

CS-524 Intro to Cloud Computing

Set Up A Continuous Integration/ Continuous Delivery Pipeline on AWS

Final Report

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Need for Continuous Integration/ Continuous Delivery:

CI (Continuous Integration) is a process that allows developers to integrate their code in the main shared repository, multiple times a day and providing them with instant feedback about possible broken functionality or tests. Instead of building and integrating software work products from different teams/people at the end of the development cycle, with Continuous Integration you can build it at regular intervals. This helps developers to meet the code quality standards, resolve bugs early and reduces integration cost.

Continuous Delivery is an extension of Continuous Integration that helps you focus on automating the delivery process of software development which helps in deploying, staging, and production at any time. Continuous Deployment is a process which automatically builds/deployes the code on the servers. The process can be fully automated which will build, test, and deploy in multiple environments. It will automatically handle any build failures and revert back to the previous good state.

Why CI/CD is important?

One of the key benefits of integrating regularly is that you can detect errors quickly and locate them more easily. As each change introduced is typically small, pinpointing the specific change that introduced a defect can be done quickly. In recent years CI has become a best practice for software development and is guided by a set of key principles. Among them are revision control, build automation and automated testing.

Additionally, Continuous Deployment and Continuous Delivery have developed as best-practices for keeping your application deployable at any point or even pushing your main codebase automatically into production whenever new changes are brought into it. This allows your team to move fast while keeping high quality standards that can be checked automatically.

How does CI/CD work?

Firstly, you can upload your application source code on Amazon S3, AWS CodeCommit repository or GitHub repository. Then, in continuous deployment, you need a deployment environment which can be either an EC2 server or a Docker container or Elastic Beanstalk (which can handle the environment configuration and bootstrapping automatically). I am going to use Elastic Beanstalk. With continuous delivery, every code change is built, tested, and then pushed to a non-

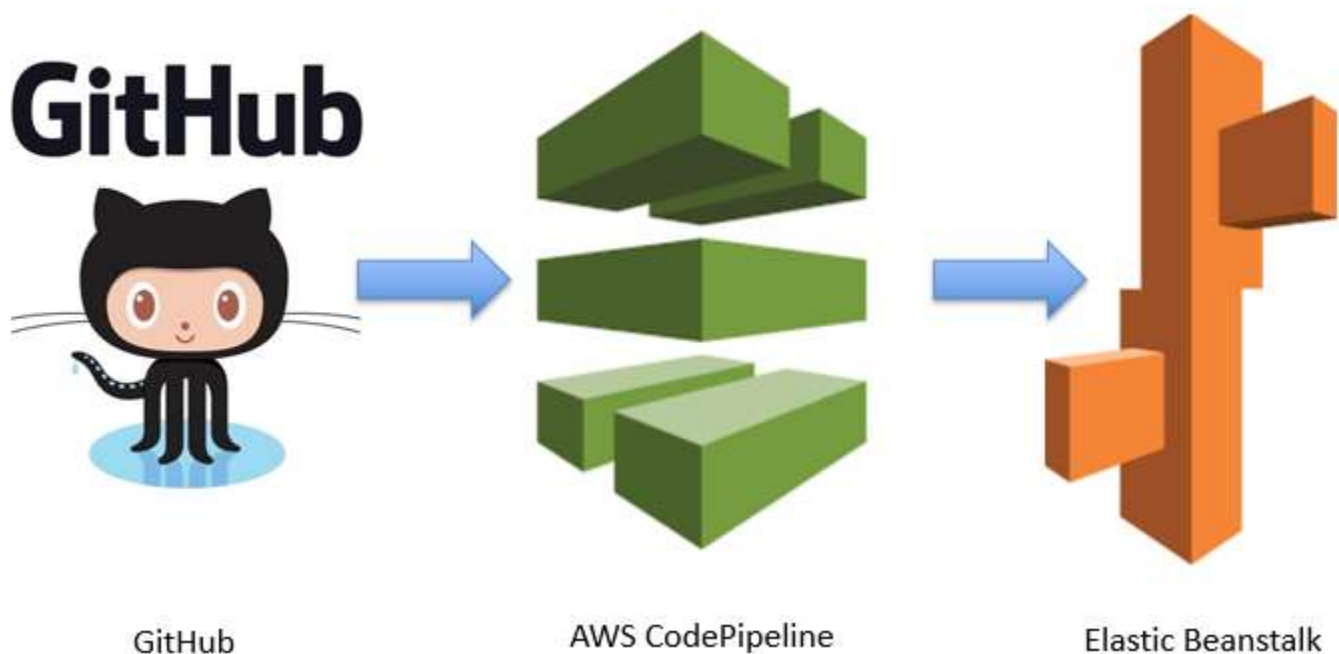
Name: Tehreem Tunekar
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production testing or staging environment. There can be multiple, parallel test stages before a production deployment. The difference between continuous delivery and continuous deployment is the presence of a manual approval to update to production. With continuous deployment, production happens automatically without explicit approval.

