

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

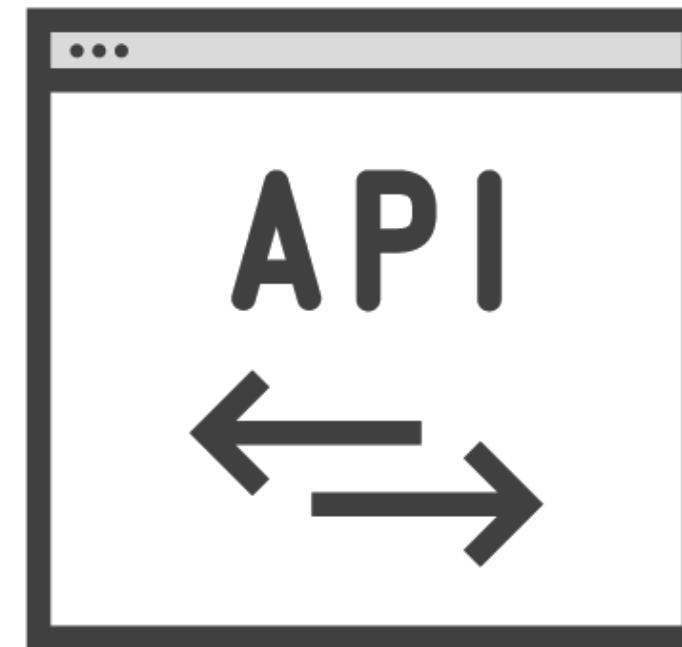
Going Serverless in AWS with Lambda



Security, Stability & 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 described as teaching how to develop, deploy, and integrate web applications with AWS. It is a Beginner level course with a rating of 4.5 stars (135 reviews), a duration of 4h 10m, and was released on 18 Aug 2016. The page includes a "Resume Course" button, a "Table of contents" section, and various navigation icons.

AWS Developer: Getting Started

The screenshot shows the course page for "AWS Developer: Designing and Developing" by Ryan Lewis. The course focuses on using the AWS SDK to design and develop applications. It is an Intermediate level course with a rating of 4.5 stars, a duration of 4h 20m, and was released on 25 Oct 2017. The page includes a "Resume Course" button, a "Table of contents" section, and various navigation icons.

AWS Developer: Designing and Developing

The screenshot shows the course page for "AWS Developer: Deployment and Security" by Ryan Lewis. The course covers deployment options and security services. It is an Advanced level course with a rating of 4.5 stars, a duration of 2h 32m, and was released on 6 Mar 2018. The page includes a "Resume Course" button, a "Table of contents" section, and various navigation icons.

AWS Developer: Deployment and Security

The screenshot shows the course page for "AWS Developer: Serverless Architecture and Monitoring". The course is highlighted with a large red starburst graphic containing the text "This Course!". The page includes a "Table of contents" section and various navigation icons.

AWS Developer:
Serverless Architecture
and Monitoring

This
Course!

