**AI & ML Workshop Hands-on :** [**Building Your First Machine Learning Web App**](https://catalog.us-east-1.prod.workshops.aws/workshops/b0b09da3-8c15-4c6a-aaf1-c265fe6e595d/en-US)

This workshop will guide you through creating your first Machine Learning Web App.

# **Introduction**

<https://catalog.us-east-1.prod.workshops.aws/workshops/b0b09da3-8c15-4c6a-aaf1-c265fe6e595d/en-US/introduction>

# **Learning Objectives**

At the end of this workshop, you will be able to:

1. Describe when to use Amazon Rekognition, Amazon Textract, or both
2. Call the Amazon Rekognition and/or Amazon Textract API from a web app
3. Interpret the data returned by the Application Programmer Interface (API)

To code, instead of using your local IDE (e.g. Visual Studio), we will use AWS service called **Cloud9** where you can provision similar IDEs.

Further, we will host this web app using **AWS Amplify** service through which you will have a running application with ***ML capabilities hosted and developed completely on AWS***.

For more details on workshop and detailed steps for running it locally, you may refer to the following link:

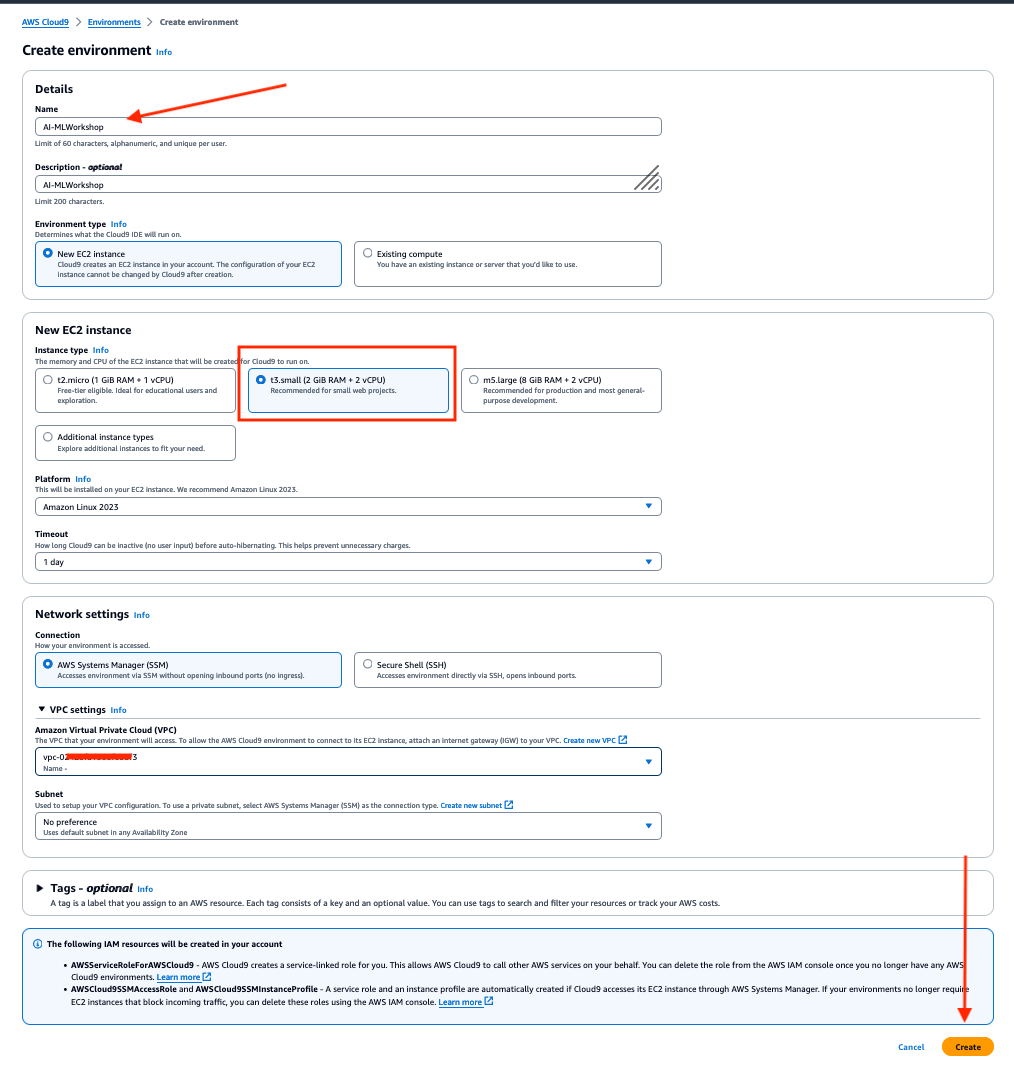
<https://catalog.us-east-1.prod.workshops.aws/workshops/b0b09da3-8c15-4c6a-aaf1-c265fe6e595d/en-US>