Then, you need to create a CodePipeline which will be used to build, test, and deploy your code every time there is a code change, based on release configuration which you have defined. This enables you to rapidly deliver your features and updates to deploy server.

You can revise your code and commit the changes to the repository. CodePipeline will detect your updated sample code and then automatically initiate deploying it to your EC2 instance via Elastic Beanstalk.



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Code Pipeline

AWS CodePipeline is a continuous delivery service for fast and reliable application updates. CodePipeline builds, tests, and deploys your code every time there is a code change, based on the release process models you define. This enables you to rapidly and reliably deliver features and updates. You can easily build out an end-to-end solution by using our pre-built plugins for popular third-party services like GitHub or integrating your own custom plugins into any stage of your release process. With AWS CodePipeline, you pay only for what you use. There are no upfront fees or long-term commitments.

Step 1: Uploading your application's code on GitHub.

Step 2: Create an Elastic Beanstalk Application Environment in PHP to deploy your Application.

Step 3: Set up a CodePipeline in AWS.

Elastic Beanstalk

AWS Elastic Beanstalk is an easy-to-use service for deploying and scaling web applications and services developed with Java, .NET, PHP, Node.js, Python, Ruby, Go, and Docker on familiar servers such as Apache, Nginx, Passenger, and IIS. You can simply upload your code and Elastic Beanstalk automatically handles the deployment, from capacity provisioning, load balancing, auto-scaling to application health monitoring. When you create the example application, Elastic Beanstalk creates the following AWS resources:

- EC2 instance – An Amazon EC2 virtual machine configured to run web apps on the platform you choose.
- Each platform runs a different set of software, configuration files, and scripts to support a specific language version, framework, web container, or combination thereof. Most platforms use either Apache or nginx as a reverse proxy that processes web traffic in front of your web app, forwards requests to it, serves static assets, and generates access and error logs.

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- Instance security group – An Amazon EC2 security group configured to allow incoming traffic on port 80. This resource lets HTTP traffic from the load balancer reach the EC2 instance running your web app. By default, traffic is not allowed on other ports.
- Amazon S3 bucket – A storage location for your source code, logs, and other artifacts that are created when you use Elastic Beanstalk.
- Amazon CloudWatch alarms – Two CloudWatch alarms that monitor the load on the instances in your environment and are triggered if the load is too high or too low. When an alarm is triggered, your Auto Scaling group scales up or down in response.
- AWS CloudFormation stack – Elastic Beanstalk uses AWS CloudFormation to launch the resources in your environment and propagate configuration changes. The resources are defined in a template that you can view in the AWS CloudFormation console.
- Domain name – A domain name that routes to your web app in the form `subdomain.region.elasticbeanstalk.com`.

PHP Application Using JavaScript

Upload your code, in my case a PHP Application on a GitHub repository. I have made a simple PHP application which acts as a Palindrome checker using JavaScript in the backend. A palindrome is a string that can be spelled the same from left to right or right to left. Example: “Madam” is a Palindrome. If the string entered is a Palindrome, it is displayed in Blue, if it is not a Palindrome, it is displayed in Red color.

