

aws

Amazon Web Services

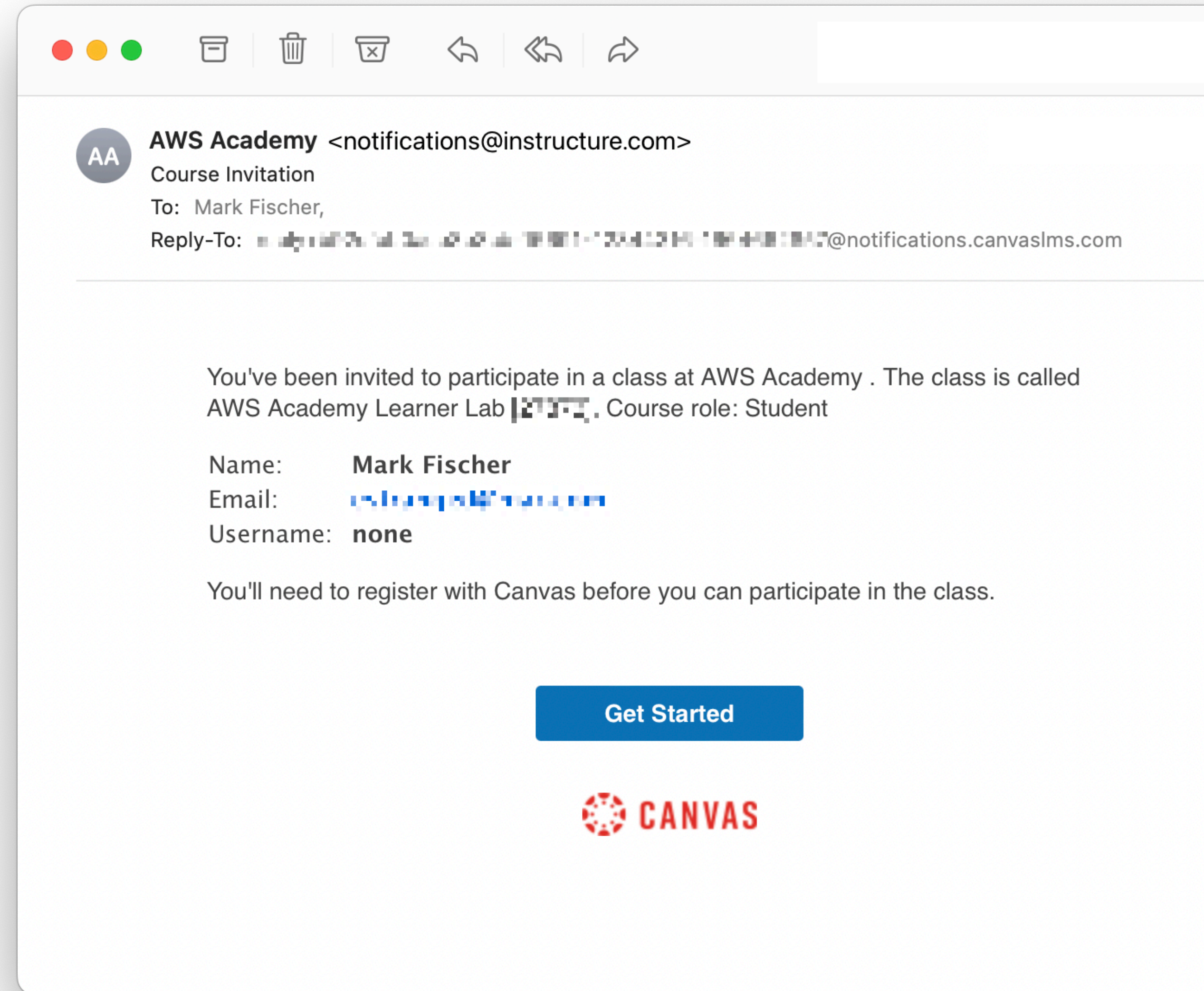
AWS



AWS Academy

Getting Set Up

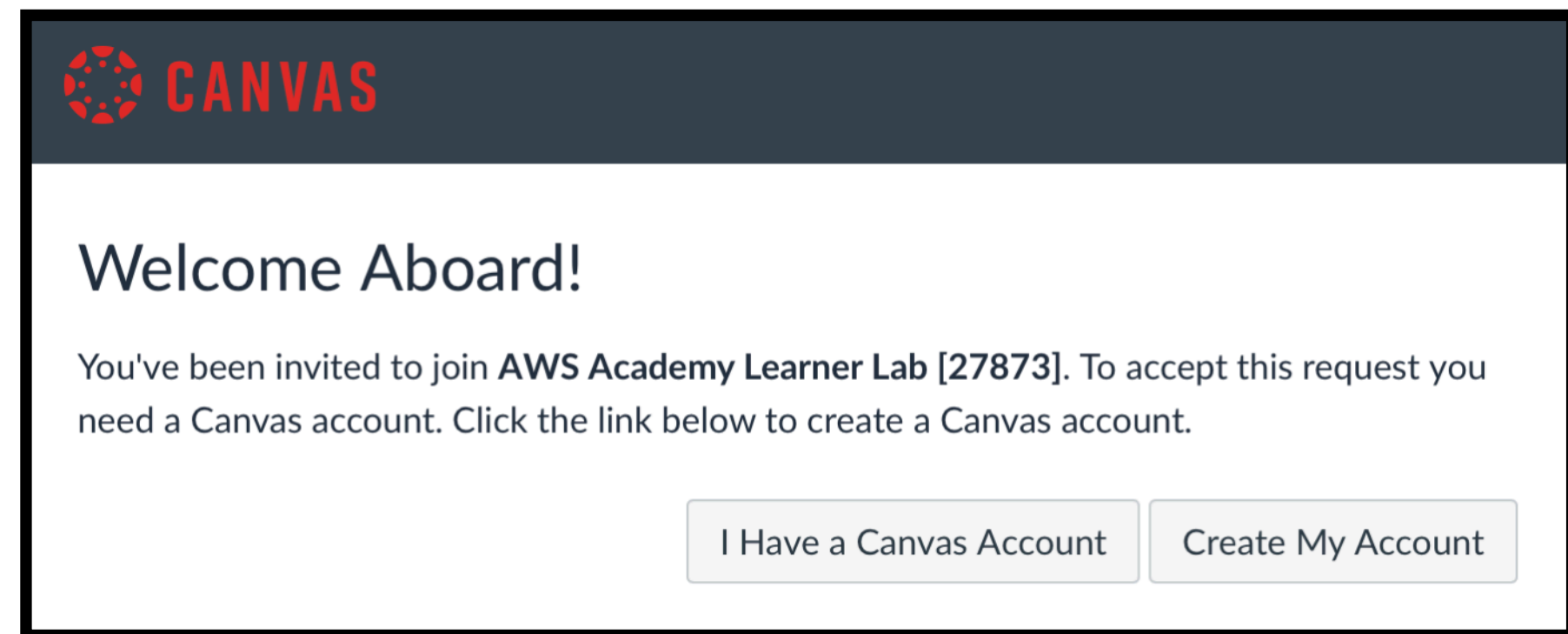
- You'll receive an email invite soon
- From instructure.com
- Click on Get Started



AWS Academy

Getting Set Up

- You'll likely have to Create My Account
- Select a Password and Time Zone
- Uncheck the AWS Spam
- Agree to Use Policy
- Register

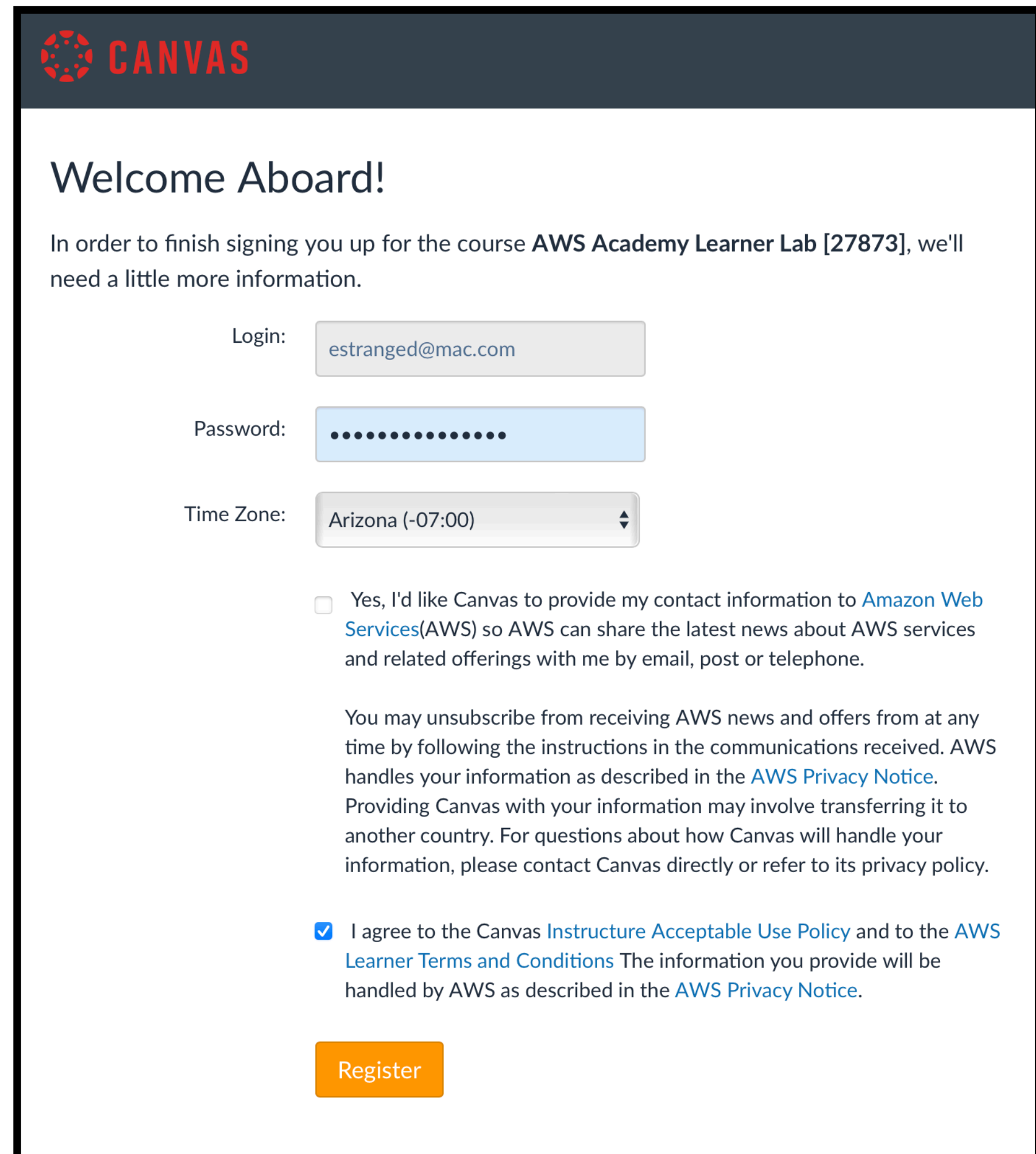


CANVAS

Welcome Aboard!

You've been invited to join **AWS Academy Learner Lab [27873]**. To accept this request you need a Canvas account. Click the link below to create a Canvas account.

[I Have a Canvas Account](#) [Create My Account](#)



CANVAS

Welcome Aboard!

In order to finish signing you up for the course **AWS Academy Learner Lab [27873]**, we'll need a little more information.

Login:

Password:

Time Zone:

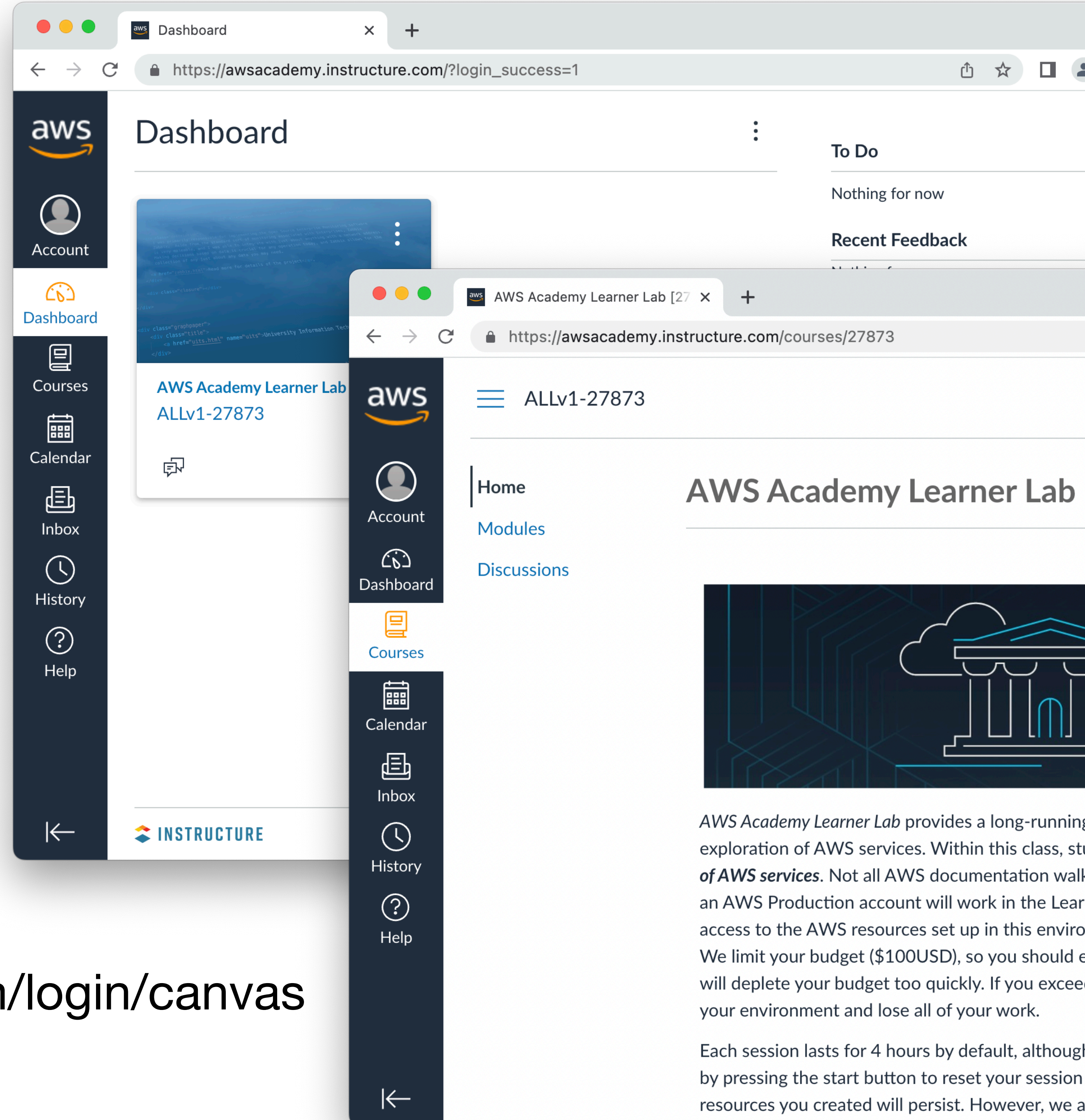
Yes, I'd like Canvas to provide my contact information to [Amazon Web Services\(AWS\)](#) so AWS can share the latest news about AWS services and related offerings with me by email, post or telephone.

You may unsubscribe from receiving AWS news and offers from at any time by following the instructions in the communications received. AWS handles your information as described in the [AWS Privacy Notice](#). Providing Canvas with your information may involve transferring it to another country. For questions about how Canvas will handle your information, please contact Canvas directly or refer to its privacy policy.

I agree to the Canvas [Instructure Acceptable Use Policy](#) and to the [AWS Learner Terms and Conditions](#) The information you provide will be handled by AWS as described in the [AWS Privacy Notice](#).