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

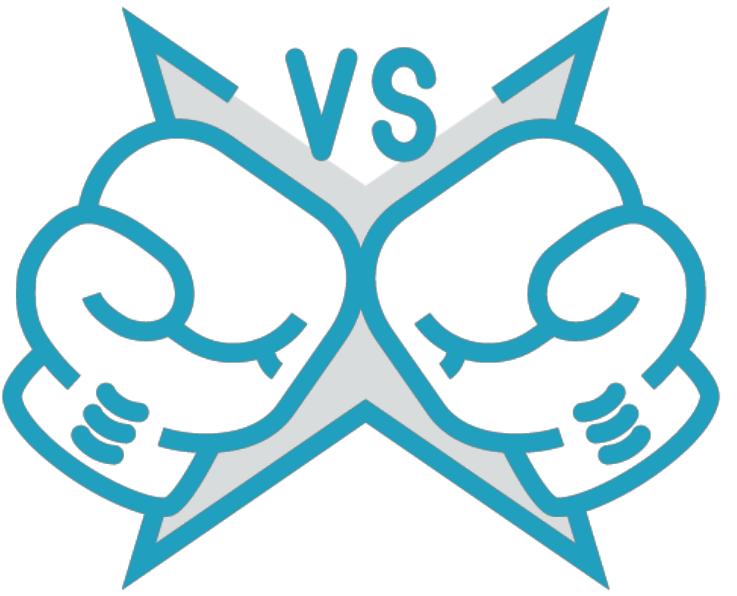
logo.png

added logo

3 years ago

README.md

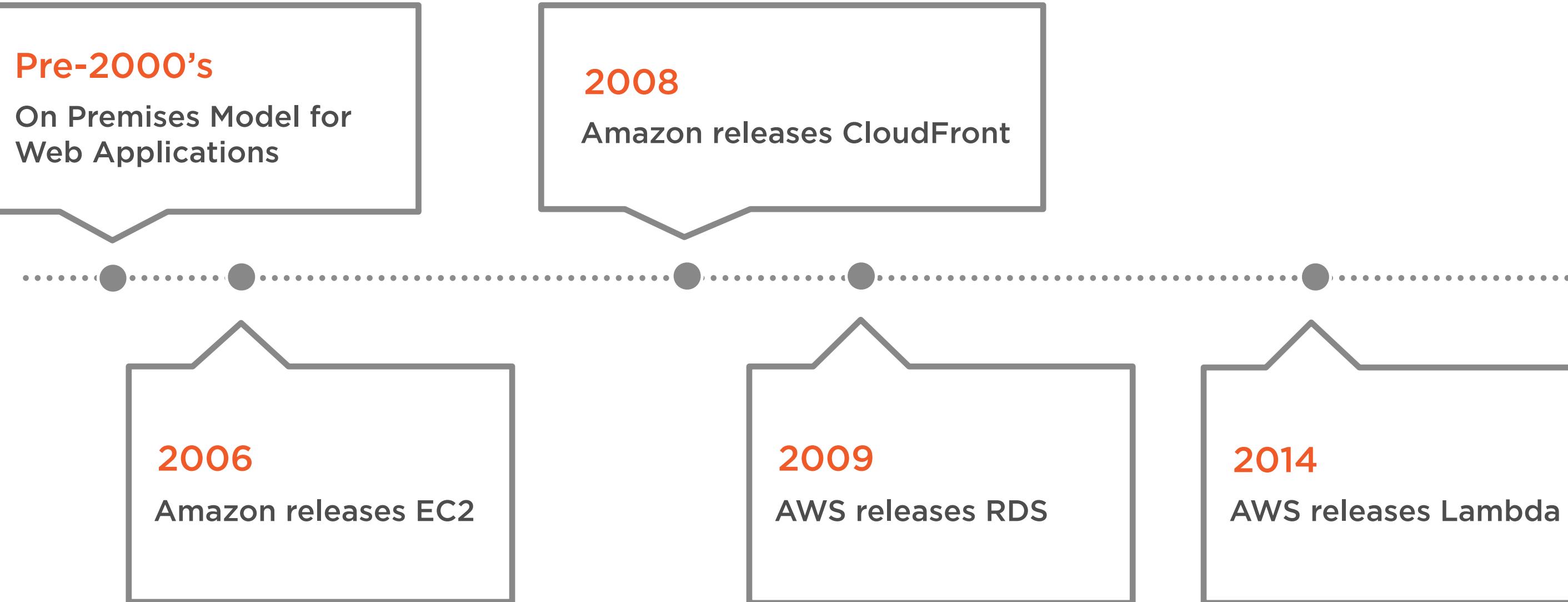
Serverless



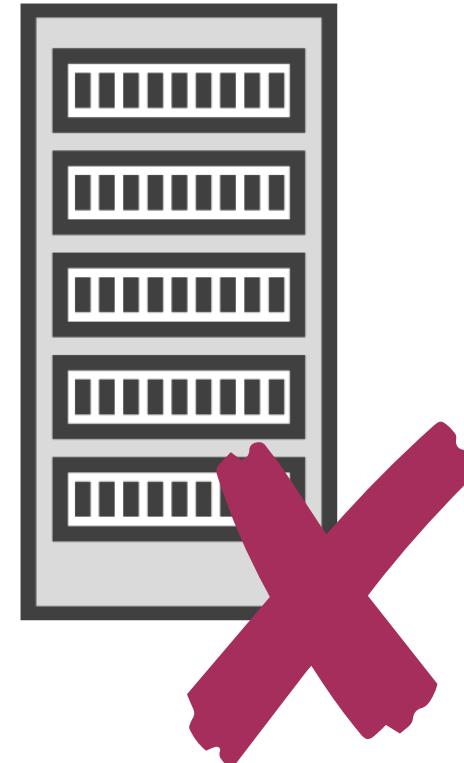
Cloud