These steps can be detailed as follows:

Uploading your Code on GitHub:

I have created a github repository named aws which contains these files: GitHub url:
<https://github.com/tehreemt/aws>

The screenshot shows the GitHub repository page for 'tehreemt/aws'. The repository has 22 commits, 1 branch, 0 packages, 0 releases, 3 contributors, and is licensed under Apache-2.0. The 'Code' tab is selected, showing a list of files and their commit history. The files listed are:

File	Commit Message	Time Ago
Update story.html	Latest commit d5244e9	18 minutes ago
.github	Adding template	2 years ago
dist	Added dist folder	5 years ago
scripts	Added AWS CodePipeline Sample	5 years ago
CONTRIBUTING.md	Adding CONTRIBUTING/CoC	2 years ago
LICENSE	Added AWS CodePipeline Sample	5 years ago
README.md	Update README.md	24 minutes ago
appspec.yml	Added AWS CodePipeline Sample	5 years ago
education.html	Update education.html	24 minutes ago
index.html	Update index.html	21 minutes ago
script.js	Add files via upload	30 minutes ago
story.html	Update story.html	18 minutes ago
style.css	Add files via upload	30 minutes ago
README.md		

The main files are index, story and education. The index file would take a string and pass it to script.js file to see if the string is a palindrome or not:



← → ↻ 🏠 github.com/tehreemt/aws/blob/master/index.html

Apps 210-451 - Cisco Pra... Your Customized Te... Login | AWS Educate Storing Images in... Build your CI/CD wi... TBennett1/CS546-F... Website | Trello

49 lines (41 sloc) 1.18 KB

```

1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4   <meta charset="UTF-8">
5   <meta name="viewport" content="width=device-width, initial-scale=1.0">
6   <title>Palindrome Checker</title>
7   <link rel="stylesheet" href="style.css"/>
8 </head>
9 <body>
10  <headers>
11    <h1>Tehreem's Palindrome Checker</h1>
12
13  </headers>
14  <div id="error" class="error" hidden></div>
15
16  <form method="POST" id="myform">
17    <label>
18      Enter Phrase:</label>
19    <textarea id="text_input" name="phrase" placeholder="Enter a Phrase to Test"></textarea>
20    <br>
21    <br>
22    <button type="submit">Submit</button>
23
24  </form>
25
26  <ol id="attempts" class="is-palindrome not-palindrome">
27
28  </ol>
29  <br>
30  <br>
31  <br>
32  <br>
33  <br>
34  <br>
35  </ol>
36  <footer>
37    <p>Tehreem Tunekar CWID: 10457940</p>
38    <nav>
39    <ul>

```

The script.js has functions to compute if the string is a palindrome or not:



