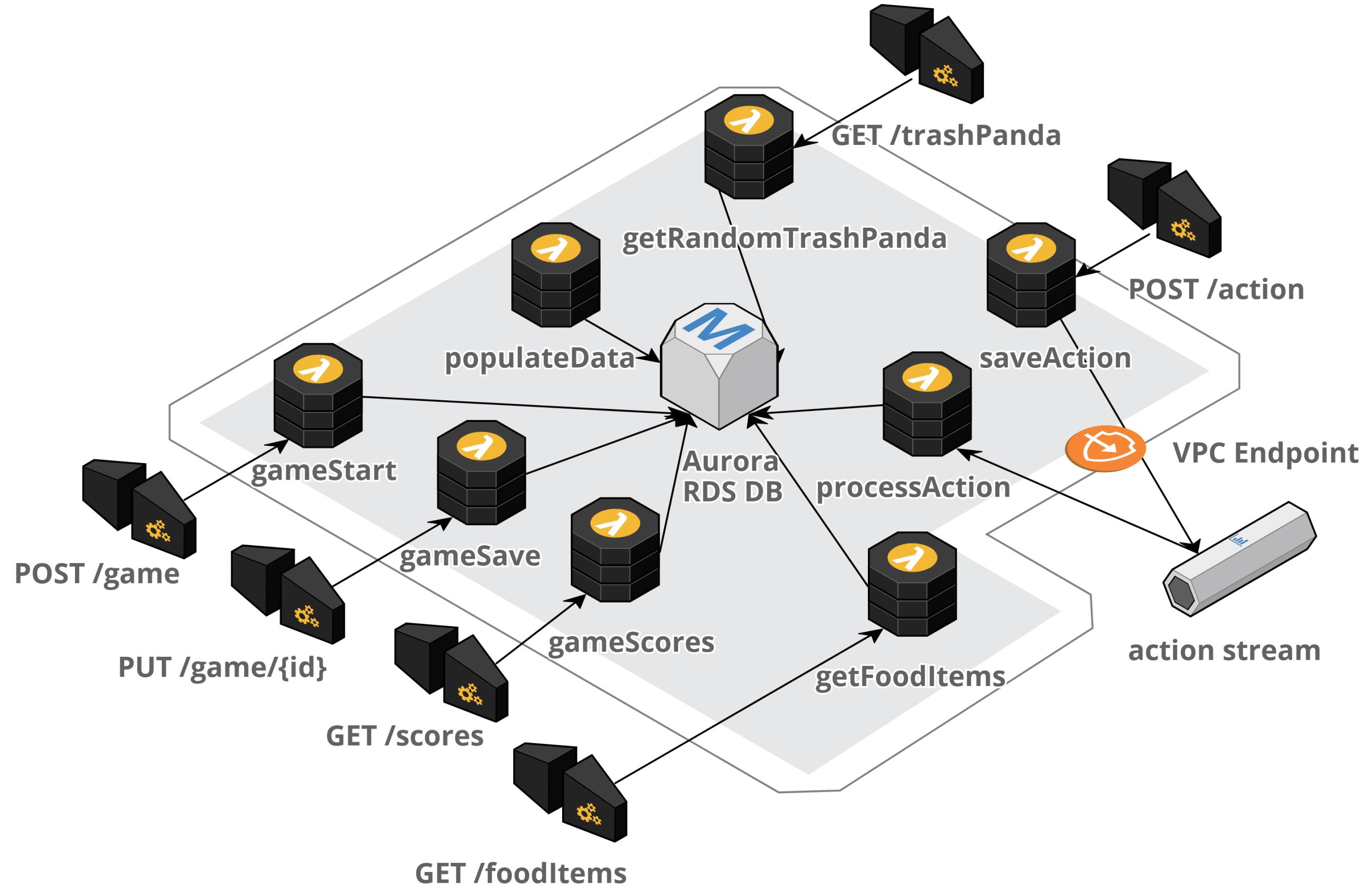
Pluralsight uses cookies. Learn more about your privacy X

Expand all

This won't be on the test

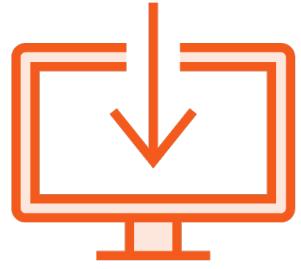
Trash Panda Buffet





Before We Start

AWS CLI



Download and install AWS CLI



Configure with a user's access key and secret



Ensure permissions for all services used in course

Local AWS credentials are located at:

OSX & Linux - `~/.aws/credentials`

Windows - `C:\Users\<you>\.aws\credentials`

Node.js Platform



Download at nodejs.org

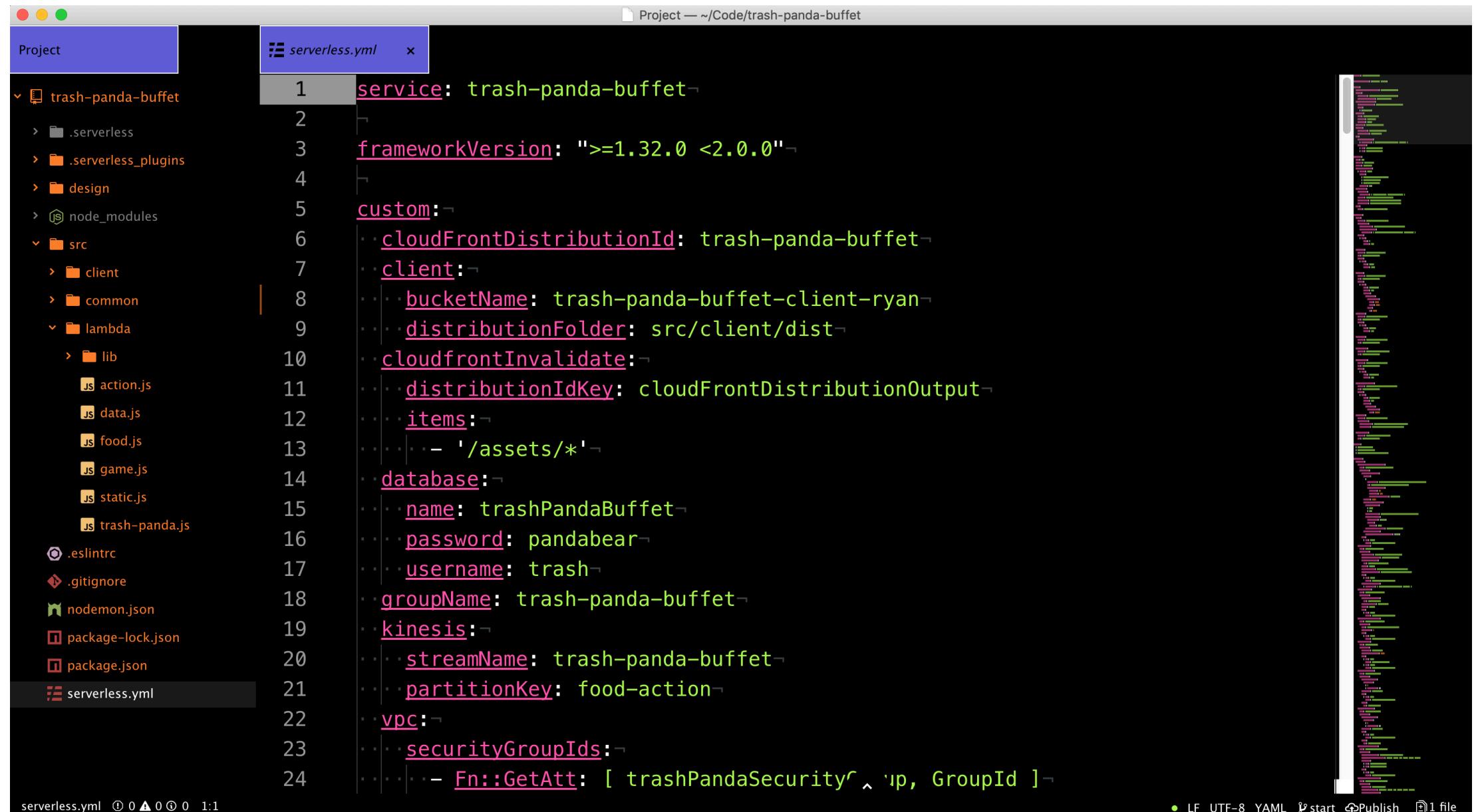
Version 12+

Code Editor

Try Atom!