[Register](#)

AWS Academy Getting Set Up

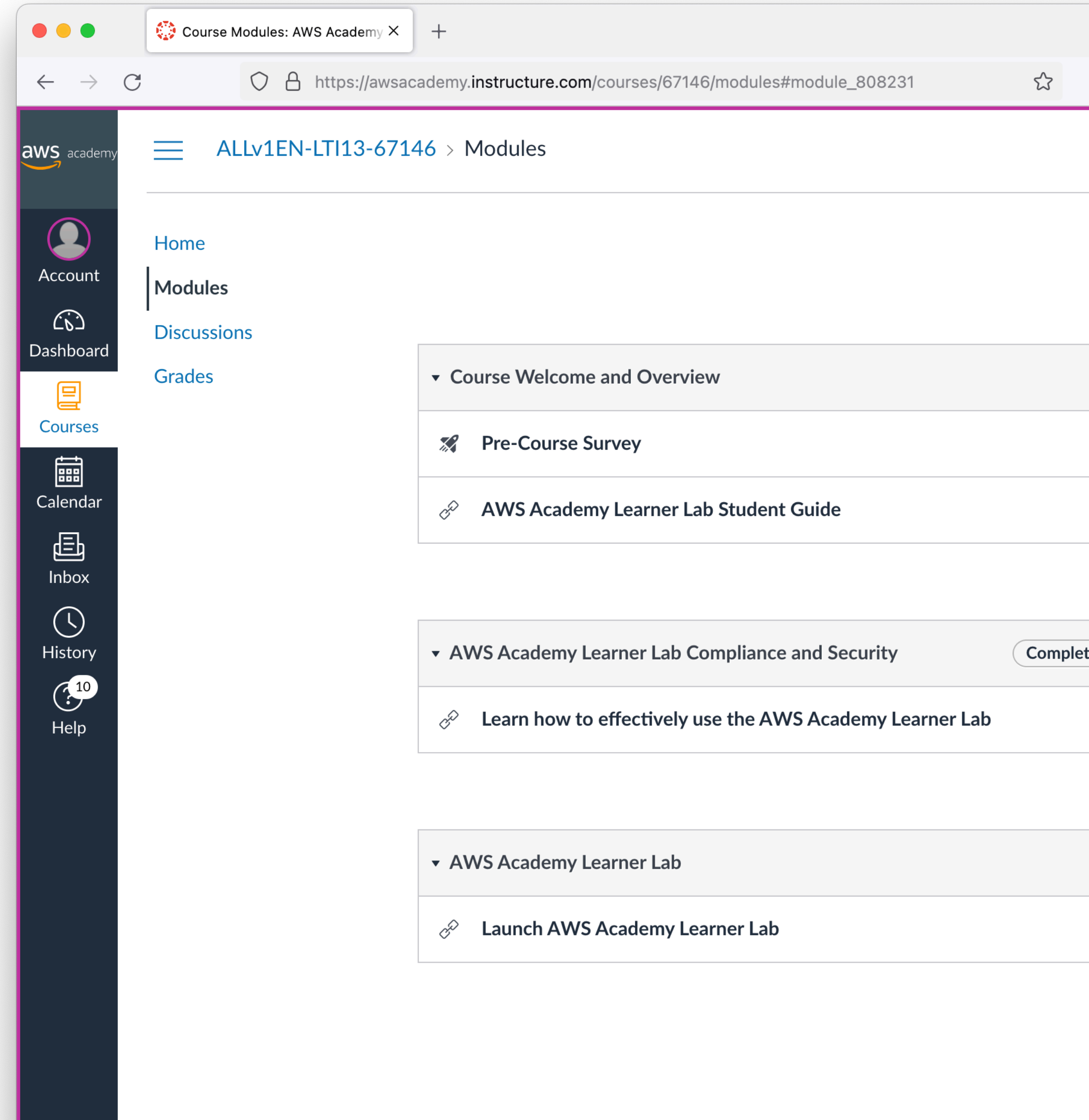


- <https://awsacademy.instructure.com/login/canvas>

AWS Academy

Getting Set Up

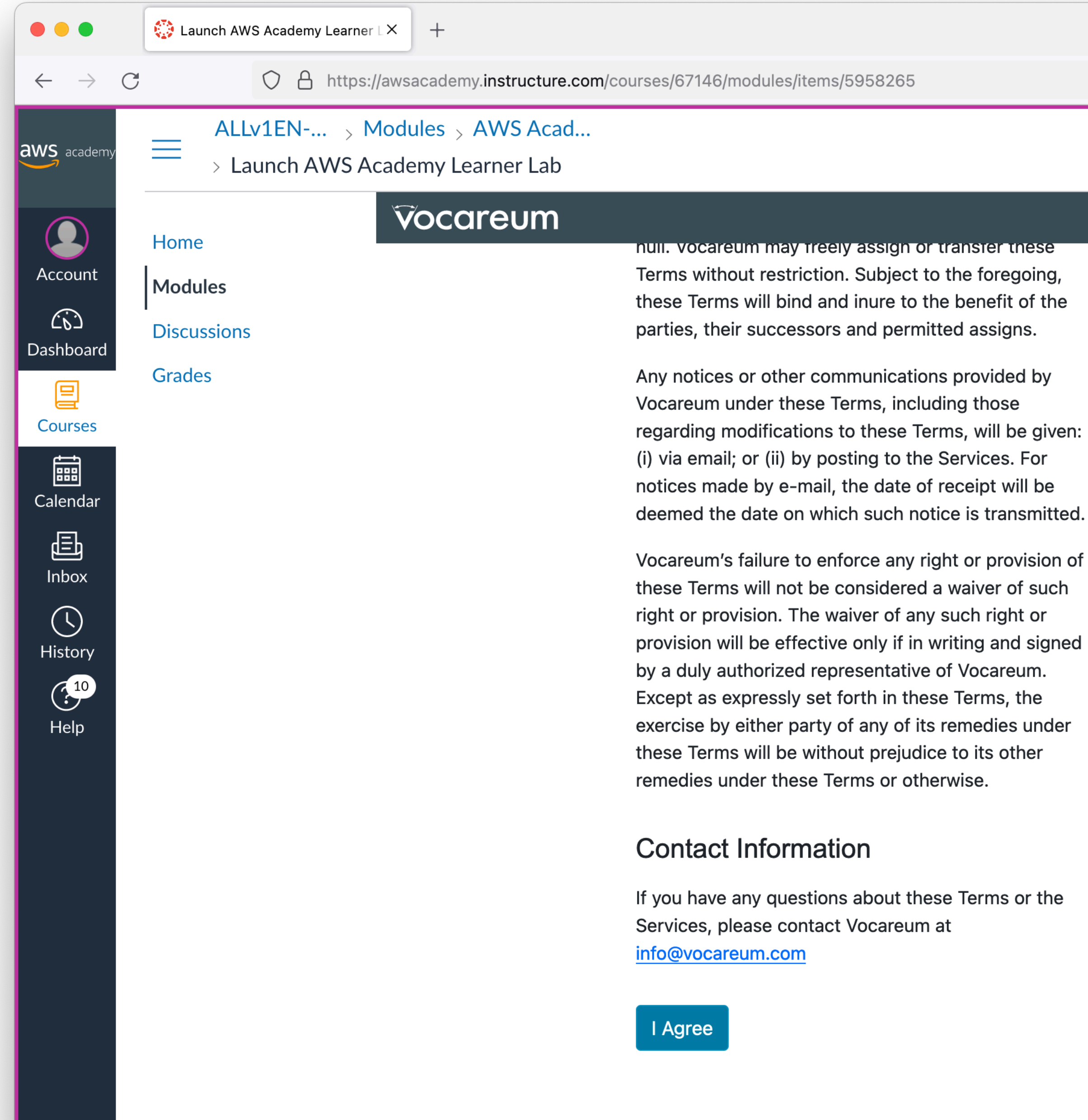
- Go into Modules
- Select “Launch AWS Academy Learner Lab”
- Note: Safari security policy prevents the Vocareum frame from loading
 - Use Firefox for this



AWS Academy

Getting Set Up

- Skim through the terms of service
- Scroll down and accept



The screenshot shows a web browser window with the URL <https://awsacademy.instructure.com/courses/67146/modules/items/5958265>. The page is titled "Launch AWS Academy Learner Lab" and is part of a course "ALLv1EN-...". The sidebar on the left contains navigation links: Account, Dashboard, Courses, Calendar, Inbox, History, and Help. The main content area features a "Vocareum" logo and a section of text that reads: "null. Vocareum may freely assign or transfer these Terms without restriction. Subject to the foregoing, these Terms will bind and inure to the benefit of the parties, their successors and permitted assigns. Any notices or other communications provided by Vocareum under these Terms, including those regarding modifications to these Terms, will be given: (i) via email; or (ii) by posting to the Services. For notices made by e-mail, the date of receipt will be deemed the date on which such notice is transmitted. Vocareum's failure to enforce any right or provision of these Terms will not be considered a waiver of such right or provision. The waiver of any such right or provision will be effective only if in writing and signed by a duly authorized representative of Vocareum. Except as expressly set forth in these Terms, the exercise by either party of any of its remedies under these Terms will be without prejudice to its other remedies under these Terms or otherwise." Below this text is a "Contact Information" section with the email info@vocareum.com and a blue button labeled "I Agree".

AWS Academy

Getting Set Up

Lab Account Status

AWS Terminal

Start Lab Button

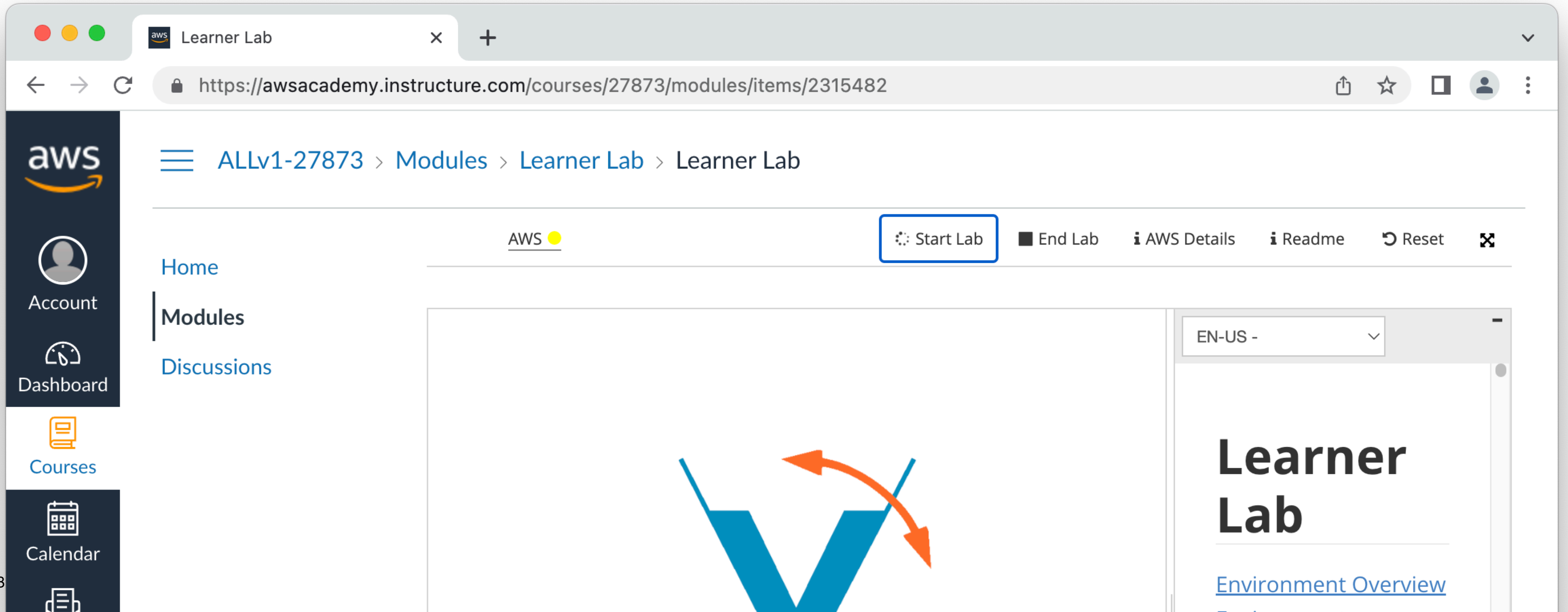
Enter Full Screen

The screenshot shows the AWS Academy Learner Lab interface. The browser address bar displays the URL `https://awsacademy.instructure.com/courses/27873/modules/items/2315482`. The breadcrumb navigation shows `ALLv1-27873 > Modules > Learner Lab > Learner Lab`. The main content area features a navigation bar with several buttons: `AWS` (with a red dot), `Start Lab` (with a play icon), `End Lab` (with a square icon), `AWS Details` (with an info icon), `Readme` (with an info icon), `Reset` (with a refresh icon), and a full-screen icon (with a square and four arrows). Below the navigation bar, there is a terminal window showing the prompt `ddd_v1_w_8id_1461430@runweb63107:~$`. To the right of the terminal, there is a language dropdown menu set to `EN-US` and a large heading `Learner`. The left sidebar contains navigation links for `Account`, `Dashboard`, and `Courses`.

AWS Academy

Getting Set Up

- Click Start Lab Button
- This takes a good 3-5 minutes the very first time to start



The screenshot shows a web browser window with the URL <https://awsacademy.instructure.com/courses/27873/modules/items/2315482>. The page features a dark sidebar on the left with navigation options: Account, Dashboard, Courses, and Calendar. The main content area has a breadcrumb trail: ALLv1-27873 > Modules > Learner Lab > Learner Lab. Below the breadcrumb, there is a navigation bar with several buttons: **Start Lab** (highlighted with a blue box), End Lab, AWS Details, Readme, and Reset. The main content area displays a large blue 'V' logo with an orange arrow pointing to the right, and a sidebar on the right with the text 'Learner Lab' and a link to 'Environment Overview'. The language is set to EN-US.

AWS Academy

Getting Set Up

- AWS Account Status Button goes green
- Click the AWS Account Status button to load the AWS Console
- Current Active Lab Session Time Displayed. 4 hours per session
- Total Lab \$ Allowance used across all lab sessions. Don't go over this!

The screenshot shows the AWS Academy Learner Lab interface. The browser address bar displays the URL: `https://awsacademy.instructure.com/courses/27873/modules/items/2315482`. The breadcrumb navigation shows: `ALLv1-27873 > Modules > Learner Lab > Learner Lab`. The main content area features a control bar with the following elements:

- AWS** button with a green status indicator (highlighted with a blue box).
- 03:57** timer (highlighted with a blue box).
- Start Lab** button (play icon).
- End Lab** button (stop icon).
- AWS Details** button (info icon).
- Readme** button (info icon).
- Reset** button (refresh icon).
- Used \$0 of \$100** allowance indicator (highlighted with a blue box).

The interface also includes a left sidebar with navigation options: Home, Modules, Discussions, Account, Dashboard, Courses, and a calendar icon. The main content area below the control bar shows a terminal window with the prompt `ddd_v1_w_8id_1461430@runweb63107:~$` and a language dropdown set to `EN-US`.

AWS Academy

AWS Console Overview

- AWS Console
- Search for Services
- Pin Favorite Services
- Select Region

The screenshot shows the AWS Management Console home page. The browser address bar displays the URL: `https://us-east-1.console.aws.amazon.com/console/home?region=us-east-1#`. The top navigation bar includes the AWS logo, a search bar with the placeholder text "Search for services, features, blogs, docs, and more", and the current region "N. Virginia". Below the navigation bar, the "Console Home" section features a "Recently visited" list with items: Route 53, CloudFormation, Elastic Container Service, VPC, and Elastic Container Registry. A "View all services" link is located at the bottom of this list. To the right, the "Welcome to AWS" section contains three cards: "Getting started with AWS", "Training and certification", and "What's new with AWS?". The bottom of the console is divided into two panels: "AWS Health" showing 0 open issues and 0 scheduled changes, and "Cost and usage" showing a message: "No cost and usage data to show".

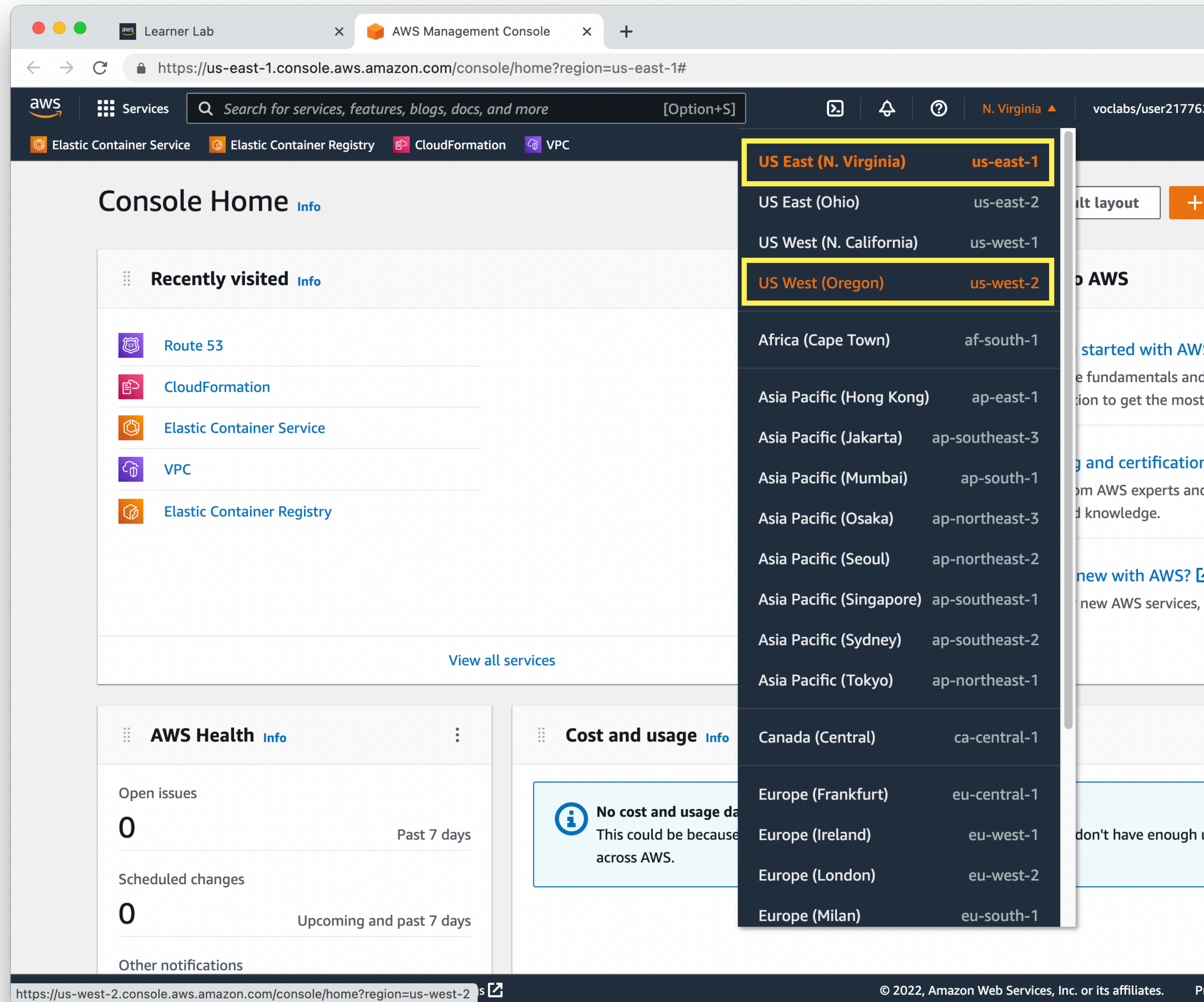
Feedback Looking for language selection? Find it in the new [Unified Settings](#)