github.com/tehreemt/aws/blob/master/script.js

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55 lines (53 sloc) 1.69 KB

Raw Blame History

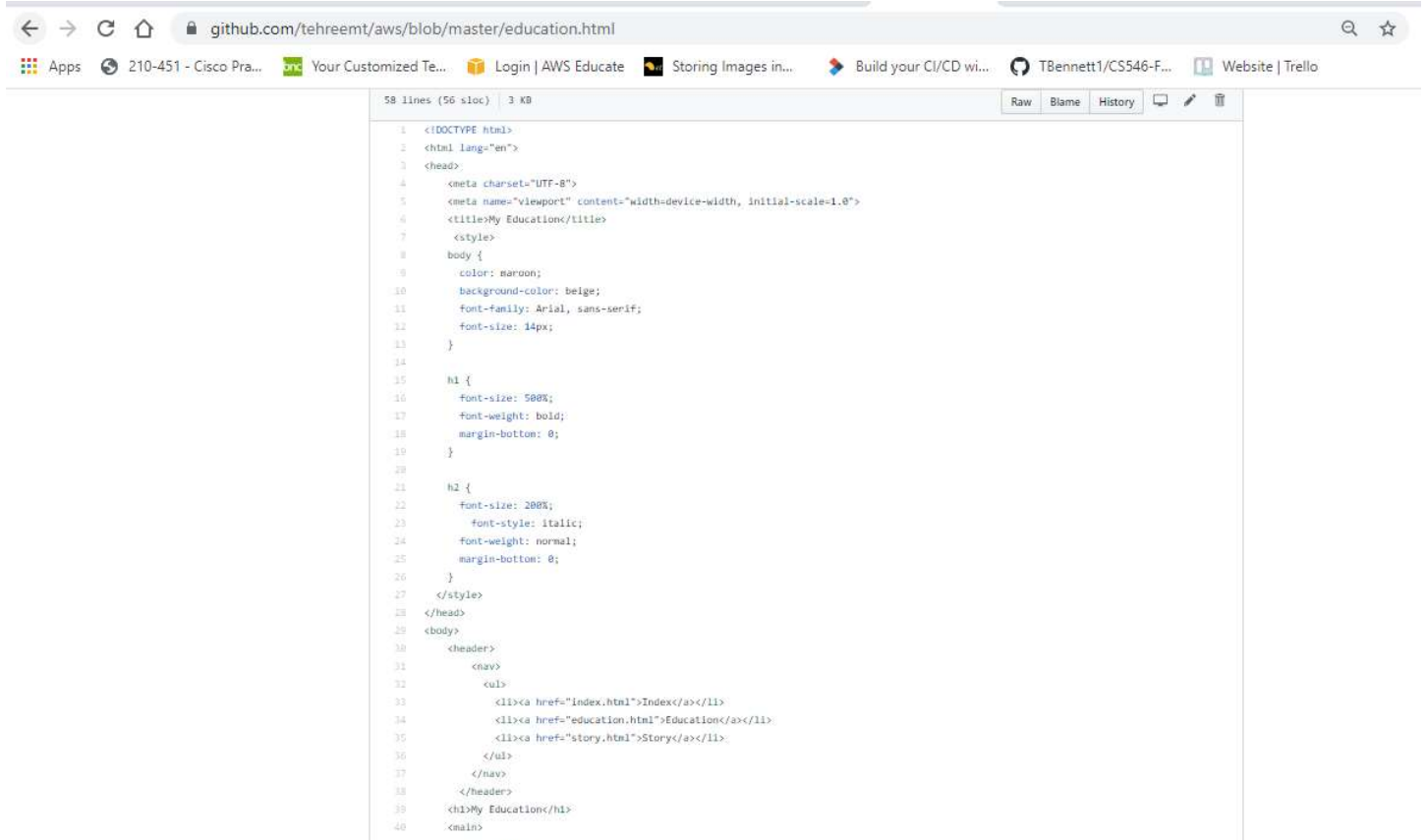
```

1 let myForm = document.getElementById('myForm');
2 let textInput = document.getElementById('text_input');
3 let errorDiv = document.getElementById('error');
4 let myUl = document.getElementById('attempts');
5 let successDiv=document.getElementById('success');
6 if (myForm) {
7   myForm.addEventListener('submit', (event) => {
8     event.preventDefault();
9     if (textInput.value) {
10      errorDiv.hidden = true;
11      let result= palindrome(textInput.value);
12      let li = document.createElement("li");
13      if(result){
14        li.innerHTML = textInput.value;
15        li.className='is-palindrome';
16        myUl.appendChild(li);
17        myForm.reset();
18        textInput.focus();
19      }
20      else{
21        li.innerHTML = textInput.value;
22        li.className='not-palindrome';
23        myUl.appendChild(li);
24        myForm.reset();
25        textInput.focus();
26      }
27    } else {
28      errorDiv.hidden = false;
29      errorDiv.innerHTML = 'You Must Enter a phrase!';
30      textInput.focus();
31    }
32  });
33 }
34
35
36 function palindrome(str) {
37   //Reference for regular expression: W3 schools
38   let lowercaseStr=str.toLowerCase().replace(/[W_]/g,"");
39   if(str==undefined) console.log("err");

```

The index page is also linked to two other pages namely education and story which contain other data and all pages are linked.