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

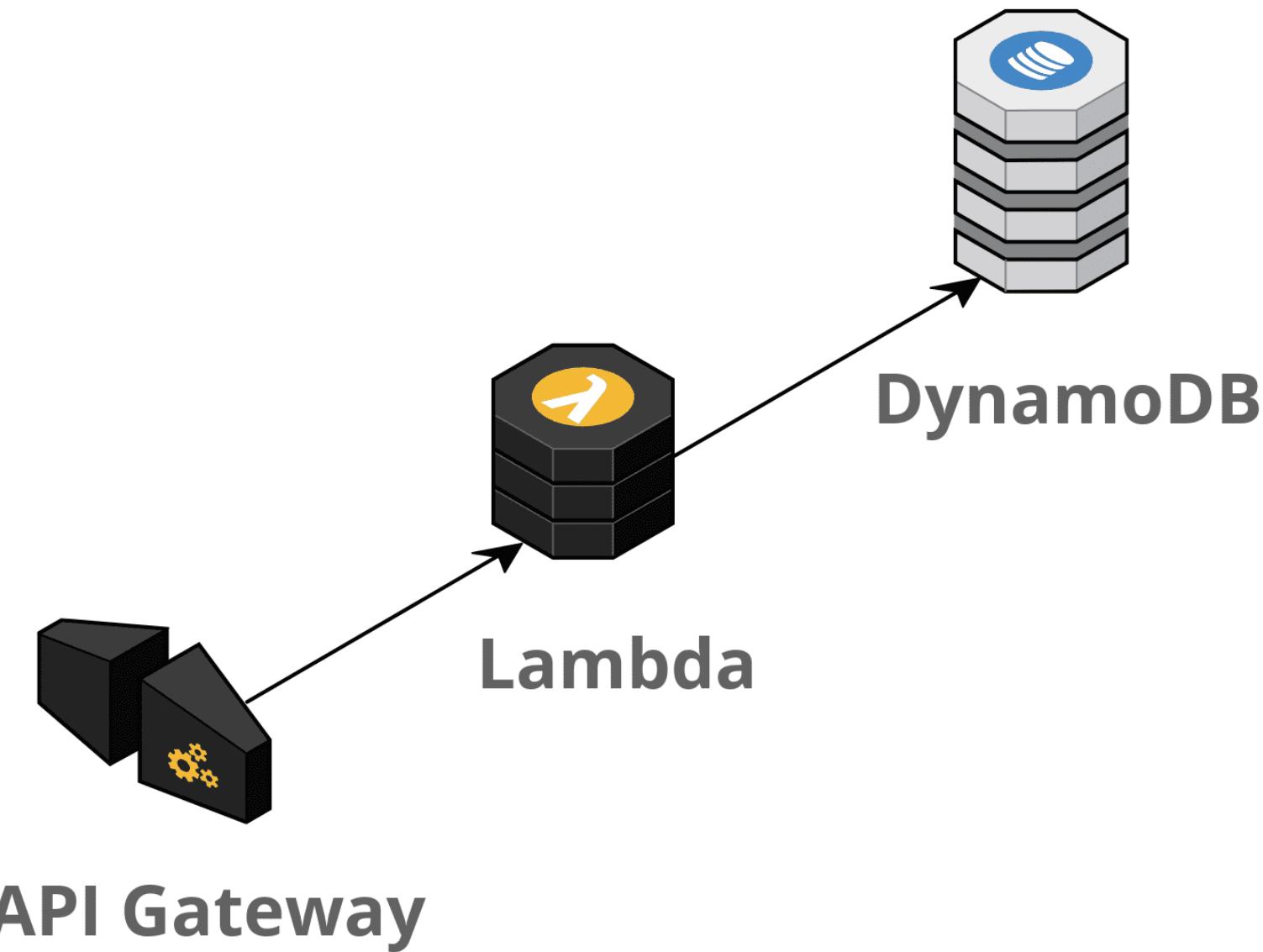
Event Based

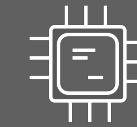
Architecting a Serverless Application

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?