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AWS Academy

AWS Console Overview

- Can only use regions:
 - N. Virginia (us-east-1)
 - Oregon (us-west-2)
- For simplicity I recommend using N. Virginia (us-east-1)

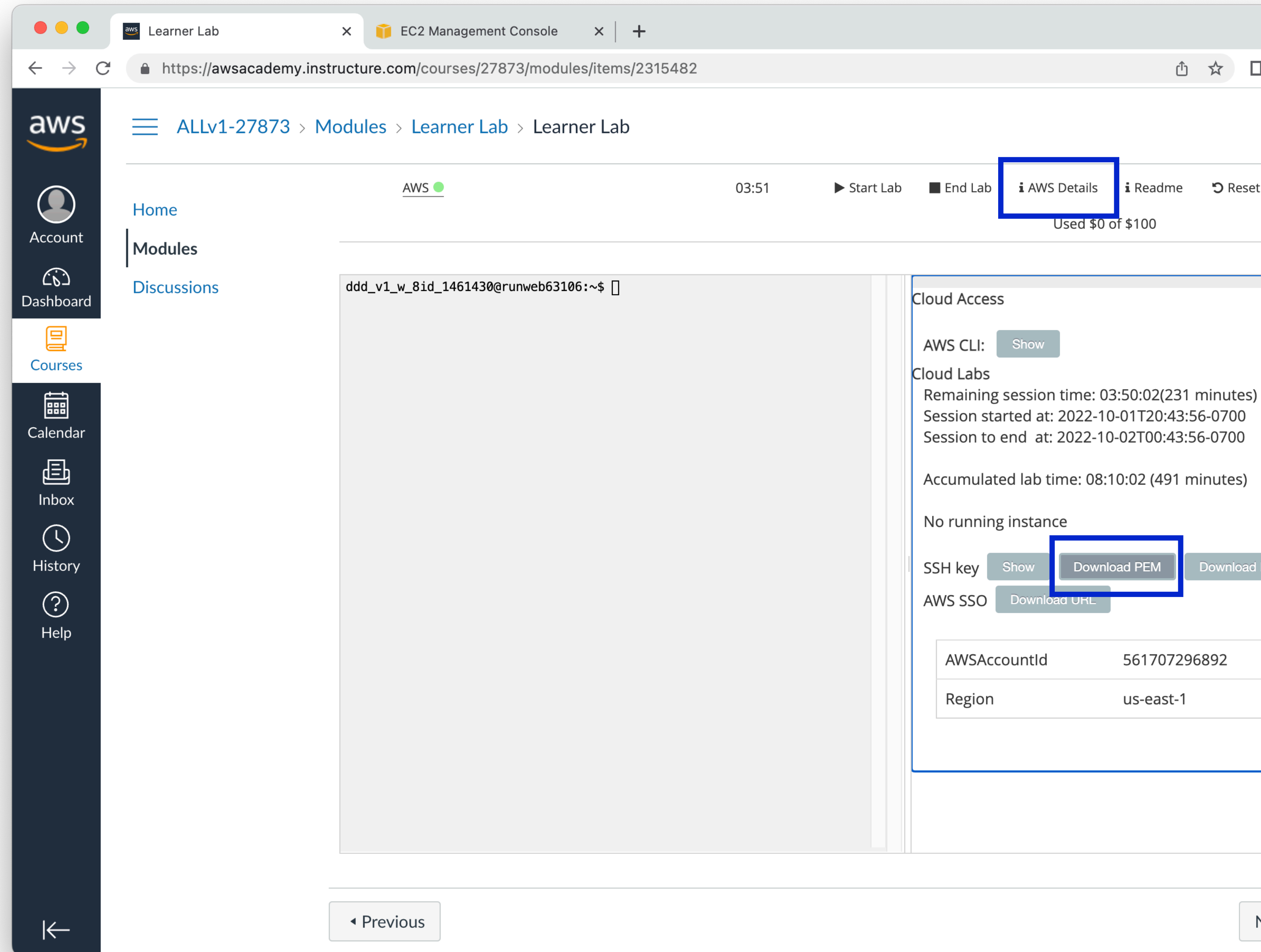


AWS Credentials

EC2 Security

Download SSH Keys

- Click on AWS Details
- Download the PEM file
 - May need the PPK file if you are using Putty on Windows
- You'll need this for SSH Terminal access and File Transfer
- Save someplace you'll remember!



The screenshot shows the AWS Academy Learner Lab interface. The browser tabs include 'Learner Lab' and 'EC2 Management Console'. The URL is <https://awsacademy.instructure.com/courses/27873/modules/items/2315482>. The navigation bar shows 'ALLv1-27873 > Modules > Learner Lab > Learner Lab'. The sidebar on the left contains navigation options: Account, Dashboard, Courses, Calendar, Inbox, History, and Help. The main content area shows a terminal window with the prompt `ddd_v1_w_8id_1461430@runweb63106:~$`. On the right, the 'AWS Details' sidebar is open, showing session information and a table of AWS account details. The 'Download PEM' button is highlighted with a blue box.

Navigation: Home, Modules, Discussions

Session Information:

- AWS
- 03:51
- Start Lab
- End Lab
- AWS Details (Used \$0 of \$100)
- Readme
- Reset

Cloud Access

- AWS CLI: Show

Cloud Labs

- Remaining session time: 03:50:02(231 minutes)
- Session started at: 2022-10-01T20:43:56-0700
- Session to end at: 2022-10-02T00:43:56-0700
- Accumulated lab time: 08:10:02 (491 minutes)

No running instance

SSH key: Show, Download PEM, Download

AWS SSO: Download URL

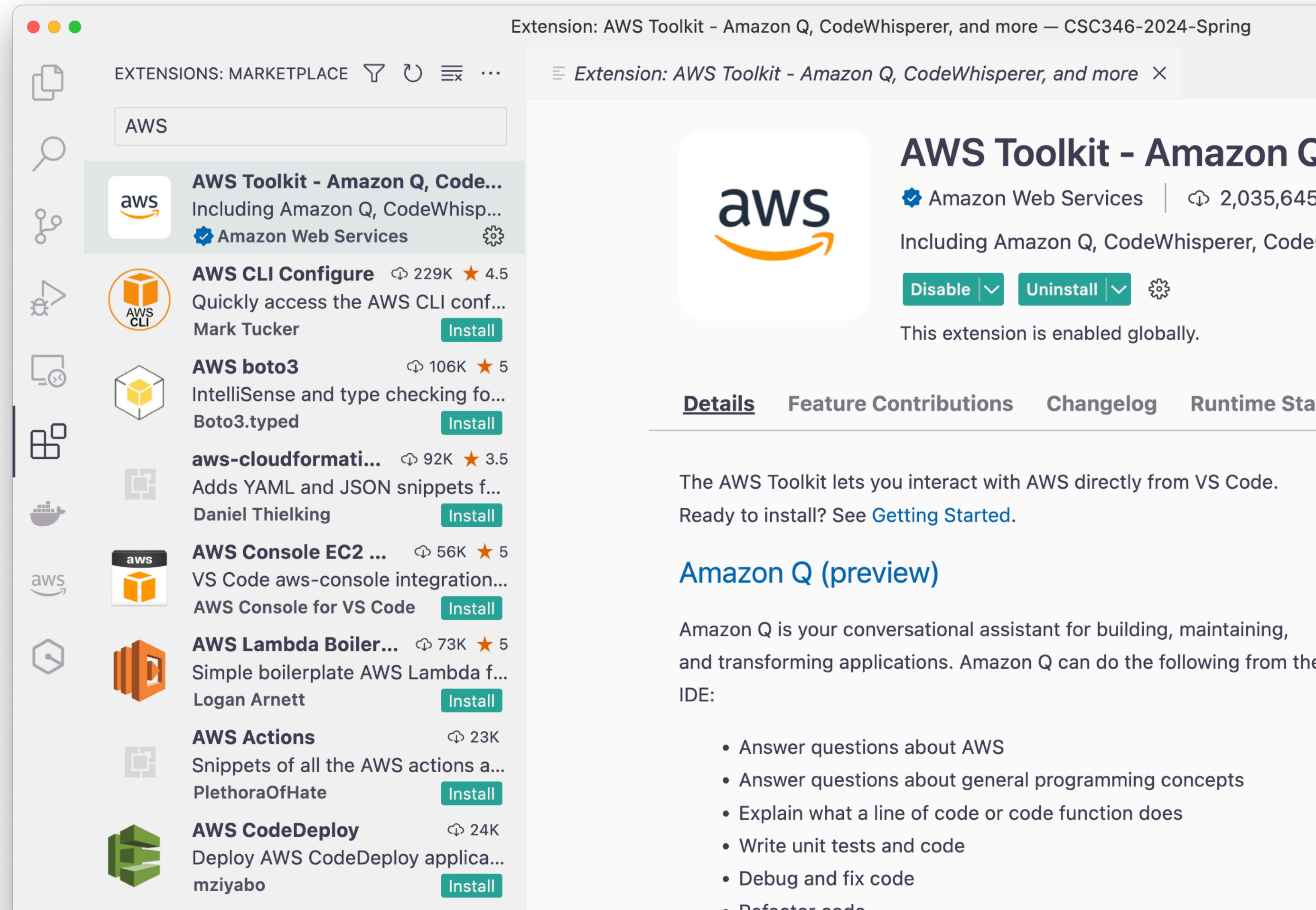
AWSAccountId	561707296892
Region	us-east-1

Navigation: Previous

AWS VS Code Extension

Not required, but highly recommended. Simplifies many things

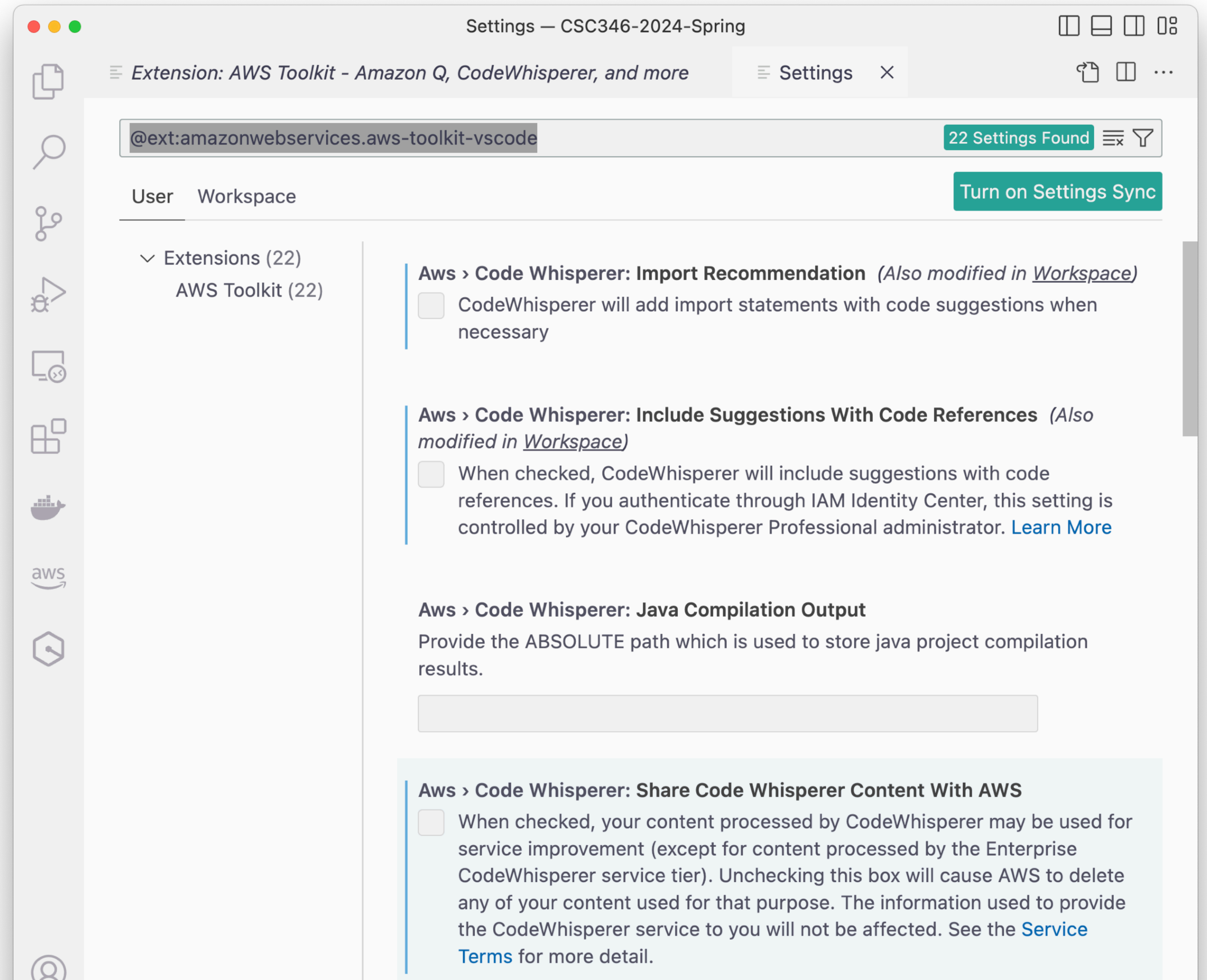
- In VS Code go to the Extensions section of the left mode sidebar
- Search for AWS
- Install the “AWS Toolkit” extension from Amazon Web Services



AWS VS Code Extension

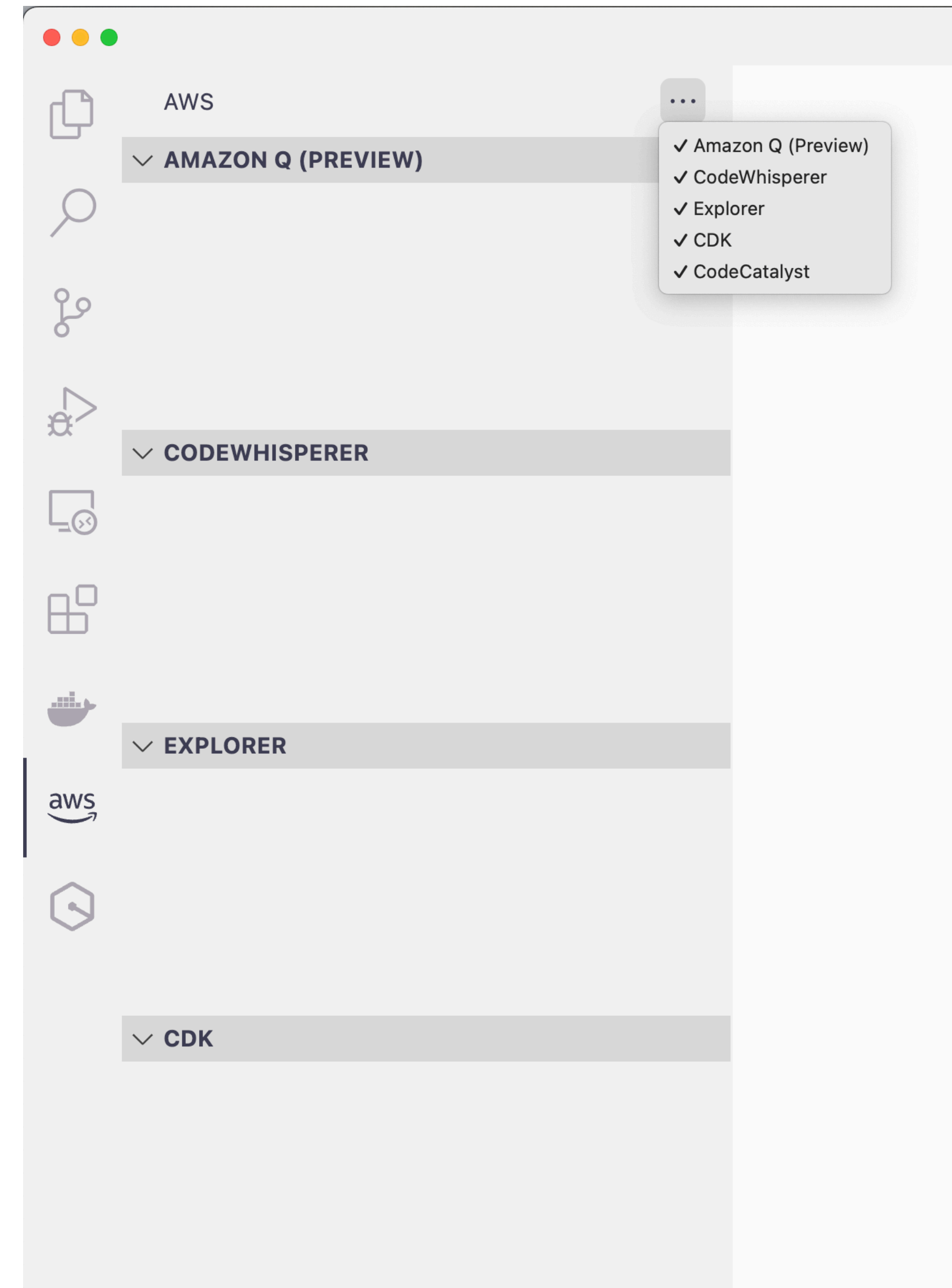
Configuration

- Turn off all of AWS “AI” spam
- Click the little Gear next to the Uninstall button
- Choose “Extension Settings”
- Scroll through and uncheck anything “Code Whisper” related.
- Close Settings