The screenshot shows a web browser window with the address bar displaying 'github.com/tehreemt/aws/blob/master/education.html'. The browser's tab bar shows several tabs, including '210-451 - Cisco Pra...', 'Your Customized Te...', 'Login | AWS Educate', 'Storing Images in...', 'Build your CI/CD wi...', 'TBennett1/CS546-F...', and 'Website | Trello'. The main content area displays the source code of the 'education.html' file, which is 58 lines long and 3 KB in size. The code is a simple HTML document with a maroon background and beige text. It includes a header with a navigation menu and a main section titled 'My Education'.

```

1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4   <meta charset="UTF-8">
5   <meta name="viewport" content="width=device-width, initial-scale=1.0">
6   <title>My Education</title>
7   <style>
8     body {
9       color: maroon;
10      background-color: beige;
11      font-family: Arial, sans-serif;
12      font-size: 14px;
13    }
14
15    h1 {
16      font-size: 500%;
17      font-weight: bold;
18      margin-bottom: 0;
19    }
20
21    h2 {
22      font-size: 200%;
23      font-style: italic;
24      font-weight: normal;
25      margin-bottom: 0;
26    }
27  </style>
28 </head>
29 <body>
30   <header>
31     <nav>
32       <ul>
33         <li><a href="index.html">Index</a></li>
34         <li><a href="education.html">Education</a></li>
35         <li><a href="story.html">Story</a></li>
36       </ul>
37     </nav>
38   </header>
39   <h1>My Education</h1>
40   <main>

```

Story page is also a short story page.



```

44 lines (42 sloc) | 1.97 KB
1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4   <meta charset="UTF-8">
5   <meta name="viewport" content="width=device-width, initial-scale=1.0">
6   <title>The Day I wrote my First Story</title>
7   <style>
8     body {
9       color: maroon;
10      background-color: goldenrod;
11      font-family: Times New Roman, Arial, sans-serif;
12      font-size: 14px;
13    }
14
15    h1 {
16      font-size: 500%;
17      font-weight: bold;
18      margin-bottom: 0;
19    }
20
21    h2 {
22      font-size: 200%;
23      font-style: italic;
24      font-weight: normal;
25      margin-bottom: 0;
26    }
27  </style>
28 </head>
29 <body>
30   <header>
31     <nav>
32       <ul>
33         <li><a href="index.html">Index</a></li>
34         <li><a href="education.html">Education</a></li>
35         <li><a href="story.html">Story</a></li>
36       </ul>
37     </nav>
38   </header>
39   <h1>The Day I wrote my First Story</h1>