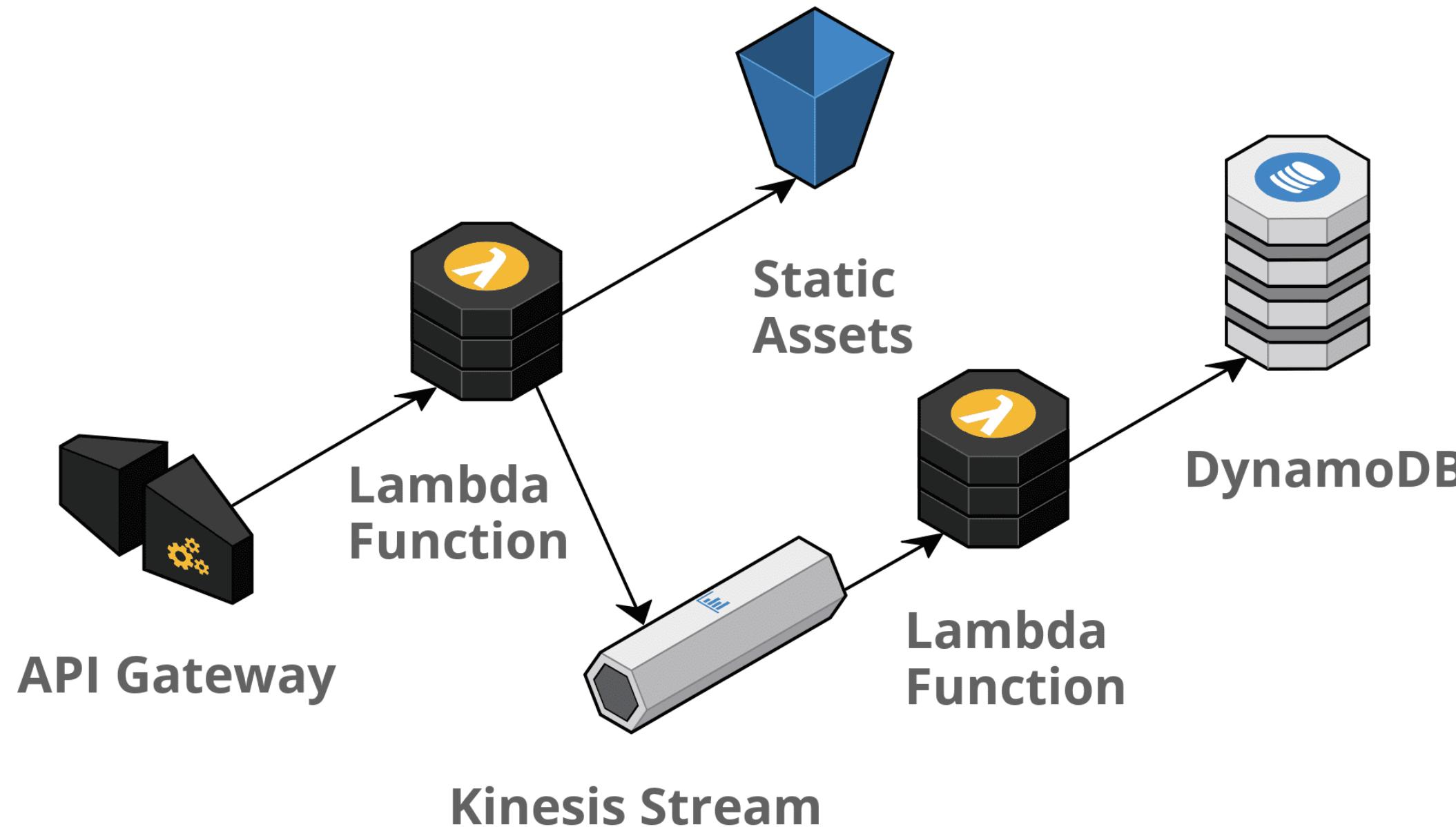
RDS requires a connection, which adds to the execution time of your Lambda function

Various AWS Services

API Gateway for web apps

Kinesis or SQS for messaging

Four Pillars of Serverless at Work

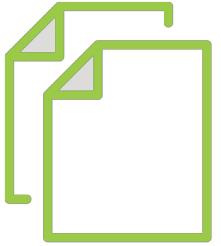


The Serverless Framework

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". In the top right corner, there's a user profile for "Ryan" (ryanharrisonlewis@gmail.com) with a notification bell and a three-dot menu. To the right of the course details, there's a section for the "Course author" (Fernando Medina Corey), a bio, and sections for "Course info" (Level: Intermediate, Rating: 4.5 stars, Duration: 1h 38m), and "My rating" (5 stars).