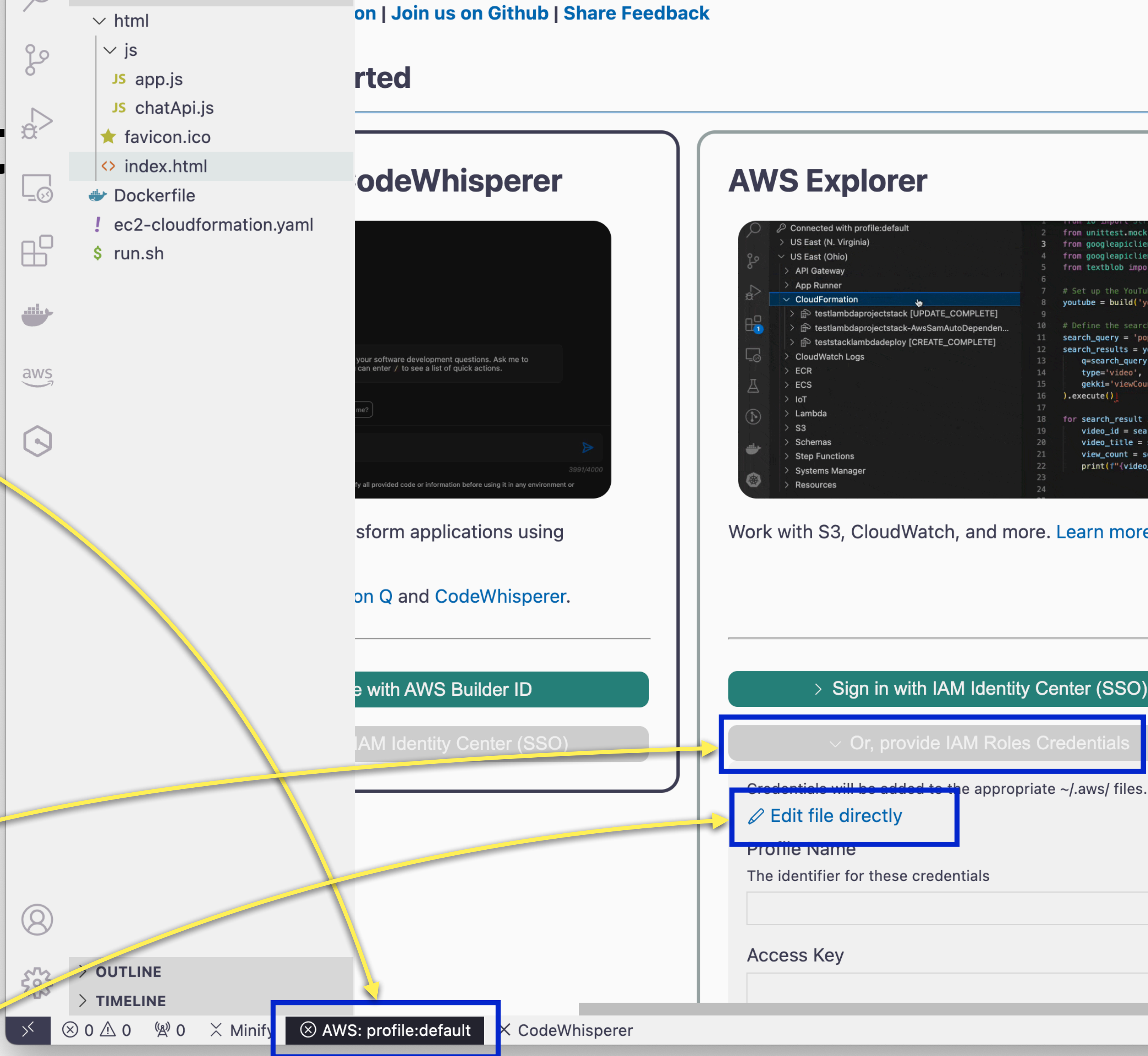
AWS VS Code Extension Configuration

- Click on the AWS Extension in the left sidebar
- Click on the three “...” menu in the upper pane and uncheck everything except “Explorer”



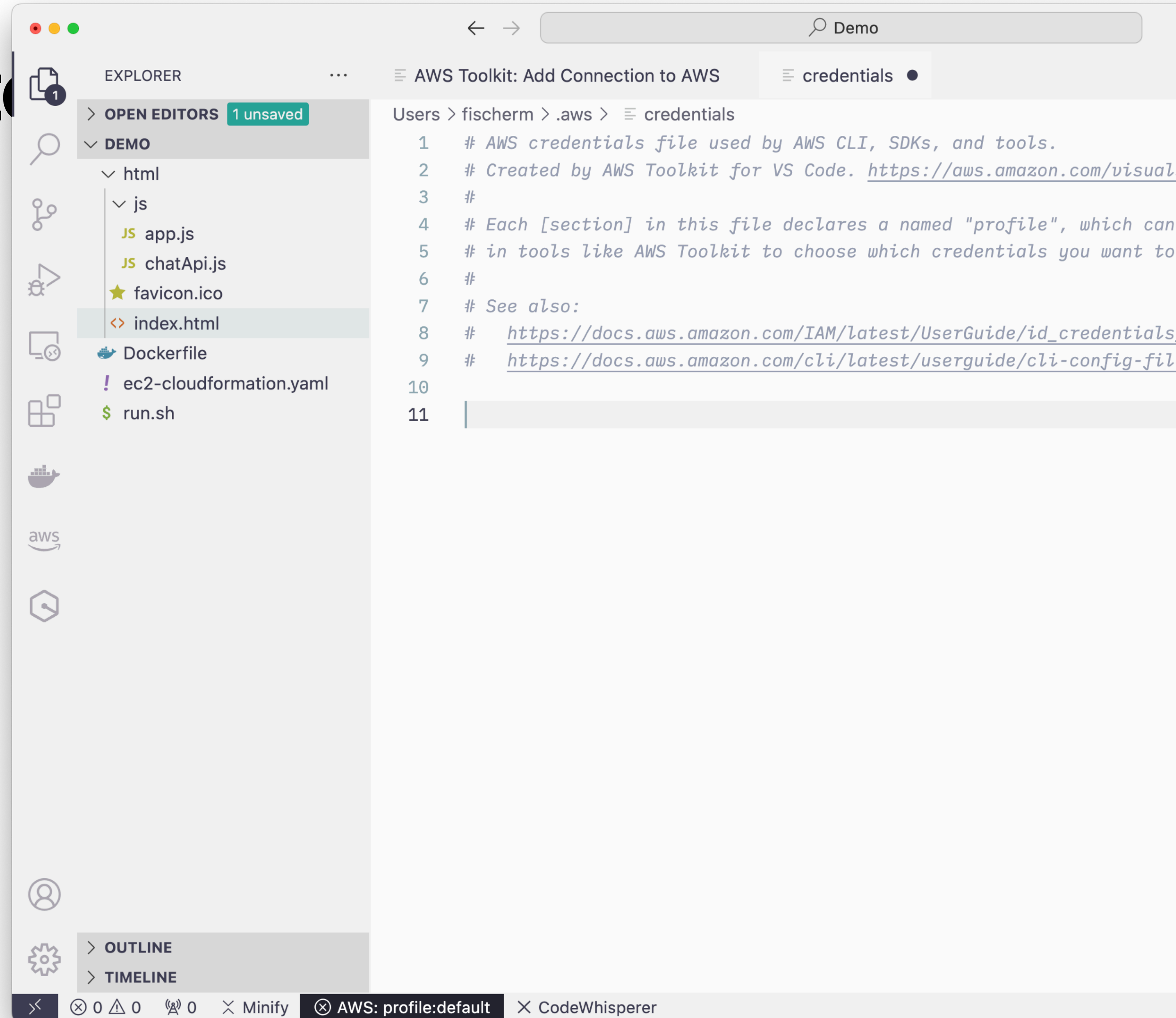
AWS VS Code Extension Configuration

- At the bottom of the window there should be a section that says “AWS: profile”
 - Restart VS Code if this isn't showing up
- Click on that to bring up a Getting Started document
- Under AWS Explorer click on the “Or provide IAM Roles Credentials”
- Click on “Edit file directly”



AWS VS Code Extension Configuration

- A new “credentials” document will open.
- We will paste in credentials we get from AWS Academy



CLI Credentials

Download SSH Keys

- Go back to AWS Academy
- Click on AWS Details
- Click on the “Show” button next to AWS CLI

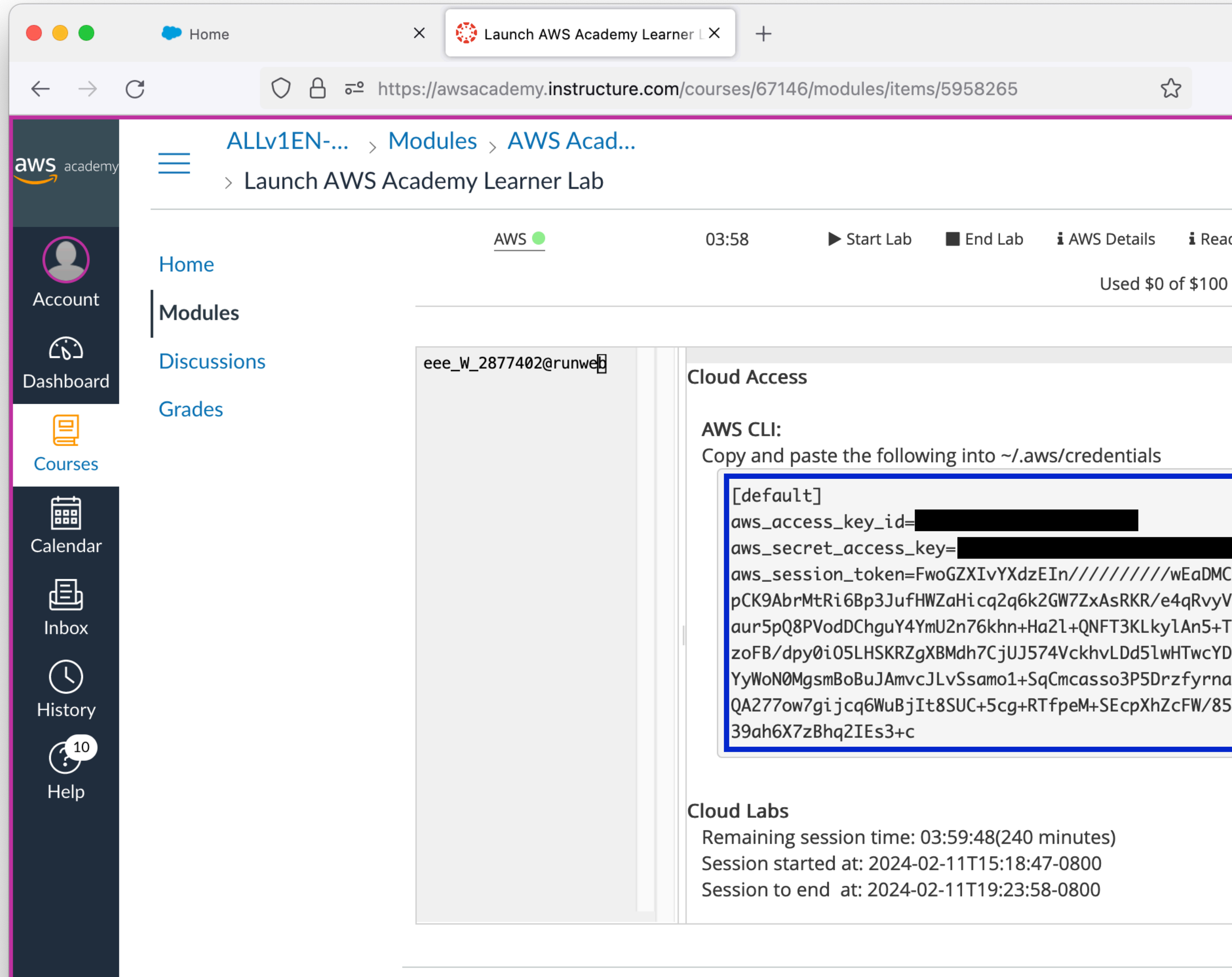
The screenshot shows the AWS Academy interface. The browser address bar displays the URL: `https://awsacademy.instructure.com/courses/27873/modules/items/2315482`. The page title is "Learner Lab". The navigation menu includes "Home", "Modules", and "Discussions". The main content area shows a terminal window with the prompt `ddd_v1_w_8id_1461430@runweb63106:~$`. On the right side, the "AWS Details" panel is open, showing session information and a "Show" button next to "AWS CLI". The "Show" button is highlighted with a blue box. Below the "Show" button, there are buttons for "Download PEM" and "Download URL". At the bottom of the panel, there is a table with the following data:

AWSAccountId	561707296892
Region	us-east-1

CLI Credentials

Download SSH Keys

- A text box with credential information including the following is displayed:
 - `aws_access_key_id`
 - `aws_secret_access_key`
 - `aws_session_token`
- Copy all of the text inside the box, including `[default]`



The screenshot shows a web browser window with the URL `https://awsacademy.instructure.com/courses/67146/modules/items/5958265`. The page is titled "Launch AWS Academy Learner Lab" and displays a sidebar with navigation options: Home, Modules, Discussions, Grades, Account, Dashboard, Courses, Calendar, Inbox, History, and Help. The main content area shows a terminal window with the prompt `eee_w_2877402@runwe` and a "Cloud Access" section. The "AWS CLI:" section contains the following text: "Copy and paste the following into `~/.aws/credentials`". Below this, a blue-bordered box contains the following text:

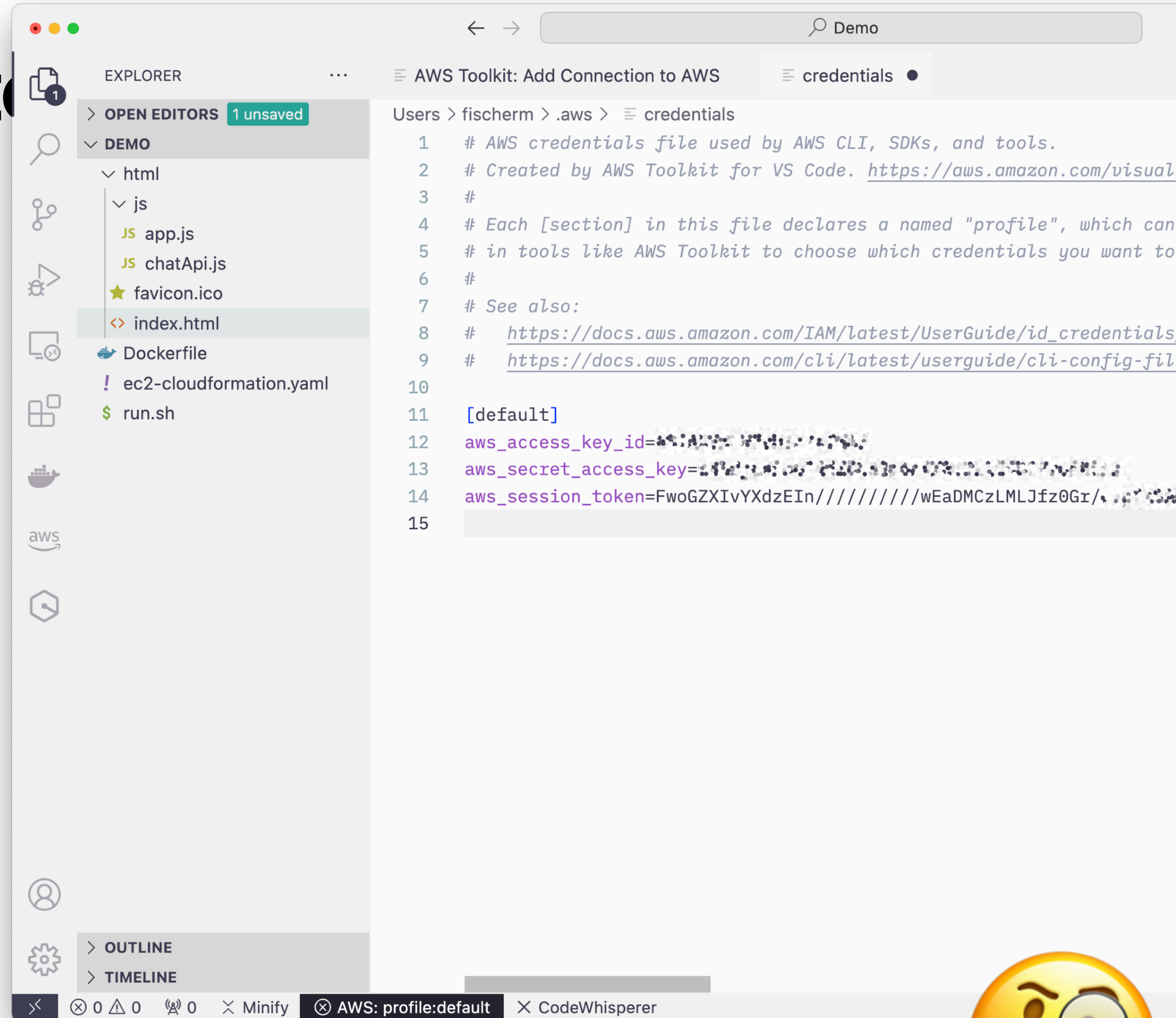
```
[default]
aws_access_key_id=[REDACTED]
aws_secret_access_key=[REDACTED]
aws_session_token=FwoGZXIvYXZlbnQv////////wEaDMC
pCK9AbrMtRi6Bp3JufHWZaHicq2q6k2GW7ZxAsRKR/e4qRvyV
aur5pQ8PVodDChguY4YmU2n76khn+Ha2l+QNFT3KLky1An5+T
zoFB/dpy0i05LHskRZgXBMDh7CjUJ574VckhvLDd5lwHTwcYD
YyWoN0MgsmBoBuJAmvcJLvSsamo1+SqCmcasso3P5Drzfyrna
QA277ow7gijq6WuBjIt8SUC+5cg+RTfpeM+SEcpXhZcFW/85
39ah6X7zBhq2IEs3+c
```