```

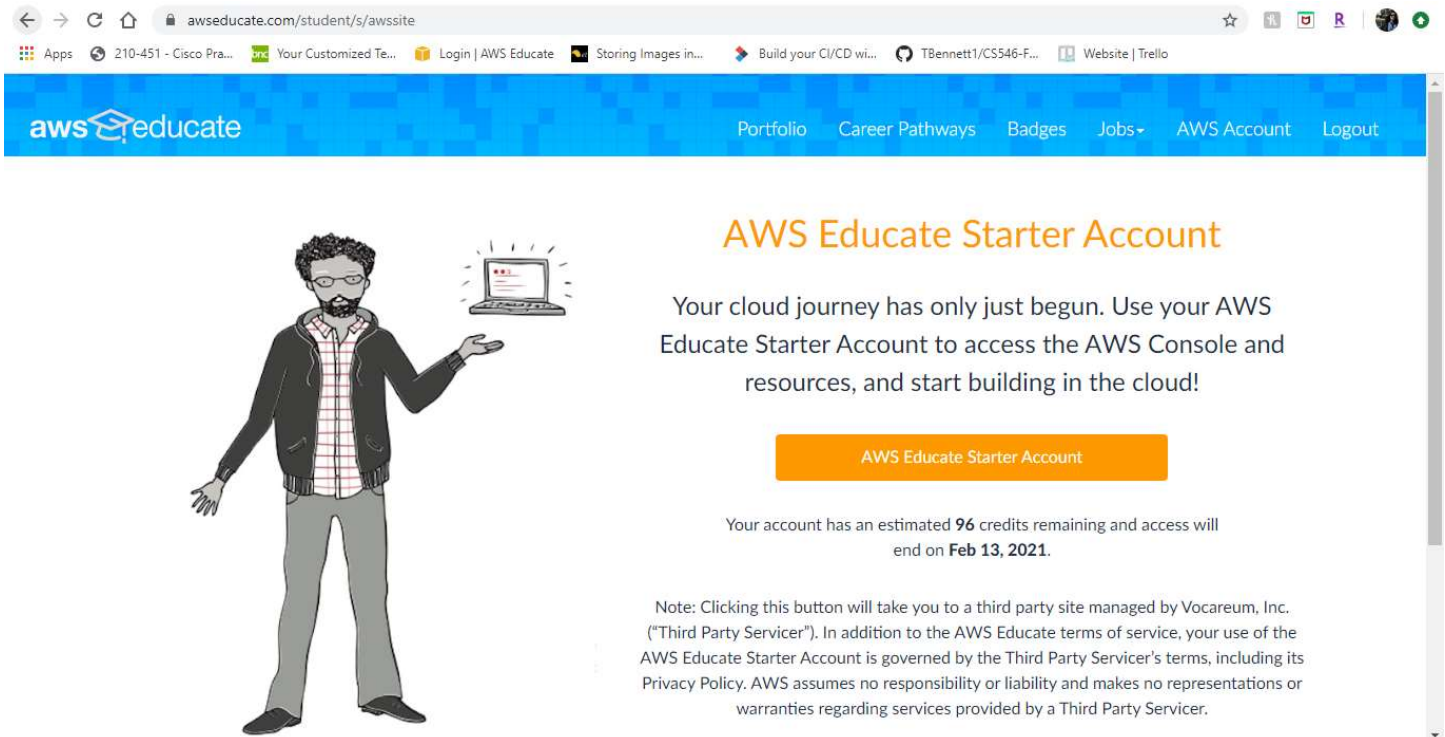
This is what my application is and it is uploaded on GitHub.

Creating an Elastic Beanstalk application deployment environment:

Firstly, you need to create an Amazon AWS account to execute this project.

After creating an AWS account, log in to your account.





awseducate.com/student/s/awssite

Apps 210-451 - Cisco Pra... Your Customized Te... Login | AWS Educate Storing Images in... Build your CI/CD wi... TBennett1/CS546-F... Website | Trello

awseducate

Portfolio Career Pathways Badges Jobs AWS Account Logout

AWS Educate Starter Account

Your cloud journey has only just begun. Use your AWS Educate Starter Account to access the AWS Console and resources, and start building in the cloud!

[AWS Educate Starter Account](#)

Your account has an estimated **96** credits remaining and access will end on **Feb 13, 2021**.

Note: Clicking this button will take you to a third party site managed by Vocareum, Inc. ("Third Party Servicer"). In addition to the AWS Educate terms of service, your use of the AWS Educate Starter Account is governed by the Third Party Servicer's terms, including its Privacy Policy. AWS assumes no responsibility or liability and makes no representations or warranties regarding services provided by a Third Party Servicer.

Click on AWS Educate Starter account.



labs.vocareum.com/main/main.php?m=editor&nav=1&asid=14334&stepid=14335

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vocareum My Classes Help ttungeka@stevens.edu




Welcome to your AWS Educate Account

AWS Educate provides you with access to a wide variety of AWS Services for you to get your hands on and build on AWS! To get started, click on the AWS Console button to log in to your AWS console.

Please read the FAQ below to help you get started on your Starter Account.

- What are the list of services supported?
- What regions are supported with Starter Accounts or Classroom Accounts?
- I can't start any resources. What happened?
- Can I create users within my Starter or Classroom Account for others to access?
- Can I create my own IAM policy within Starter Account or Classroom?