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

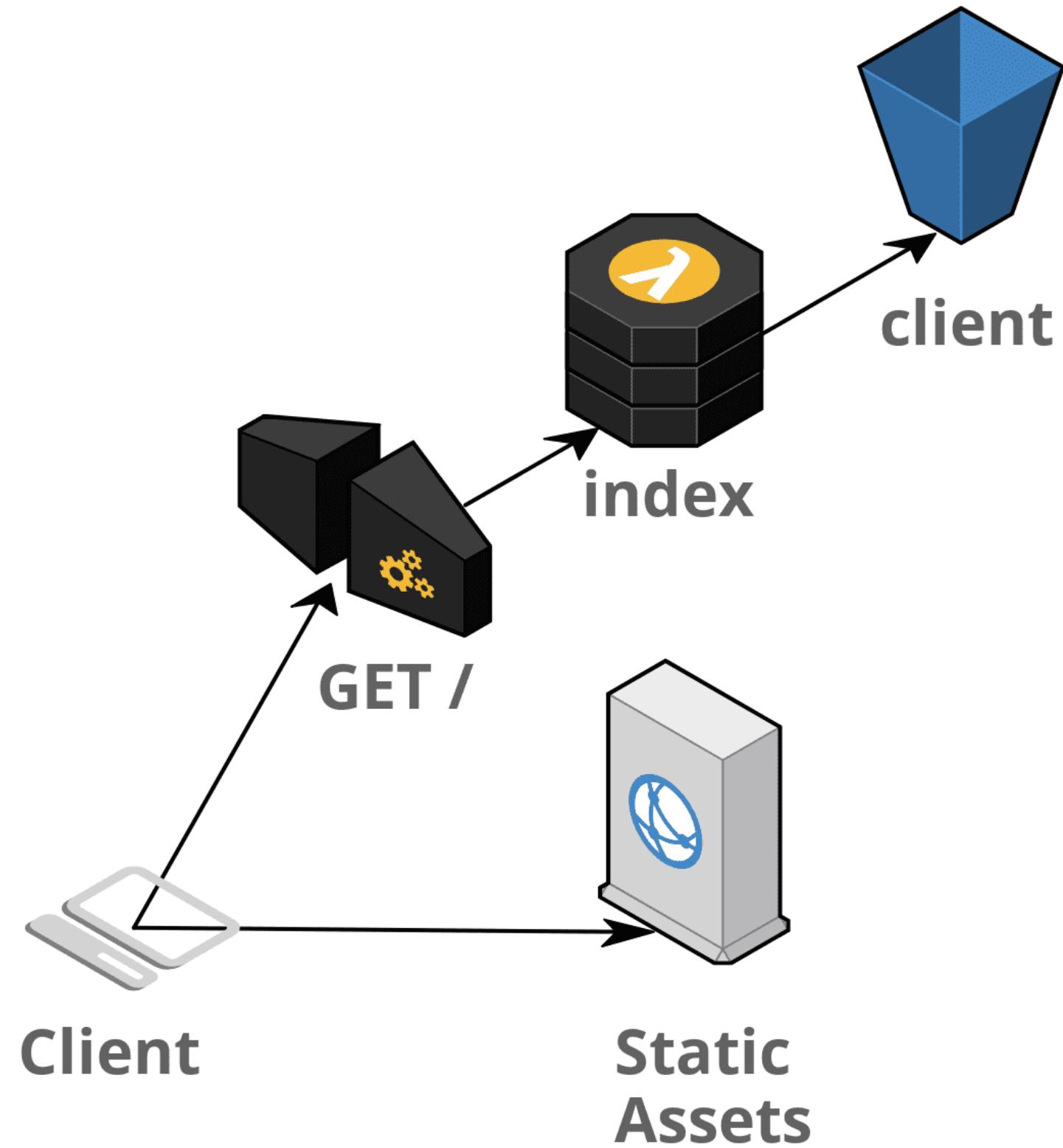
Table of contents Description Transcript Exercise files Discussion Learning Check Recommended