Below the "Cloud Access" section, the "Cloud Labs" section shows the following information:

- Remaining session time: 03:59:48(240 minutes)
- Session started at: 2024-02-11T15:18:47-0800
- Session to end at: 2024-02-11T19:23:58-0800

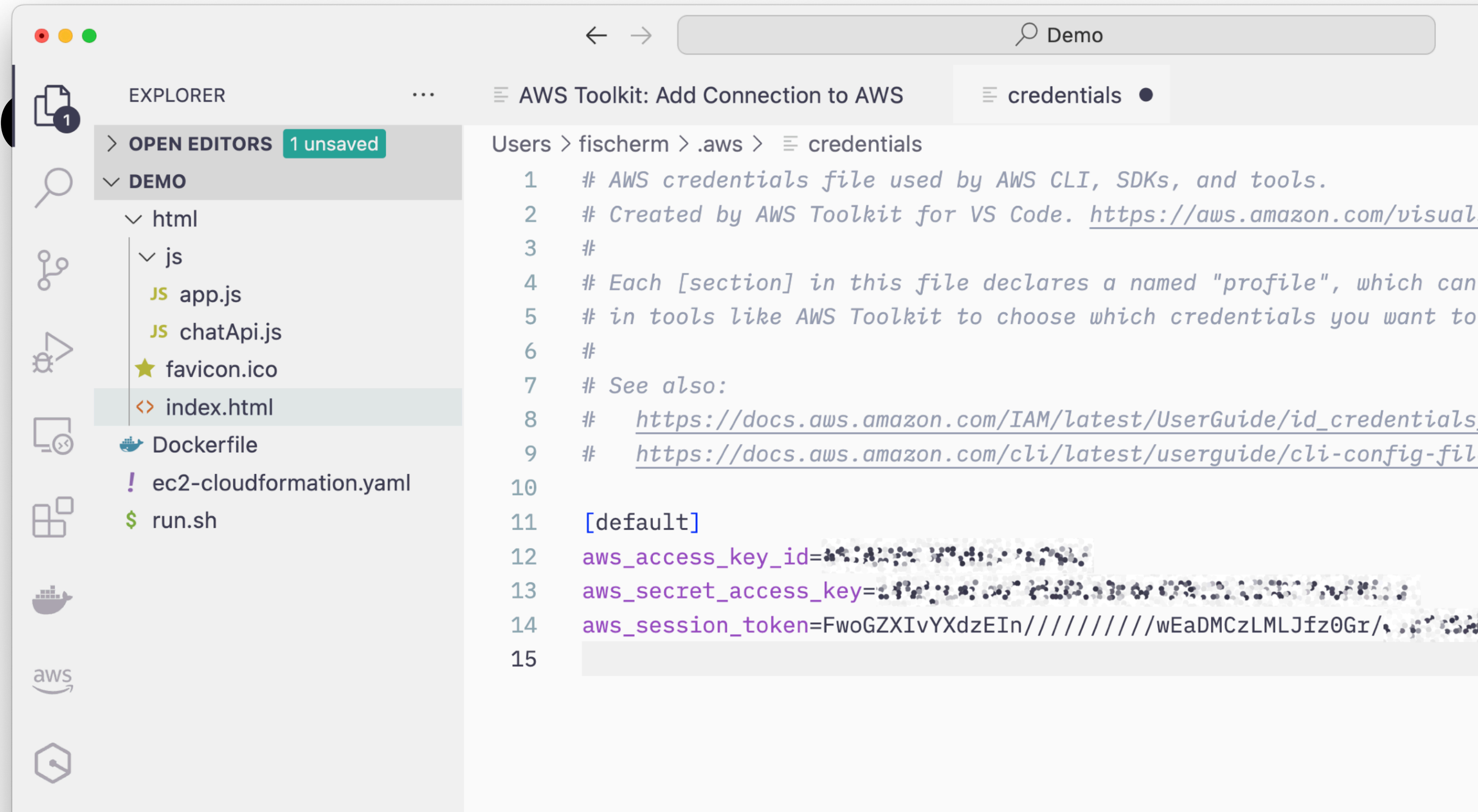
AWS VS Code Extension Configuration

- A new “credentials” document will open.
- We will paste in credentials we get from AWS Academy
- Save the document



AWS VS Code Extension Configuration

- A new “credentials” document will open.
- We will paste in credentials we get from AWS Academy
- Save the document



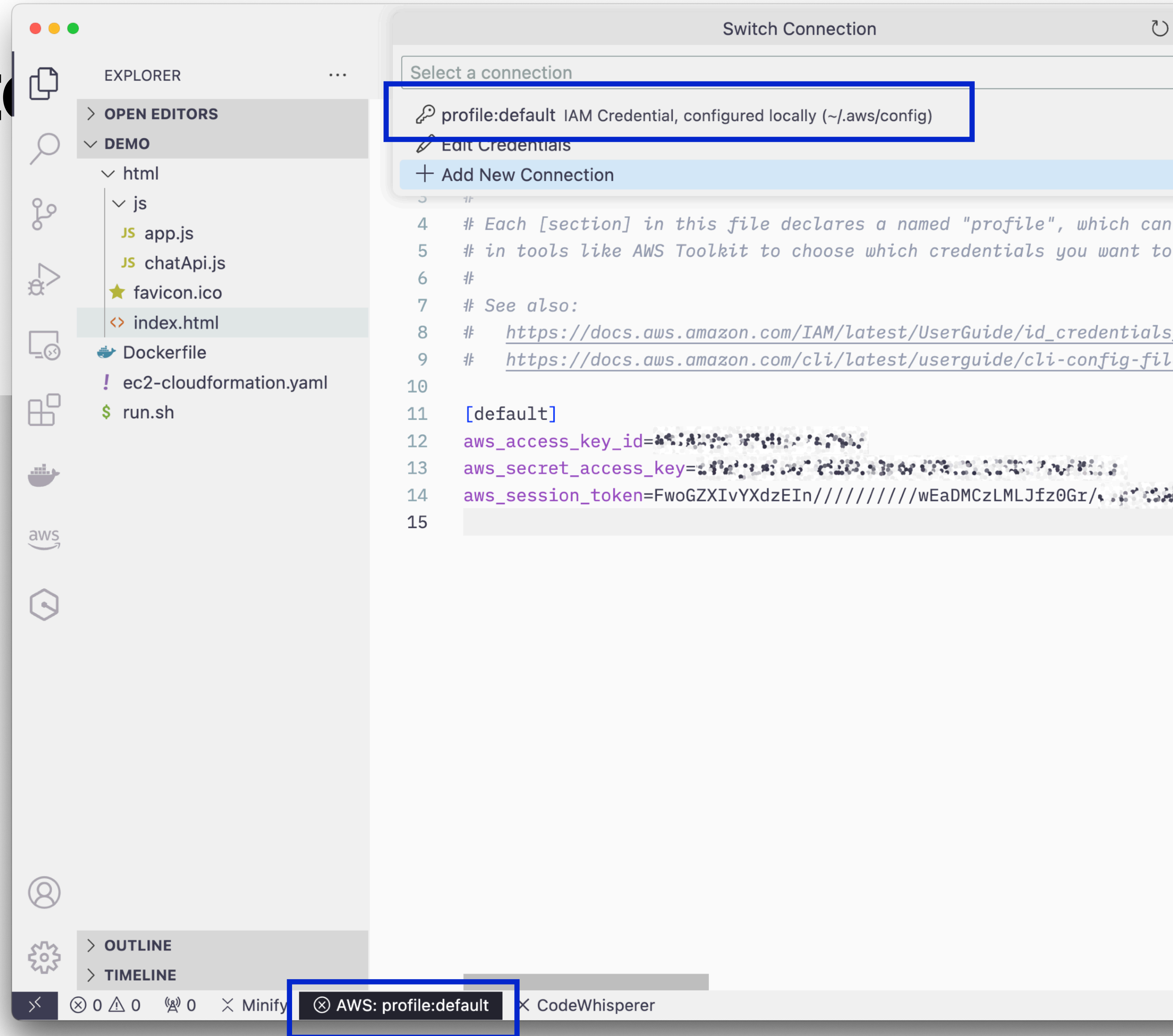
Important!

You will have to get new CLI credentials for each AWS Academy Lab session. Sessions are only valid for 4 hours at a time.

Copy them into this file and replace the old ones each time.

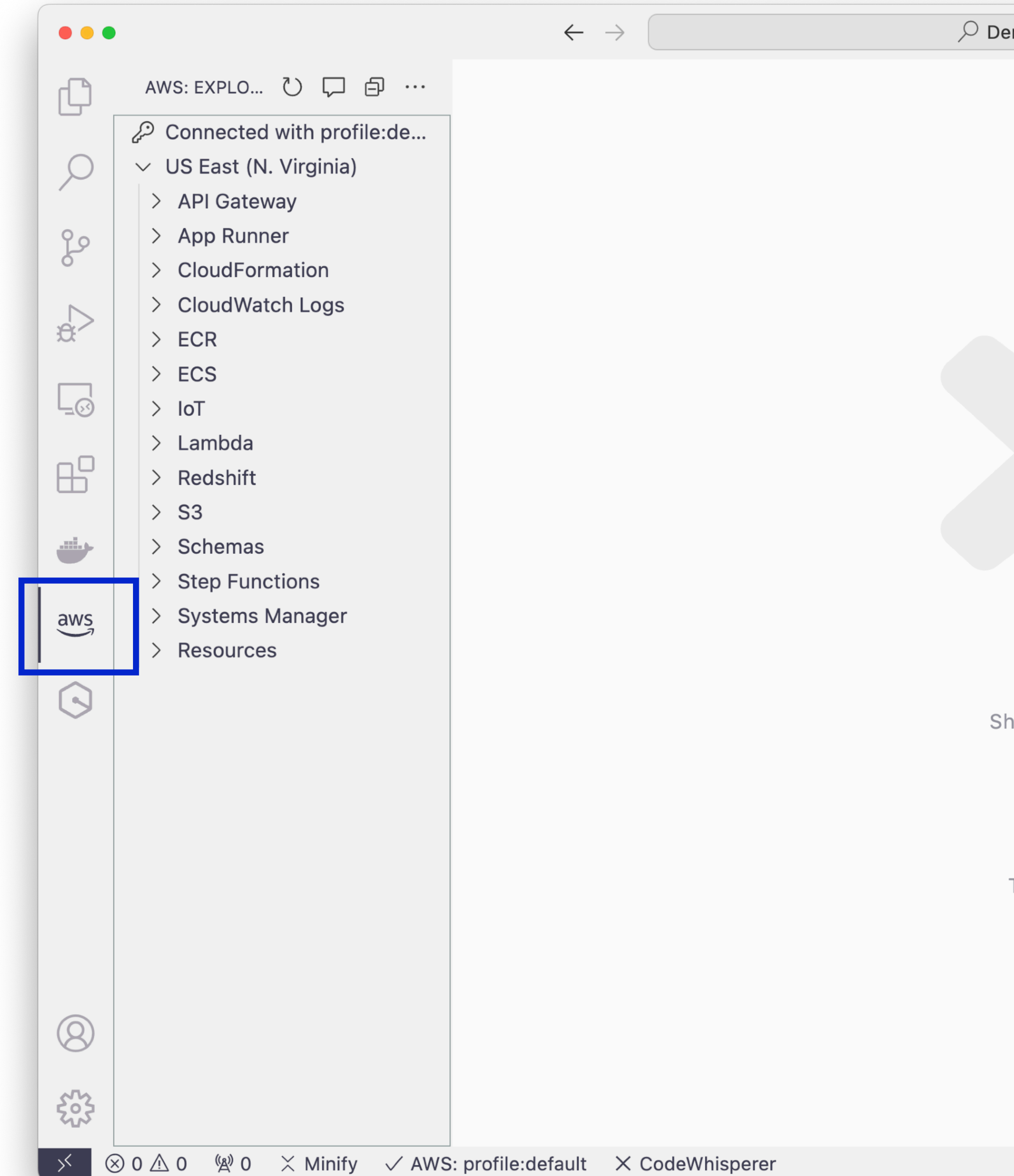
AWS VS Code Extension Configuration

- Click on the “AWS: profile” in the window footer again to open the profile selection
- You should see your new default profile in the list now
- Click on that line to activate it.



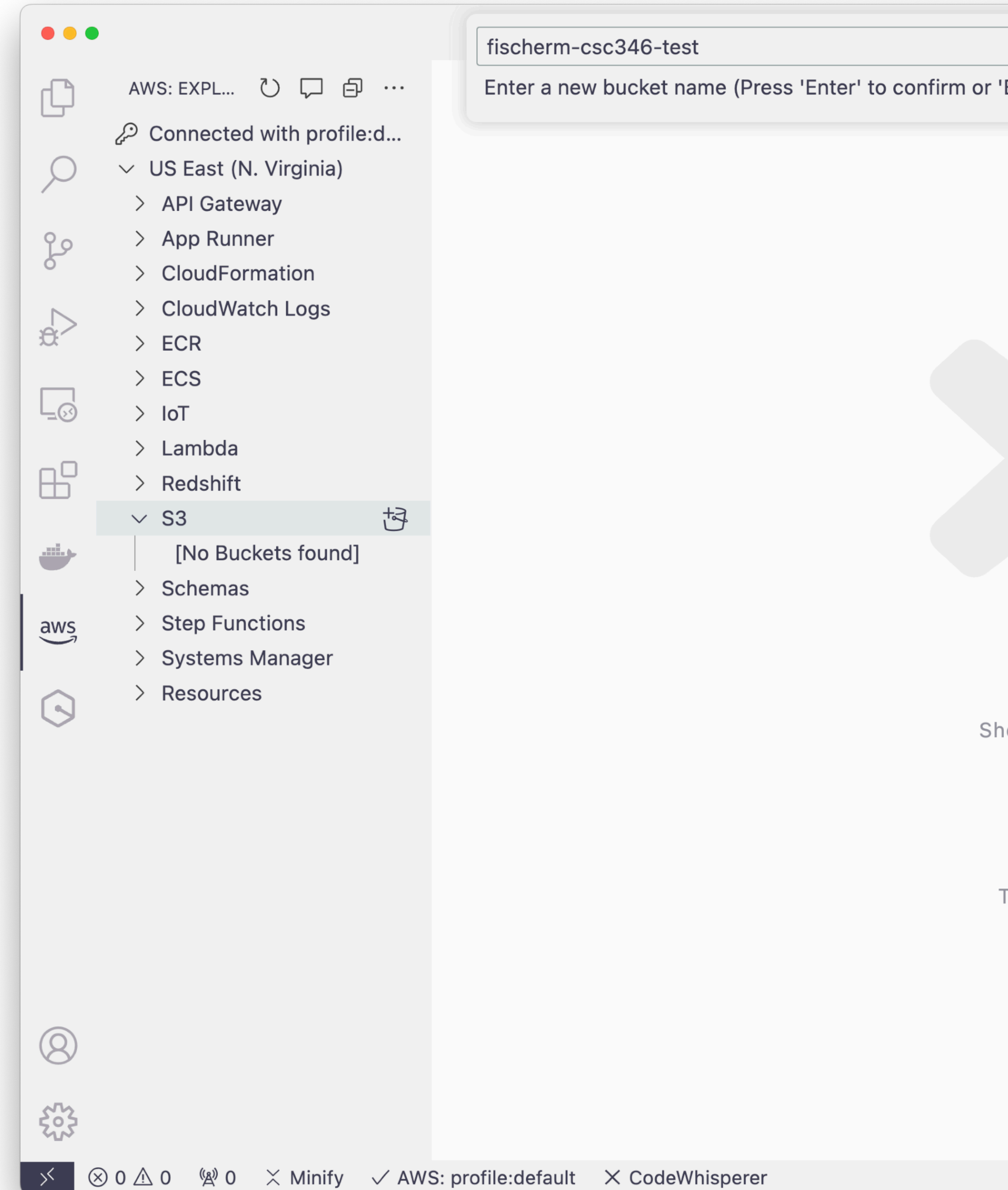
AWS VS Code Extension Configuration

- Clicking on the AWS Extension in the left sidebar will now bring up the resource browser for the current region (us-east-1)
- There's probably nothing there yet since this is a new empty account