Download at
atom.io

Try out
my syntax theme:
no-compromise

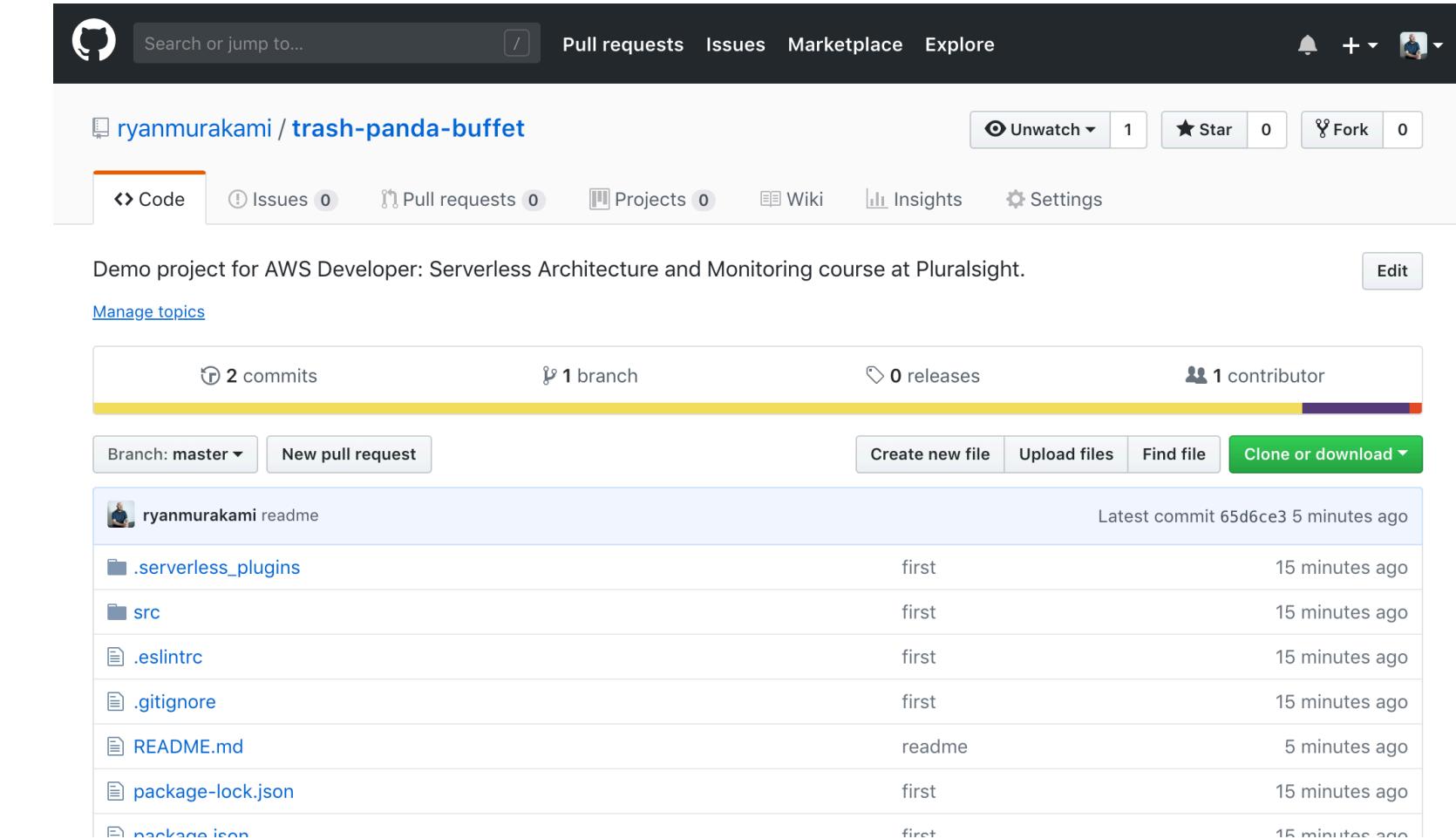


```
Project — ~/Code/trash-panda-buffet
serverless.yml x
1 service: trash-panda-buffet
2
3 frameworkVersion: ">=1.32.0 <2.0.0"
4
5 custom:
6   .cloudFrontDistributionId: trash-panda-buffet
7   client:
8     .bucketName: trash-panda-buffet-client-ryan
9     .distributionFolder: src/client/dist
10    .cloudfrontInvalidate:
11      .distributionIdKey: cloudFrontDistributionOutput
12      .items:
13        - '/assets/*'
14    database:
15      .name: trashPandaBuffet
16      .password: pandabear
17      .username: trash
18    groupName: trash-panda-buffet
19    kinesis:
20      .streamName: trash-panda-buffet
21      .partitionKey: food-action
22    vpc:
23      .securityGroupIds:
24        - Fn::GetAtt: [ trashPandaSecurityGroup, GroupId ]
```

serverless.yml ① 0 ▲ 0 ② 0 1:1 • LF UTF-8 YAML ⌂ start ⌂ Publish ⌂ 1 file

Course Demo Project Code

Or download
on Pluralsight
under “Exercise
Files”



github.com/ryanmurakami/trash-panda-buffet

Set an AWS Billing Alarm

Screenshot of the AWS CloudWatch Alarms interface showing a BillingAlarm.

The left sidebar shows navigation links: CloudWatch Dashboards, Alarms (selected), ALARM (1), INSUFFICIENT (0), OK (0), Billing, Logs, Log groups, Insights, Metrics, Events, Rules, Event Buses, ServiceLens (NEW), Service Map, Traces, Synthetics (NEW), Canaries, and Thresholds.

The top header includes the AWS logo, Services dropdown, Resource Groups dropdown, a bell icon, user name Ryan H Lewis, region N. Virginia, and Support dropdown.

The breadcrumb path is CloudWatch > Alarms > BillingAlarm.

BillingAlarm

Graph

EstimatedCharges

EstimatedCharges > 5 for 1 datapoints within 6 hours

No unit

13.8

9.41

5

01/09 01/10 01/11 01/12 01/13 01/14 01/15 01/16

EstimatedCharges

In alarm

Buttons: Edit, Delete, Copy, View in metrics