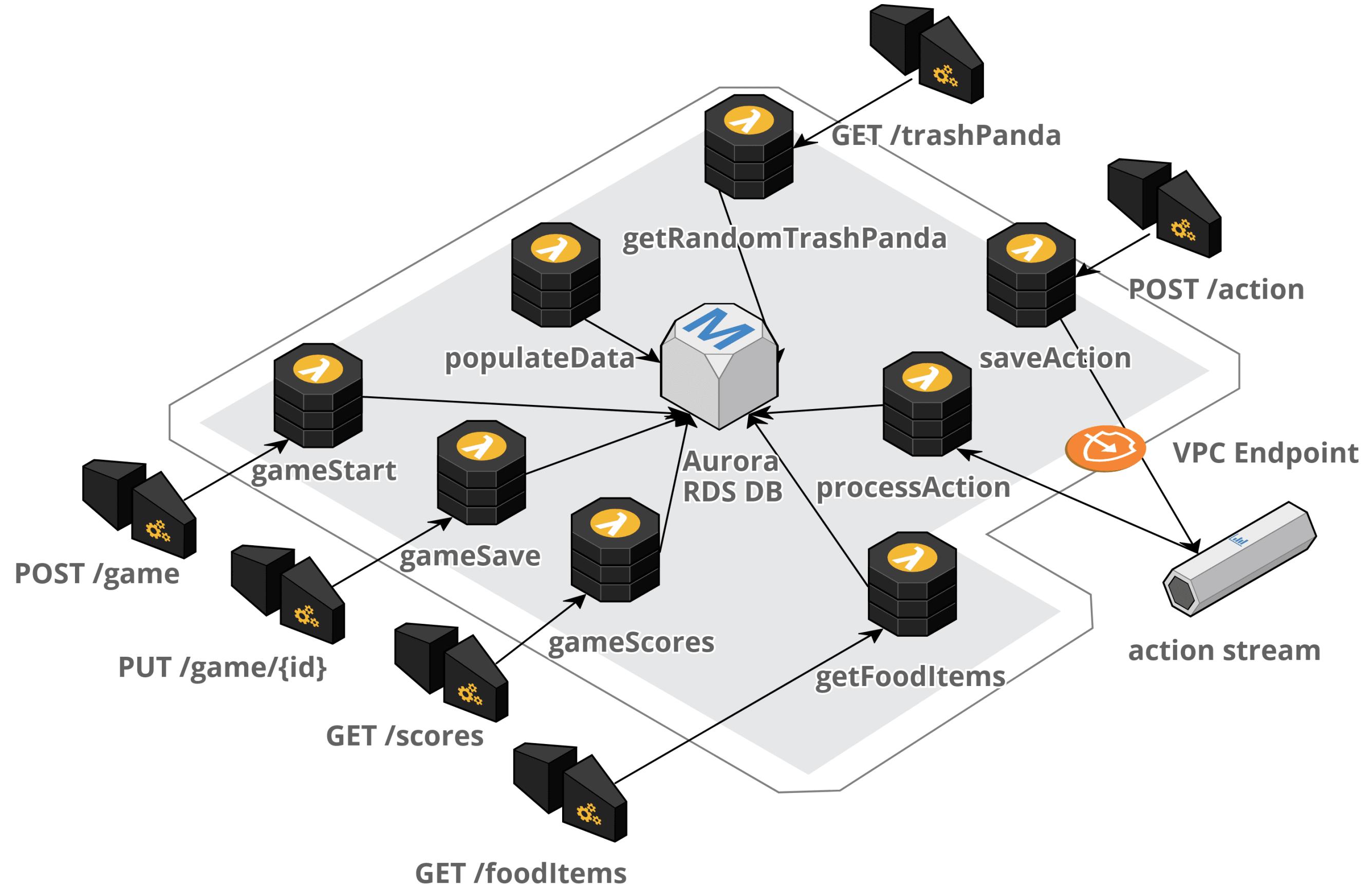
Pluralsight uses cookies. Learn more about your privacy X

Expand all

This won't be on the test

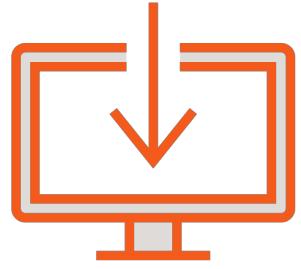
Trash Panda Buffet



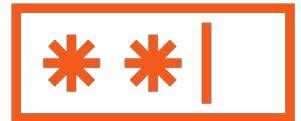


Before We Start

AWS CLI



Download and install AWS CLI



Configure with a user's access key & secret



Ensure permissions for all services used in course

Local AWS credentials are located at:

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

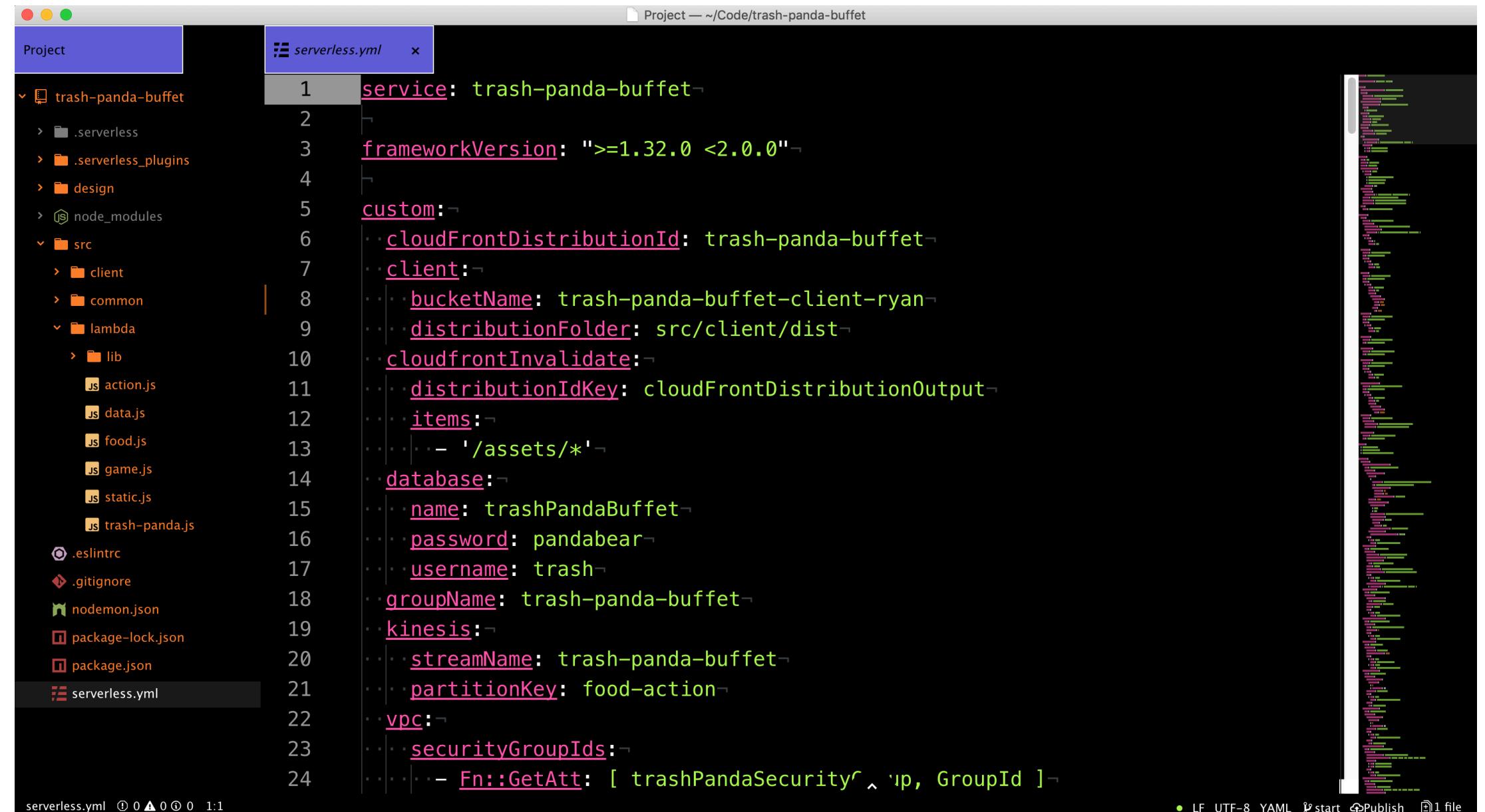
Windows - `C:\Users\<you>\.aws\credentials`

Code Editor

Try Atom!