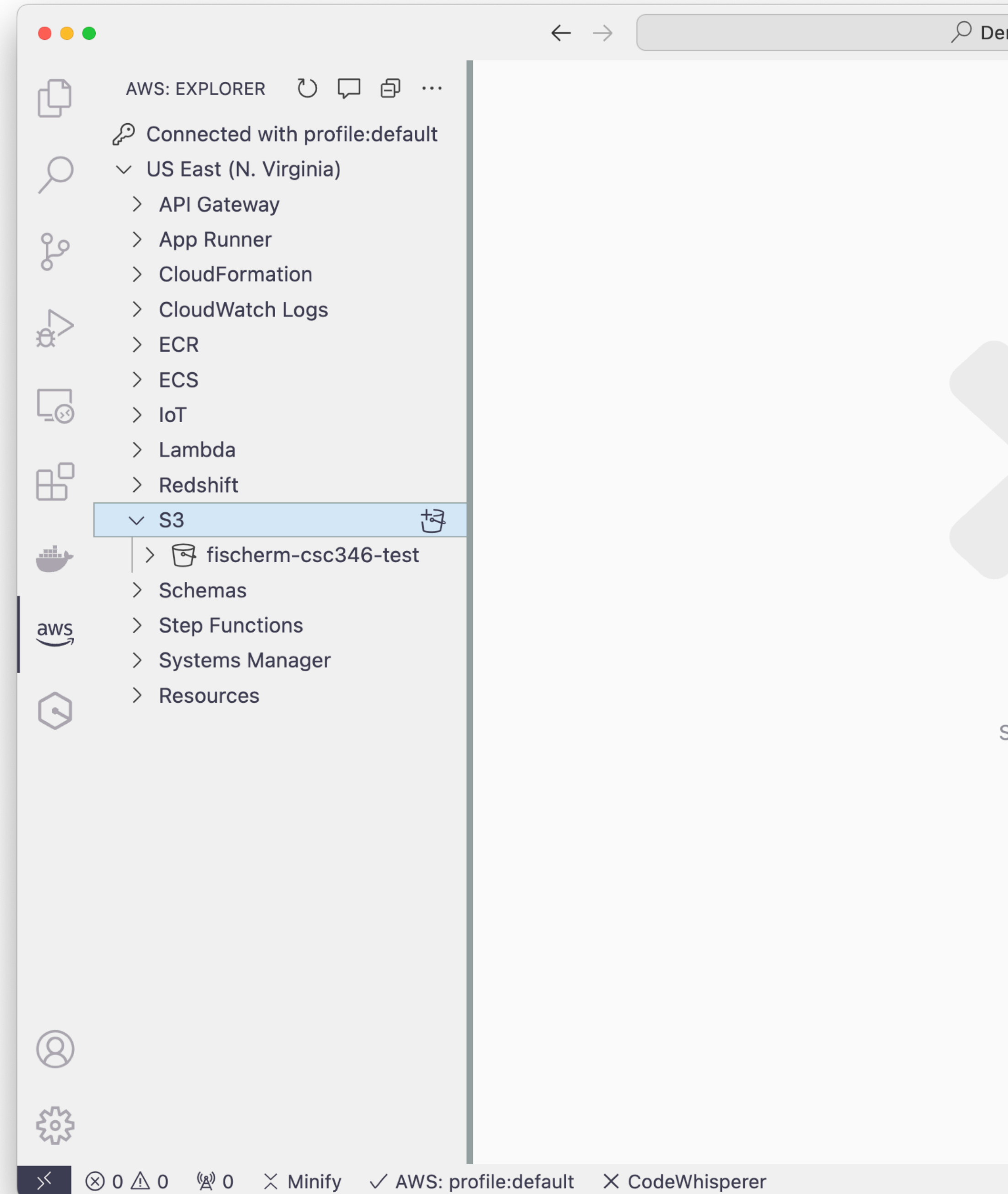
AWS VS Code Extension Configuration

- Click on the S3 section
- Click on the little +Bucket Icon
- Enter in the name of your bucket
 - Note bucket names must be globally unique among all AWS accounts
- Hit the “Return” key to make it



AWS VS Code Extension Configuration

- You made your first cloud resource!



AWS Academy

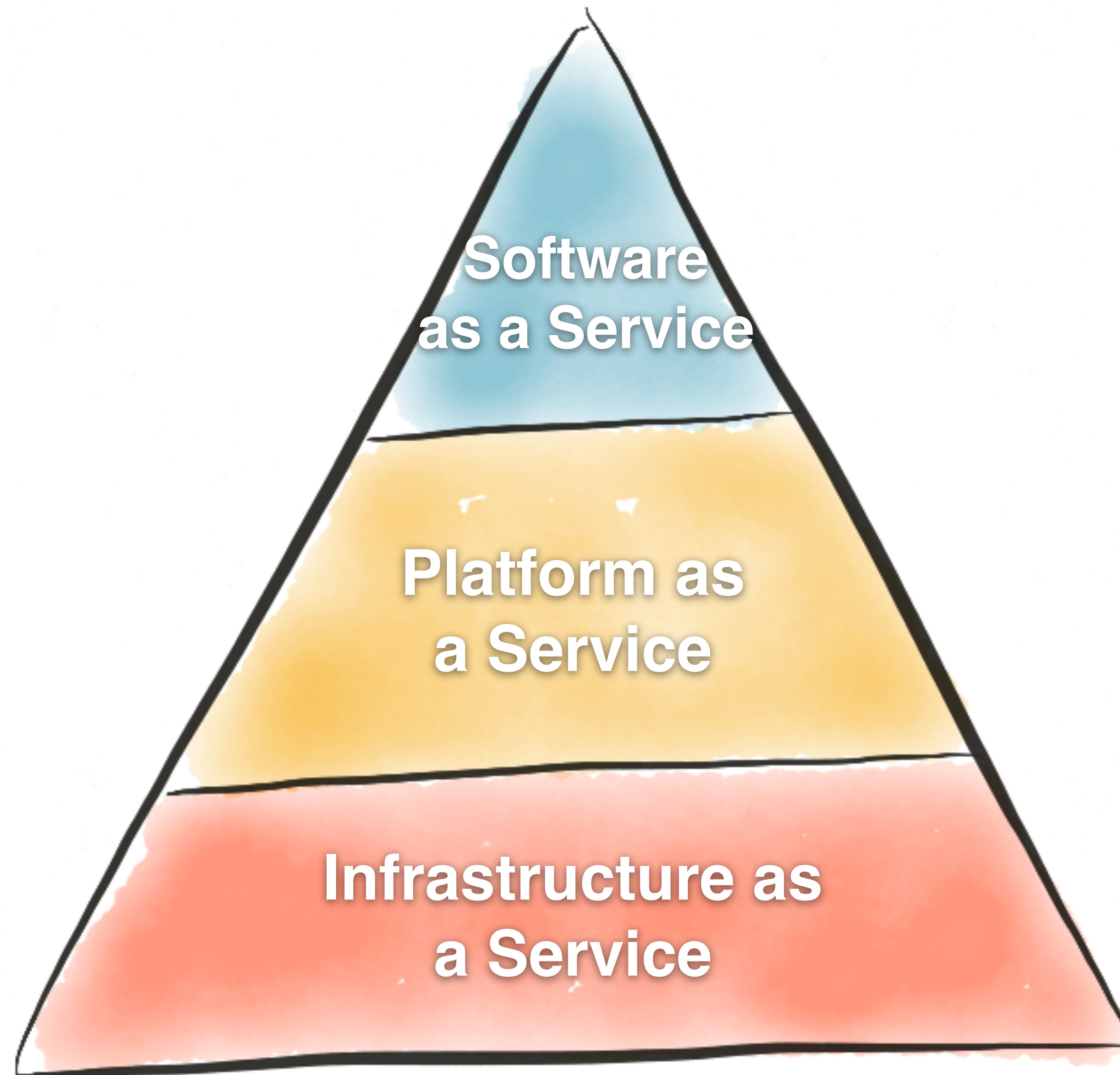
End Lab Session

- When you're done, make a habit of ending your lab session in AWS Academy.
- If you forget, it will automatically time out after 4 hours, but you're charged for any running resources during that whole time.

End Lab Button

The screenshot shows a web browser window with the URL `https://awsacademy.instructure.com/courses/27873/modules/items/2315482`. The page title is "Learner Lab". The breadcrumb navigation shows "ALLv1-27873 > Modules > Learner Lab > Learner Lab". The main content area has a header with "AWS" and a red dot, and a row of buttons: "Start Lab", "End Lab", "AWS Details", "Readme", "Reset", and a close icon. The "End Lab" button is highlighted with a blue box. An arrow points from the text "End Lab Button" to this button. Below the buttons is a terminal window showing the prompt `ddd_v1_w_8id_1461430@runweb63107:~$` and a language dropdown menu set to "EN-US".