## Workshop Steps:

#### **1. Login to your AWS Console**

#### **2. Create an AWS Cloud9 Environment**

* + Navigate to AWS Cloud9 Console using the link: <https://console.aws.amazon.com/cloud9/>
  + Choose the large **Create environment** button
  + Provide a suitable name for your environment eg ML-Workshop
  + Use settings as shown in the following image:

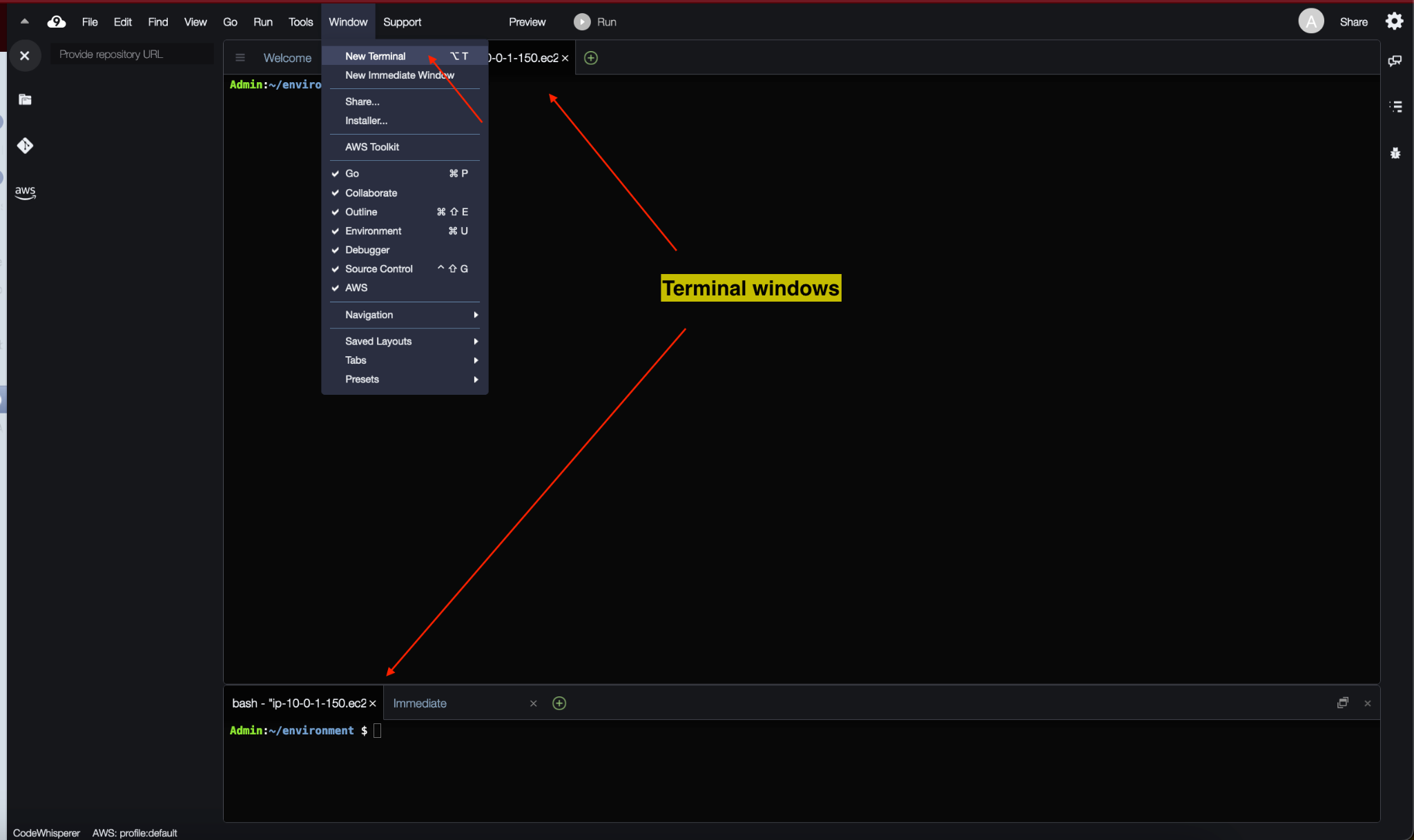


Click on Create Button.

#### **3. Open your Cloud9 Environment:**

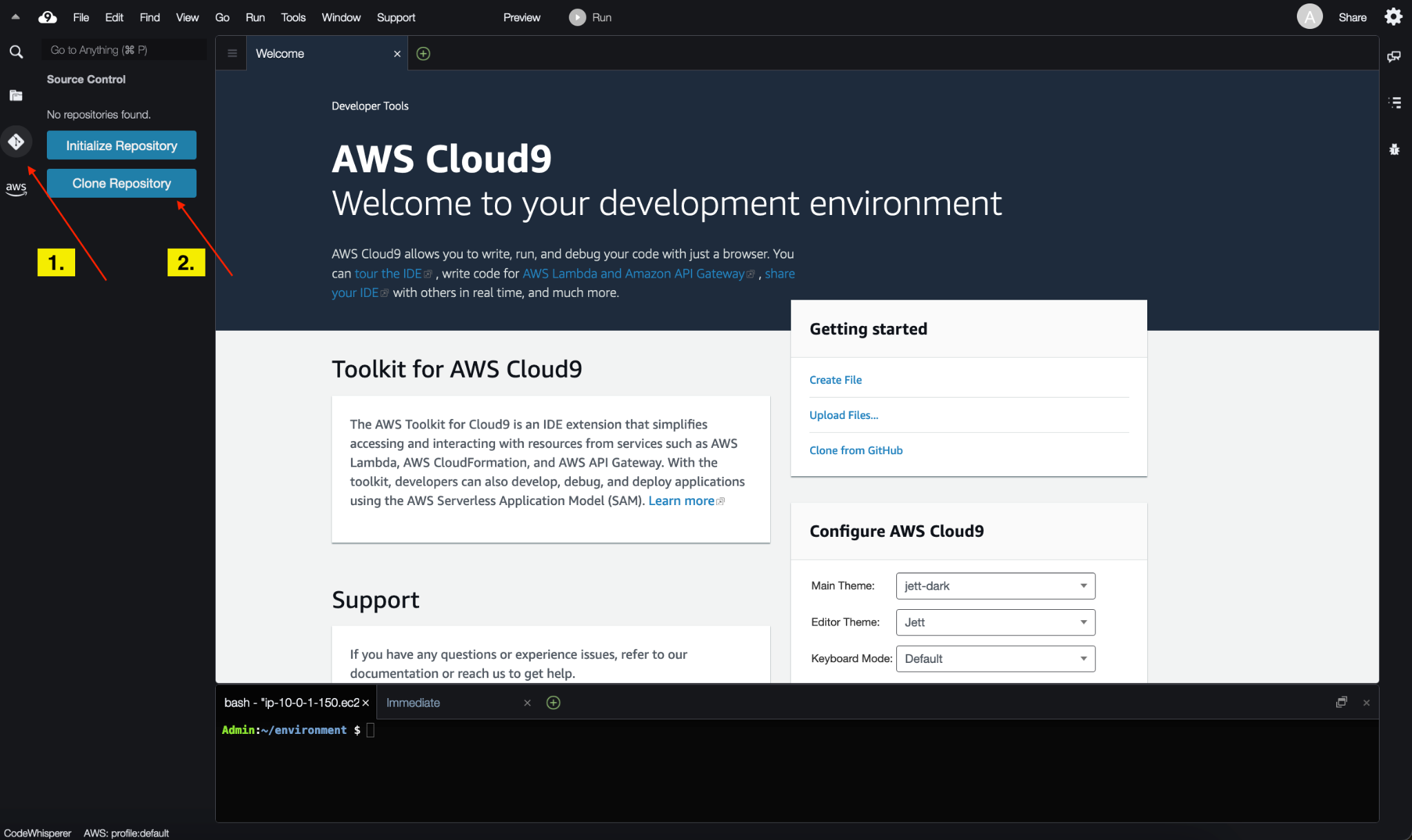
* Click on My Environments from left navigation panel.
* Select the environment you have created above.
* Click on “Open in Cloud9”.