Download at
atom.io

Try out
my syntax theme:
no-compromise



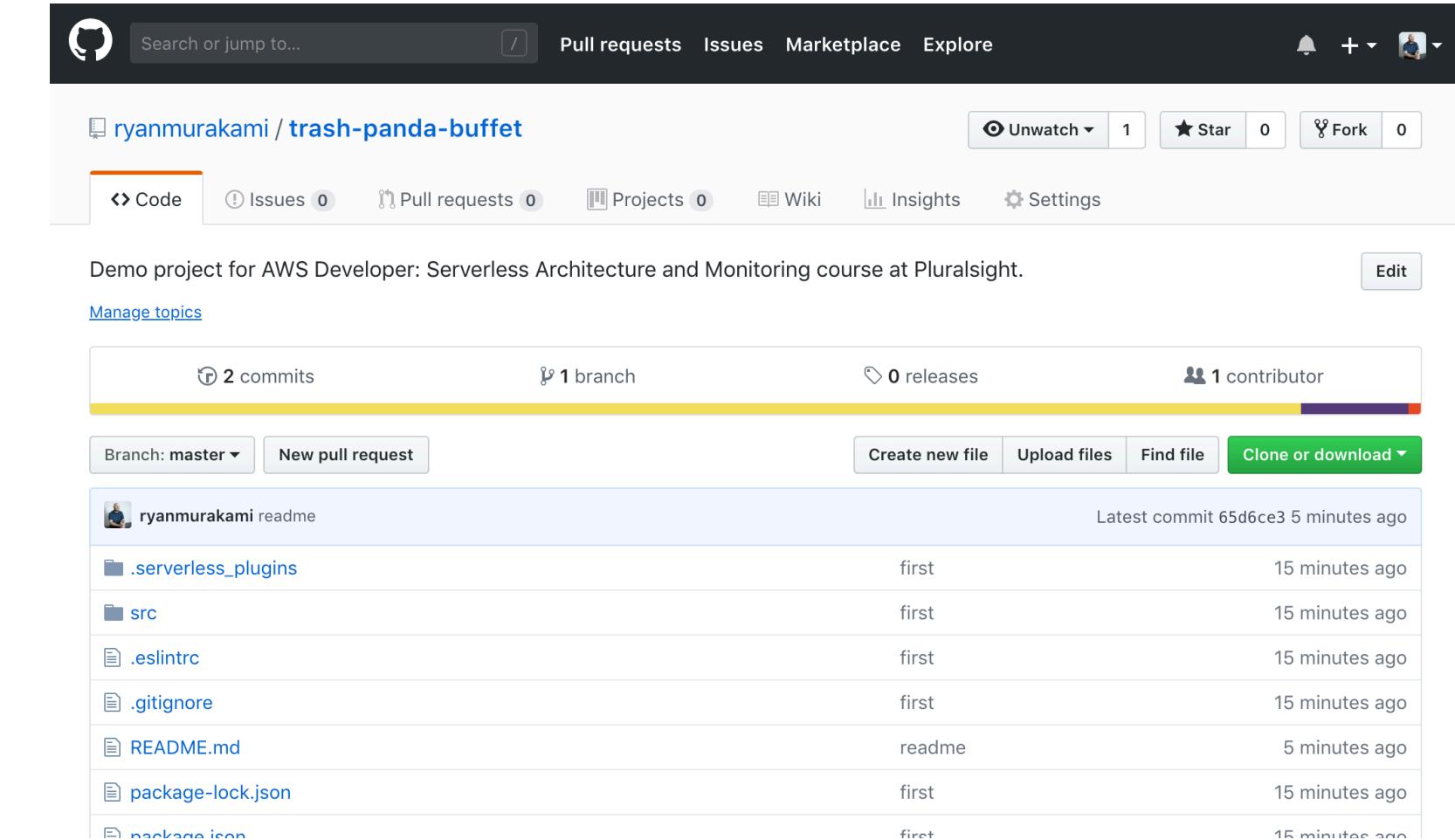
The screenshot shows the Atom code editor with a dark purple and black color scheme. On the left is a sidebar labeled 'Project' containing a tree view of a project directory named 'trash-panda-buffet'. The tree includes subfolders like '.serverless', '.serverless_plugins', 'design', 'node_modules', 'src' (which contains 'client', 'common', and 'lambda' subfolders), and files like '.eslintrc', '.gitignore', 'nodemon.json', 'package-lock.json', 'package.json', and 'serverless.yml'. The main editor area has a tab for 'serverless.yml'. The code itself is a YAML configuration for a Serverless application:

```
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 ]
```

At the bottom of the editor, there are status indicators: 'serverless.yml ① 0 ▲ 0 ② 0 1:1', and a footer bar with icons for file type (LF, UTF-8, YAML), start, publish, and a file count of '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 console showing a configured Billing Alarm.

Left Sidebar:

- CloudWatch
- Dashboards
- Alarms** (selected)
- ALARM (0)
- INSUFFICIENT (0)
- OK (1)
- Billing
- Events
- Rules
- Event Buses
- Logs
- Metrics
- Favorites

Top Bar:

- aws logo
- Services dropdown
- Resource Groups dropdown
- Actions dropdown
- Bell icon
- Ryan Lewis (User)
- N. Virginia (Region)
- Support (dropdown)

Main Content Area:

Create Alarm button (highlighted), **Add to Dashboard**, **Actions** dropdown.

Filter: All alarms, **Search Alarms** input, **Hide all AutoScaling alarms** checkbox (unchecked).

Table View:

State	Name	Threshold	Config Status
OK	Billing Alarm	EstimatedCharges >= 5 for 1 datapoints within 6 hours	

Details Tab:

Alarm: Billing Alarm

State Details: State changed to OK at 2018/09/30. Reason: Threshold Crossed: 1 datapoint [0.0 (30/09/18 23:49:00)] was not greater than or equal to the threshold (5.0).

Description:

Threshold: EstimatedCharges >= 5 for 1 datapoints within 6 hours

Actions: In ALARM:

- Send message to topic "admin_email" (ryan@ryanhlewis.com)

Namespace: AWS/Billing

Metric Name: EstimatedCharges

Dimensions: Currency = USD

Statistic: Maximum

Period: 6 hours

Graph: Billing Alarm

The graph displays the estimated charges over a six-hour period. The threshold is set at 5.00, which is crossed on 10/07, triggering the alarm.