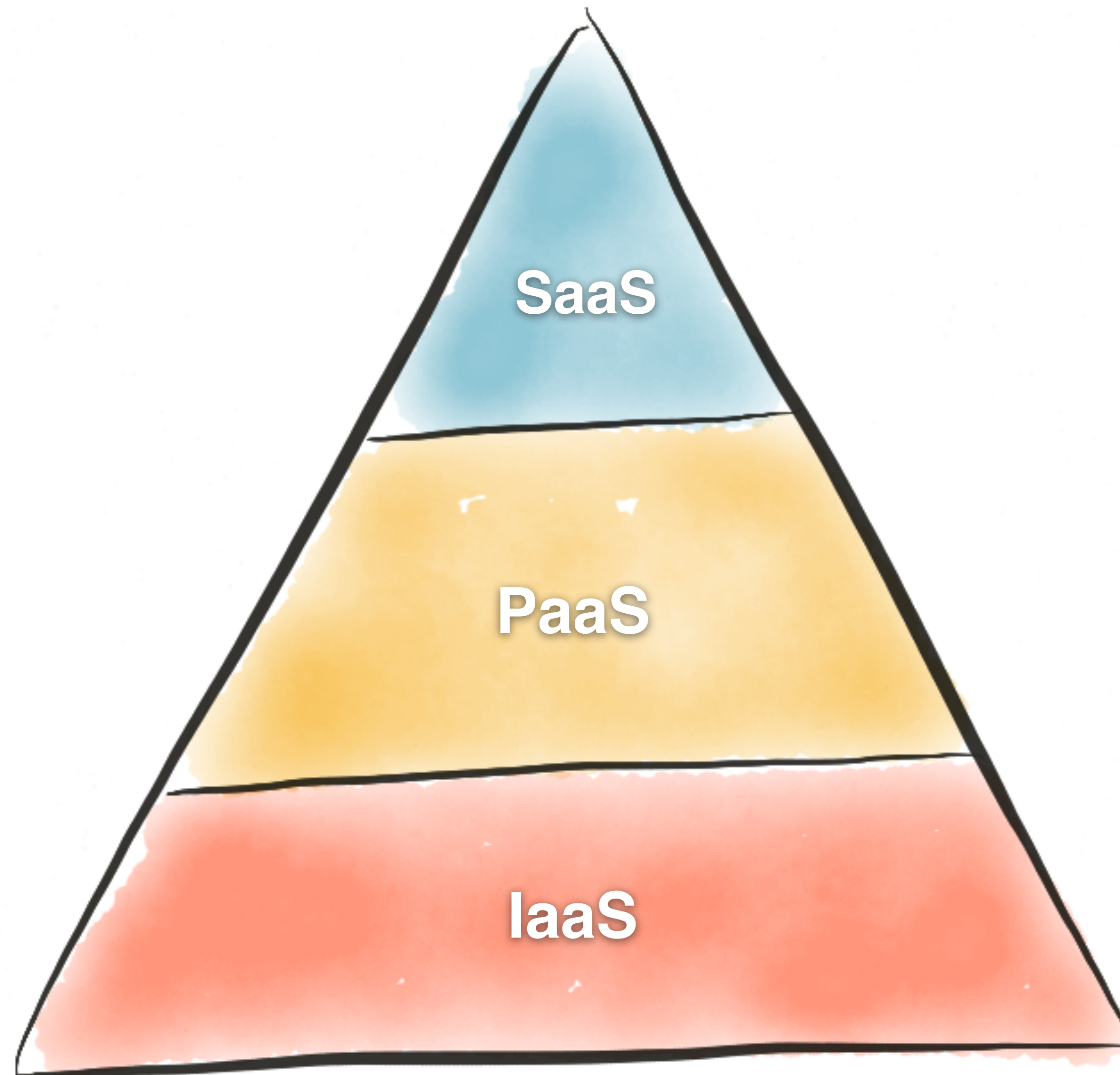
AWS Overview



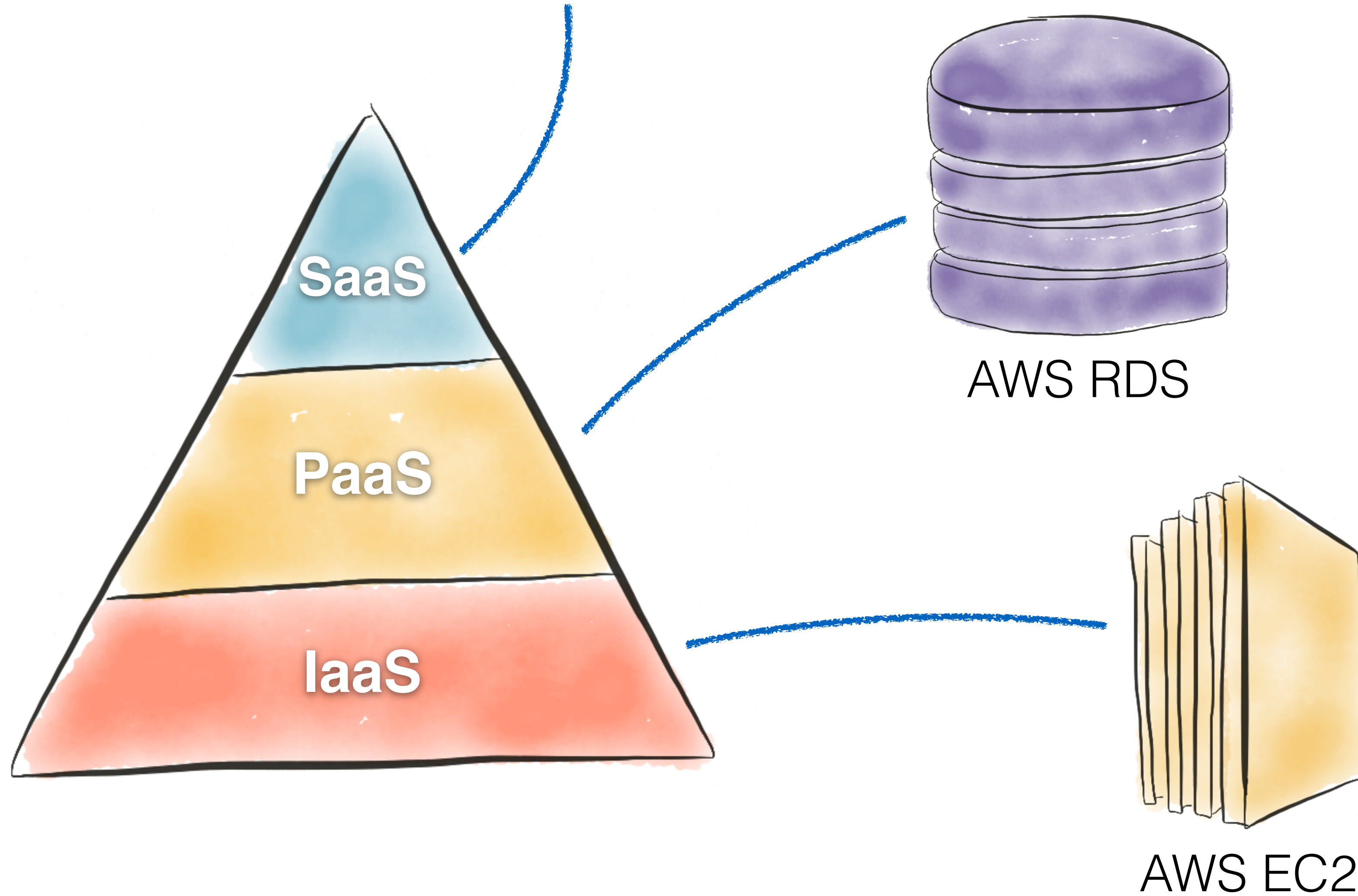
**Software
as a Service**

**Platform as
a Service**

**Infrastructure as
a Service**



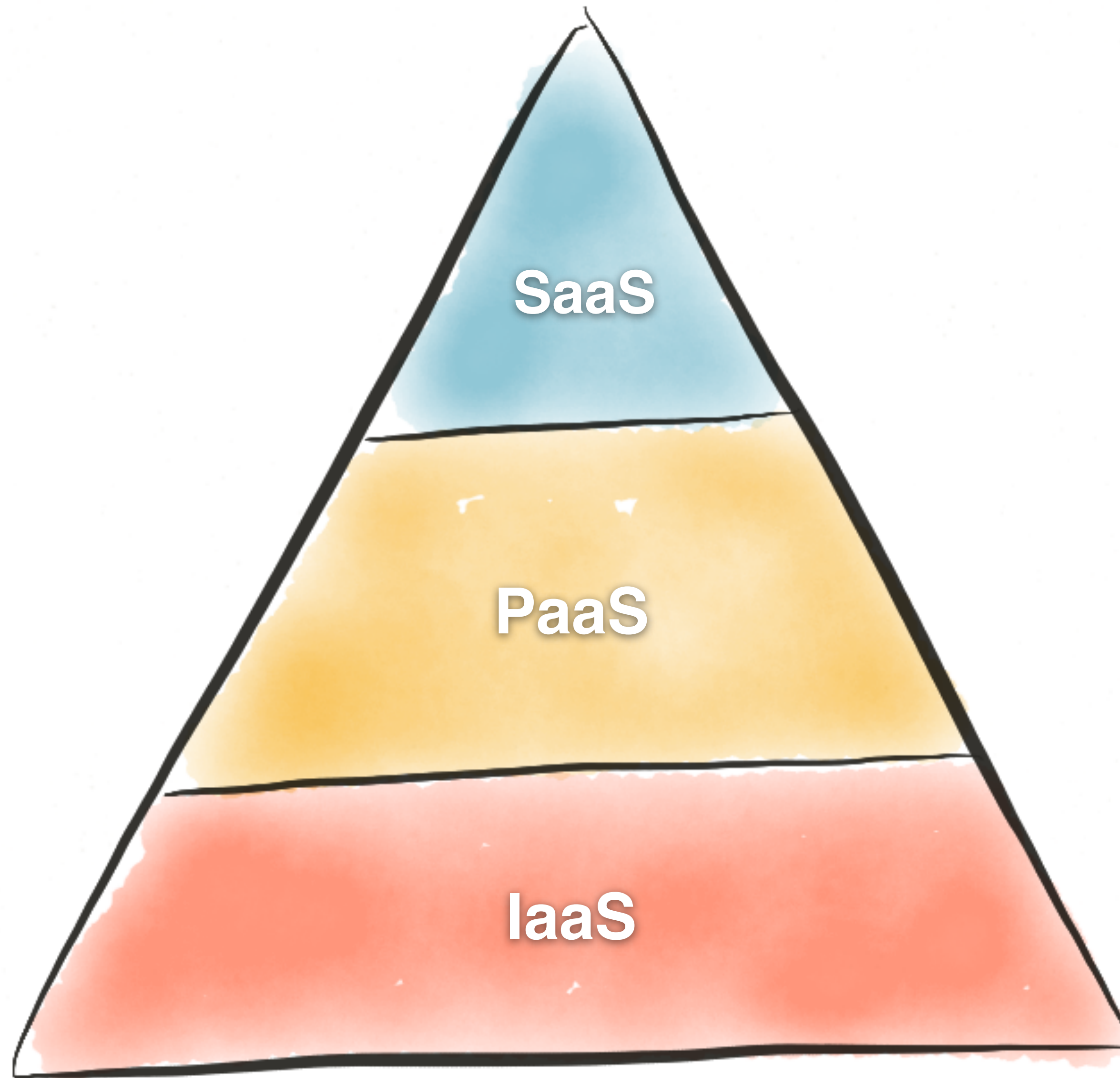
box



Less
Maintenance



More
Control

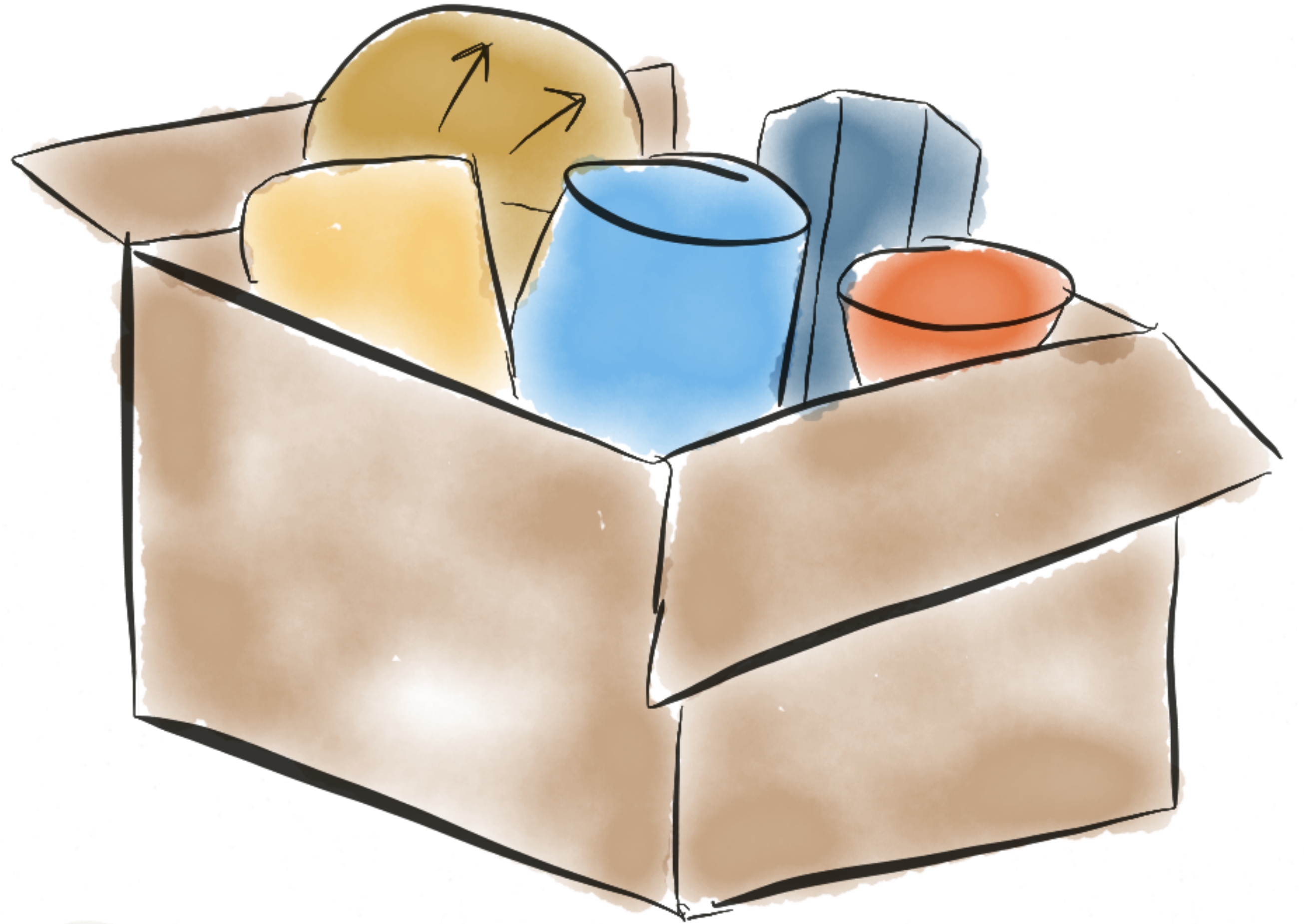


More \$\$
Less Time



Less \$\$
More Time

AWS Services



Three Main Categories

Compute	Storage	Network
EC2	S3	S3
RDS	RDS	VPC
Lambda	EBS	VPN

Compare On-Prem to Cloud

On-Prem	AWS
VMWare	EC2
Isilon / Synology / NAS	EFS
F5 bigIP	ELB / ALB
Firewalls	Security Groups

EC2

- Elastic Cloud Compute
- Virtual Machines (VMs)
- Linux or Windows
- Basic Server Building Block
- Provision, log in, configure as you like

EBS

- Elastic Block Storage
- Standard block storage attached to EC2 instances
- Multiple volumes can be attached to an instance
- Snapshots

EFS

- Elastic File System
- Amazon's Managed NFS Service
- Unix-centric shared file system
 - Mount a single file system across many application hosts
 - Store application files that need to be shared

S3

- Simple Storage System
- Basic Object Storage
 - Key/Value Pairs
 - NOT Block Storage! Cannot directly attach to EC2 Instances
- Good for storing lots of data independent of a single server
- Access through APIs and HTTP
- Much cheaper than EBS

RDS

- Relational Database Service
- PaaS for Databases
 - Oracle, MSSQL, MySQL, PostgreSQL, Aurora
 - AWS manages the servers, minor patching
 - Less management on your part, also less configurability

ELB / ALB

- Elastic Load Balancer / Application Load Balancer
- Simpler, dumber versions of an F5
- Accepts incoming traffic on some port, balances to n backend servers
- Usually public-facing, in public subnets
- SSL/TLS Termination

Regions

- Geographic location of AWS data centers
- Oregon, Virginia, London, etc.
- Each Region contains multiple physical data centers, each with independent power and networking
- Resources must be specified in a particular Region
 - We use Oregon (us-west-2) for almost everything

Availability Zone

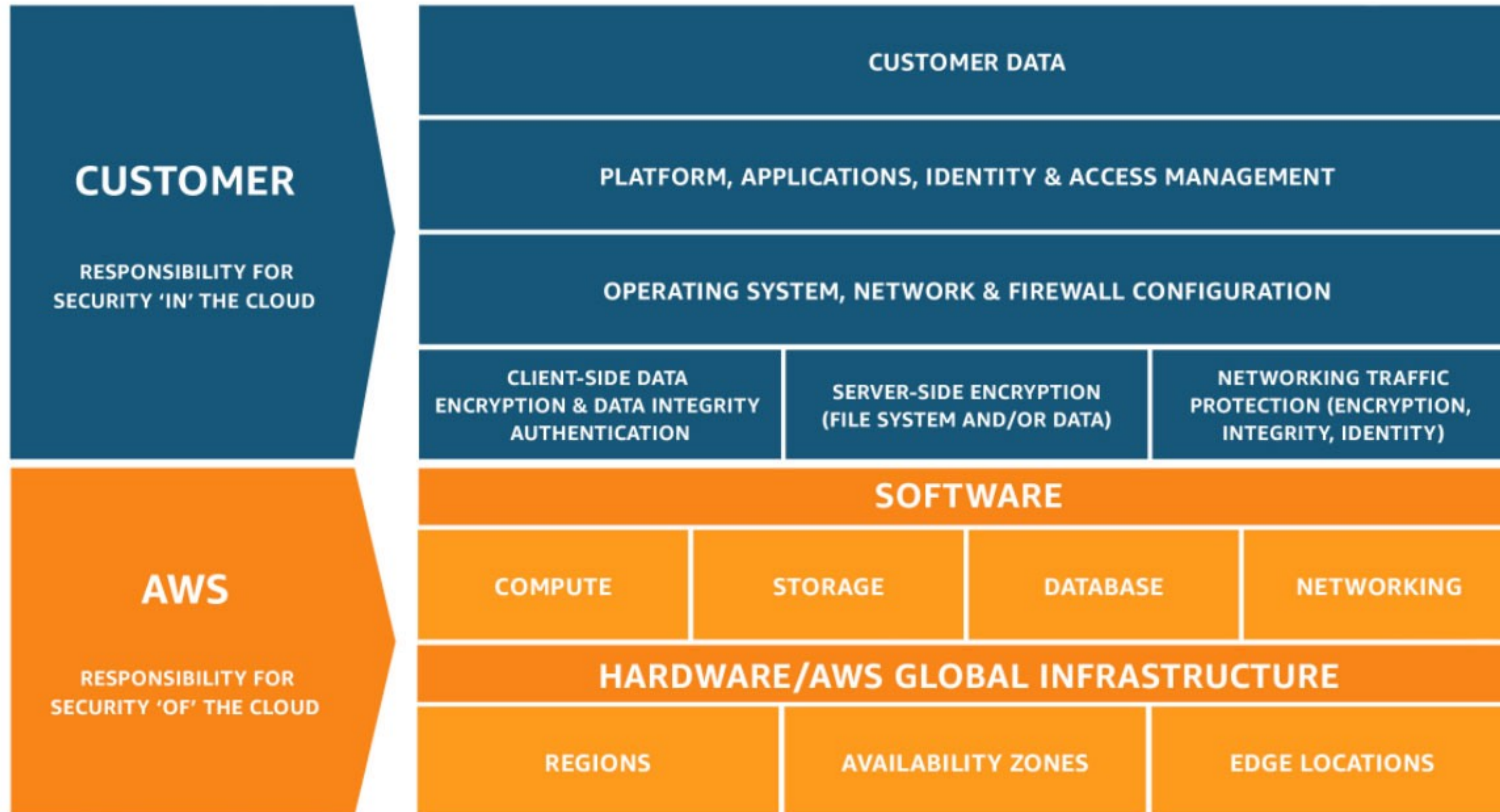
- Within a region, there are multiple Availability Zones
- Each AZ has separate power and networking
- Designed for physical redundancy
- High Availability is achieved by deploying resources into multiple AZs
- Many services (RDS, ELBs, etc) are Multi-AZ capable

VPC

- Virtual Private Cloud
- AWS's Network Construct
- Subnets, Route Table, ACLs, VPNs, etc.
- Almost all compute resources must be assigned to a subnet in a VPC
 - (EC2, RDS, ELBs, EFS, etc)

AWS Shared Responsibility Model

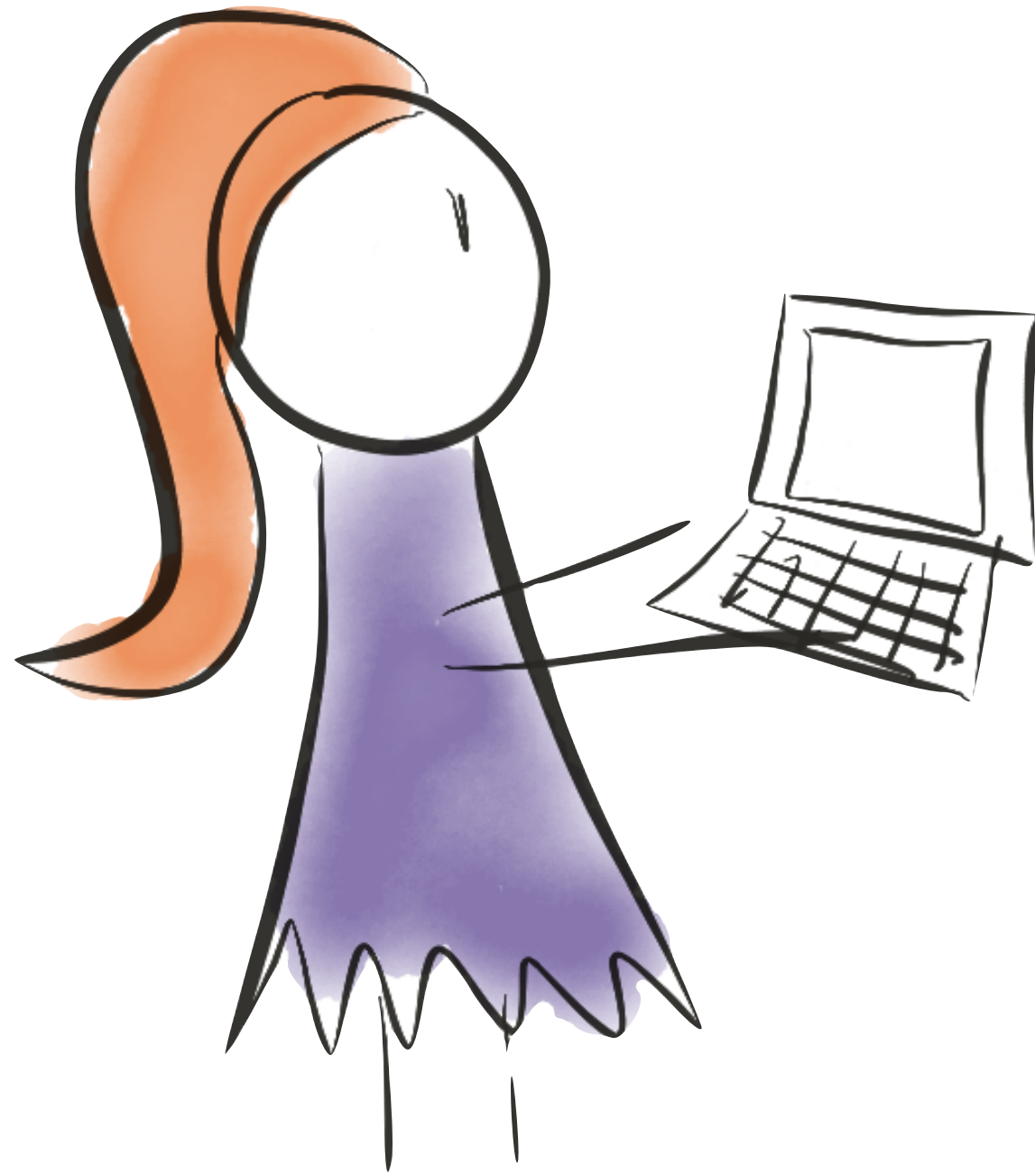
<https://aws.amazon.com/compliance/shared-responsibility-model/>



Permissions Model

Can I push this button?