#### **4. Install Amplify CLI:** This will be required to host your application on AWS. With Amplify CLI, we can use Amplify features via Command terminal

* In your Cloud9 environment, open a new terminal if not already there.
* 
* Run the following command to install AWS amplify CLI:

npm install -g @aws-amplify/cli

#### 5. Set-up you basic application code: Let’s clone the basic code from Github

* Click on Source Control Icon
* 
* Click Clone repository
* Enter the following URL:

<https://github.com/build-on-aws/building-a-machine-learning-enabled-web-app>

* Select default repository location.

#### **6. Host the basic Web app:**

* Run the following commands:
* ***cd building-a-machine-learning-enabled-web-app/***
* ***npm install***
* ***amplify init***
* Provide project name e.g. ML Workshop and keep hitting enter
* Select the authentication method you want to use: (Use arrow keys) : Use AWS Profile

❯ AWS profile

* AWS access credentials can not be found.
* ✔ Setup new user No
* ✔ accessKeyId: \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
* ✔ secretAccessKey: \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*
* ✔ region: ap-south-1

Provide AWS credentials from workshop studio (access key and secret access key)

* ***amplify build***
* ***amplify add hosting***

✔ Select the plugin module to execute · **Hosting with Amplify Console (Managed hosting with custom domains, Continuous deployment)**

✔ Choose a type **Manual deployment**

* ***amplify publish***

This command should return the hosted URL of the web application. Opening the WebURL in a new browser tab will take you to your Web Application.

Currently, the app contains the basic UI code with features to detect labels and text in the uploaded images. The AWS ML capabilities needs to be added in the application code.

#### **7. Adding ML capabilities**

Open file explorer in your Cloud9 environment and modify the code as per the following documentations:

##### **Lab 1: Adding Amazon Rekognition to an existing web app**

* 1. [Exploring AcadeML app code](https://catalog.us-east-1.prod.workshops.aws/workshops/b0b09da3-8c15-4c6a-aaf1-c265fe6e595d/en-US/lab1/3-explore-the-app-code) *[Optional]*
  2. [Adding Amazon Rekognition Client to AcadeML](https://catalog.us-east-1.prod.workshops.aws/workshops/b0b09da3-8c15-4c6a-aaf1-c265fe6e595d/en-US/lab1/4-add-rekognition-client)
  3. [Installing SDK Modules & Adding IAM Credentials](https://catalog.us-east-1.prod.workshops.aws/workshops/b0b09da3-8c15-4c6a-aaf1-c265fe6e595d/en-US/lab1/5-installing-libraries-adding-credentials)
  4. [Add Rekognition Client Initialization and Configuration](https://catalog.us-east-1.prod.workshops.aws/workshops/b0b09da3-8c15-4c6a-aaf1-c265fe6e595d/en-US/lab1/6-create-rekognition-client)
  5. [Add and Call a DetectLabels Command](https://catalog.us-east-1.prod.workshops.aws/workshops/b0b09da3-8c15-4c6a-aaf1-c265fe6e595d/en-US/lab1/7-add-detectlables-command) [This doc also contains the complete code]
  6. [Testing DetectLabels](https://catalog.us-east-1.prod.workshops.aws/workshops/b0b09da3-8c15-4c6a-aaf1-c265fe6e595d/en-US/lab1/8-testing-detectlabels)
  7. To test the capabilities, run the following command to push changes to the cloud:

command S or control S to save files

***amplify publish***

##### **Lab 2: Adding Amazon Textract to an existing web app**

* 1. Follow: <https://catalog.us-east-1.prod.workshops.aws/workshops/b0b09da3-8c15-4c6a-aaf1-c265fe6e595d/en-US/lab2>
  2. To test the capabilities, run the following command to push changes to the cloud:

command S or control S to save files

***amplify publish***