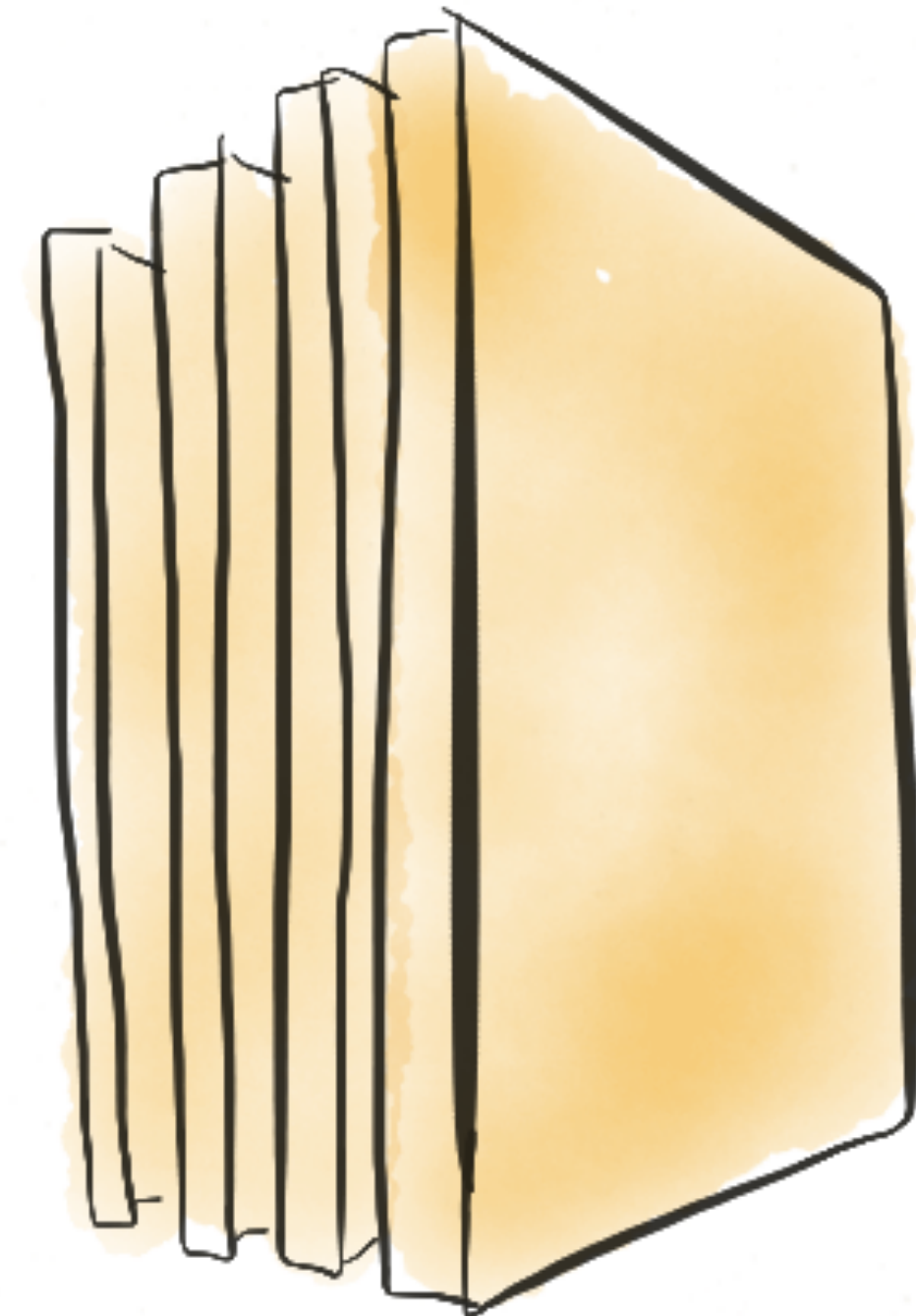
Permissions in 3 parts



Someone

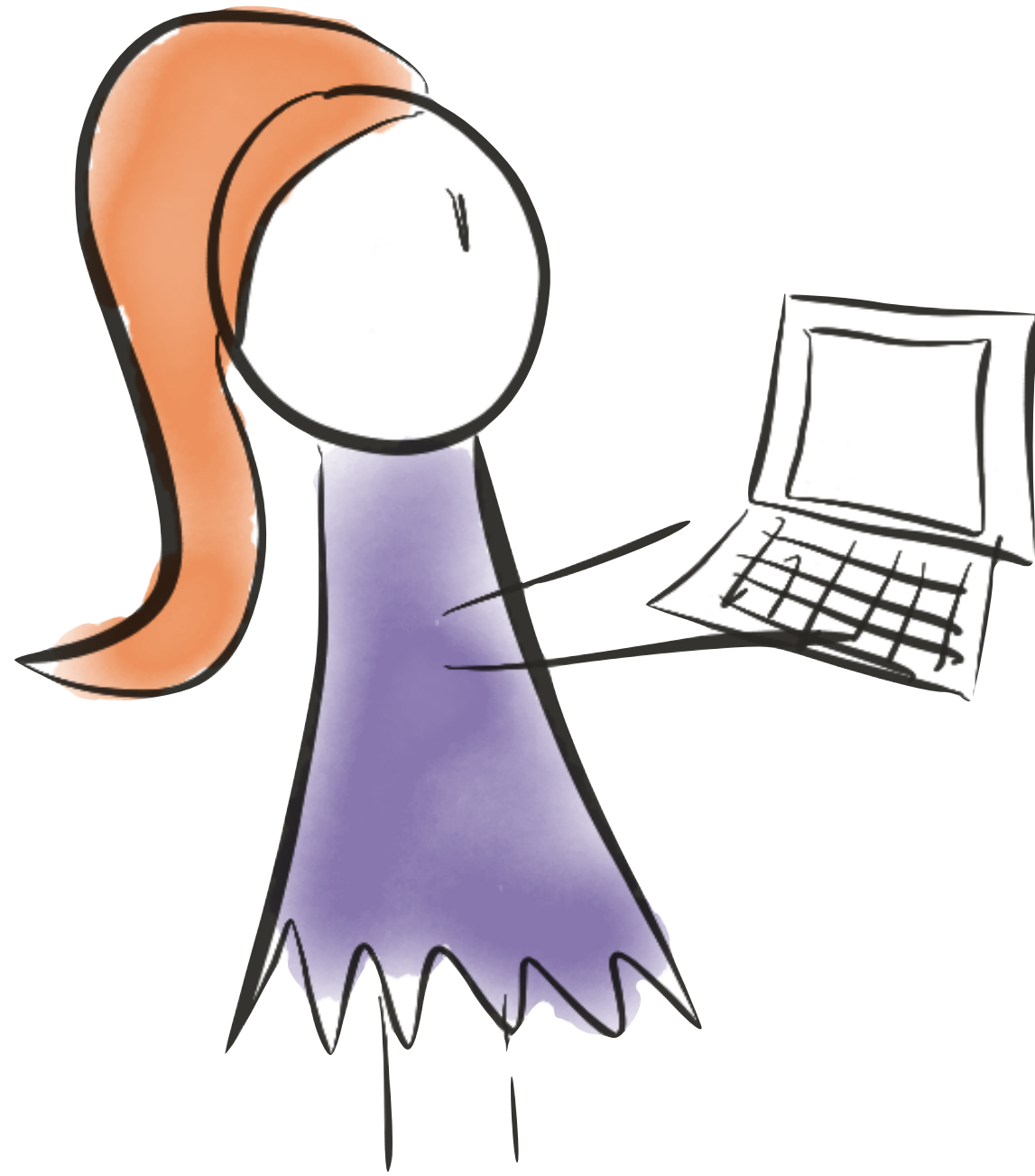
ec2 : RunInstance

Does something



To something

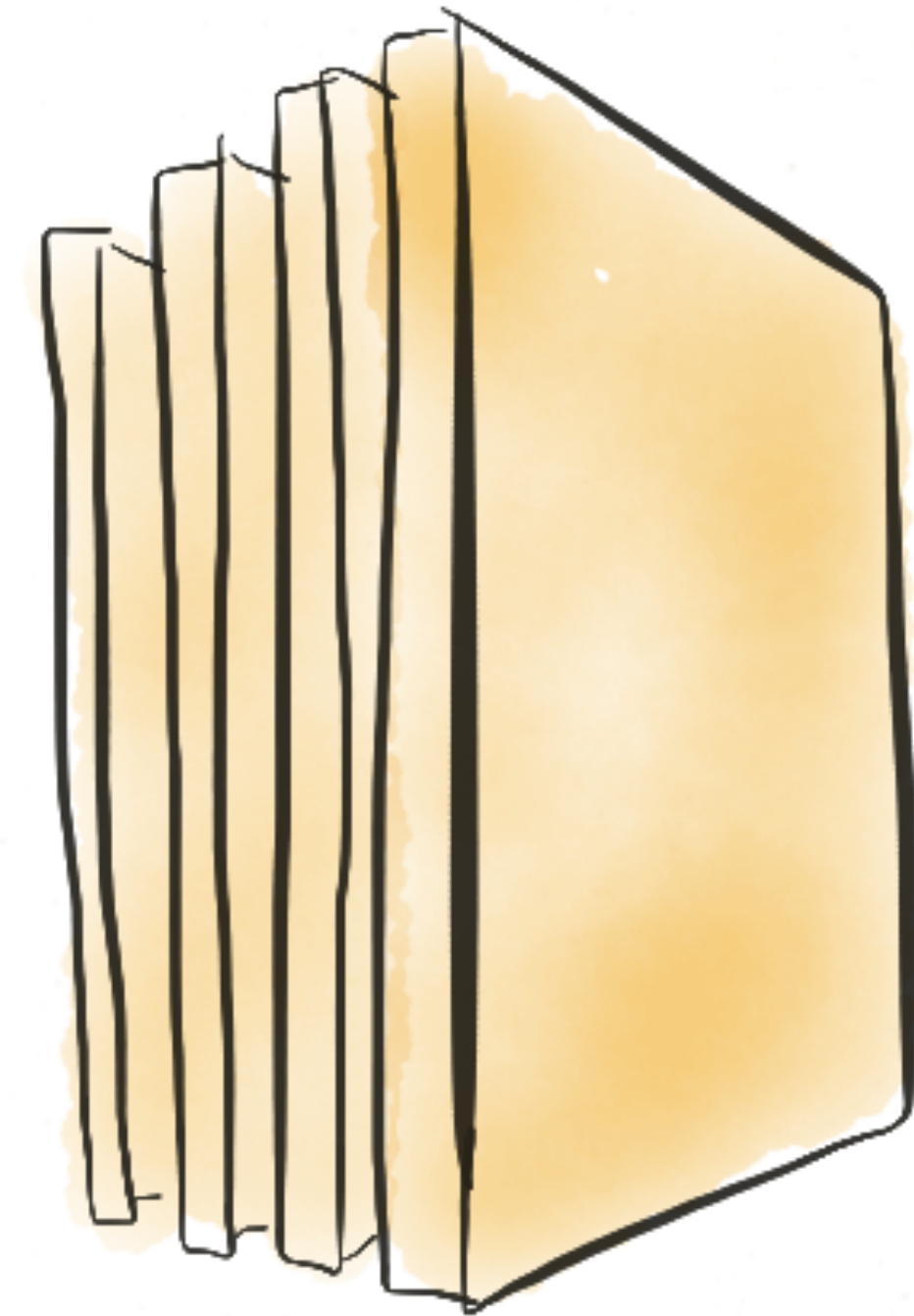
Permissions in 3 parts



Principal

ec2:RunInstance

Action



Resource



IAM

- Identity & Access Management
- Controls who can do which actions to what resources

IAM User

- A user entity
- Could be configured with web console access (or not)
- Could be configured with API access keys (or not)
- Can have Roles assigned to it, and belong to groups

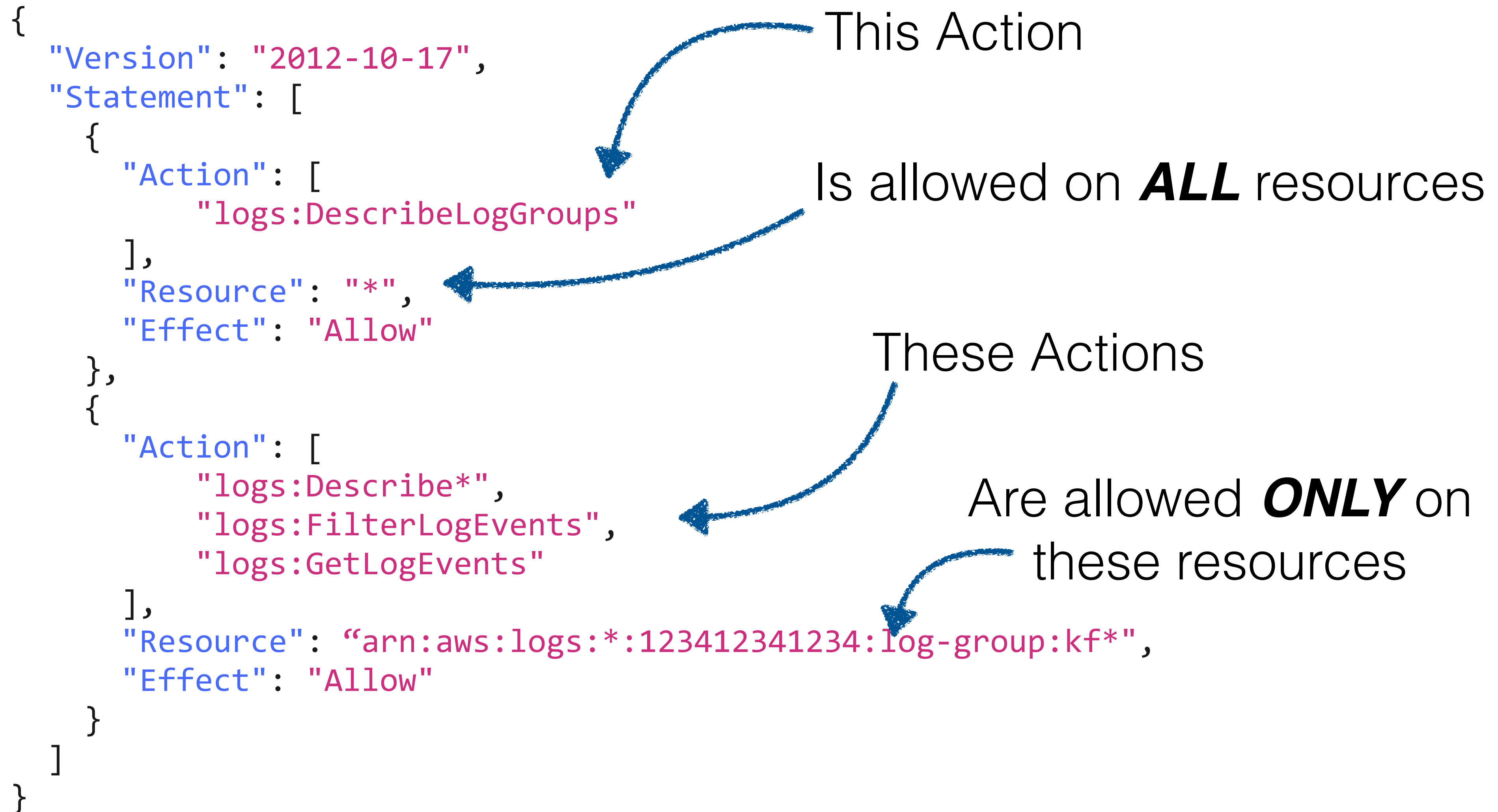
IAM Role

- A collection of 0 or more Policies
- Roles can be attached to users and services

IAM Policy

- A set of instructions allowing or denying an action to be performed on some resource
- Policies are assigned to Users or Roles
- JSON Document

IAM Policy



There Are Lots of Actions

ec2:AcceptReservedInstancesExchangeQuote
ec2:AcceptVpcPeeringConnection
ec2:AllocateAddress
ec2:AllocateHosts
ec2:AssignPrivateIpAddresses
ec2:AssociateAddress
ec2:AssociateDhcpOptions
ec2:AssociateFpgaImage
ec2:AssociateIamInstanceProfile
ec2:AssociateRouteTable
ec2:AttachClassicLinkVpc
ec2:AttachInternetGateway
ec2:AttachNetworkInterface
ec2:AttachVolume
ec2:AttachVpnGateway
ec2:AuthorizeSecurityGroupEgress
ec2:AuthorizeSecurityGroupIngress
ec2:BundleInstance
ec2:CancelBundleTask
ec2:CancelConversionTask
ec2:CancelExportTask
ec2:CancelImportTask
ec2:CancelReservedInstancesListing
ec2:CancelSpotFleetRequests
ec2:CancelSpotInstanceRequests
ec2:ConfirmProductInstance
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Demo