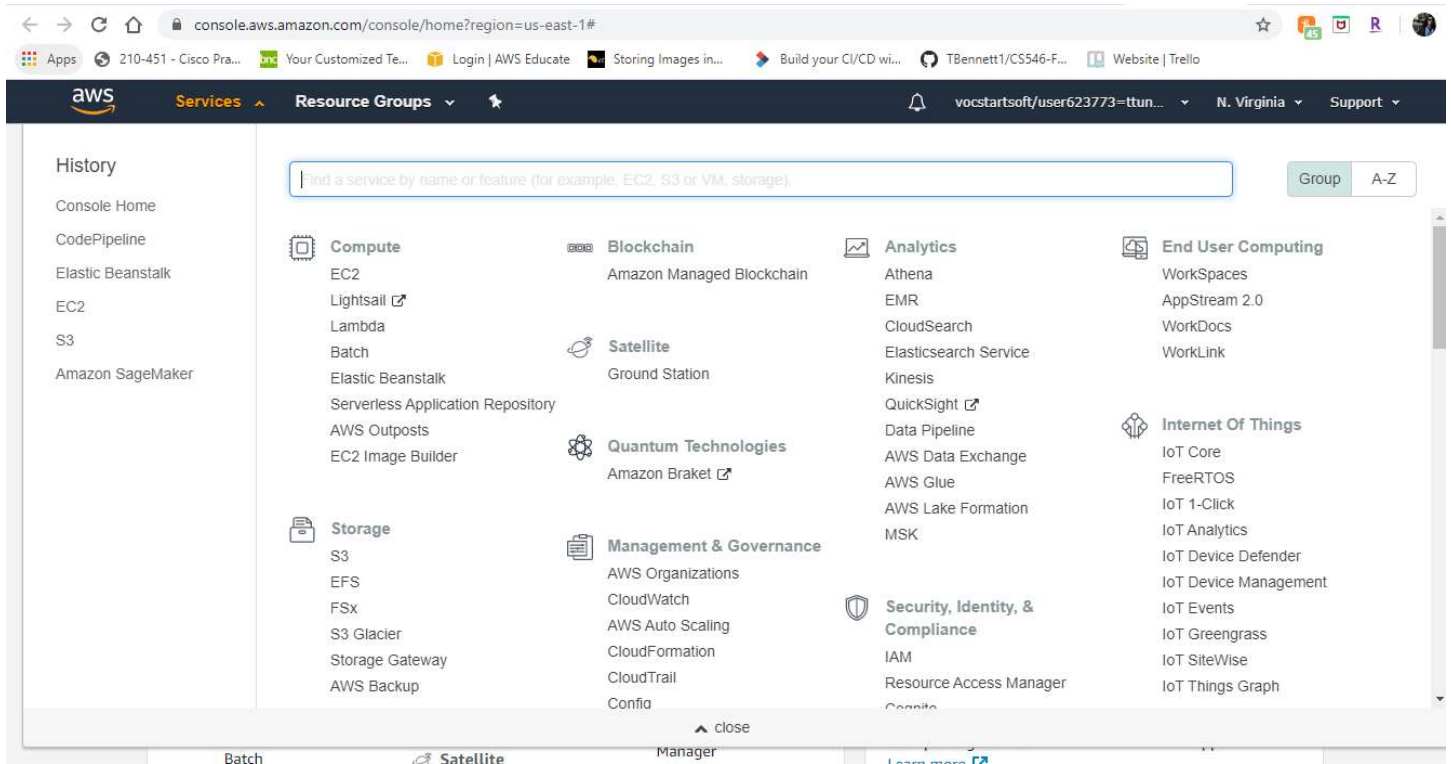
Your AWS Account Status

	Active full access (ttungeka@stevens.edu)
	\$96.5 remaining credits (estimated)
	2:60 session time

[Account Details](#) [AWS Console](#)

Please use AWS Educate Account responsibly. Remember to shut down your instances when not in use to make the best use of your credits. And, don't forget to logout once you are done with your work!

Click on AWS Console.



Click on Services Dropdown>Compute>Elastic Beanstalk.

You will be redirected to AWS Elastic Beanstalk Homepage:

console.aws.amazon.com/elasticbeanstalk/home?region=us-east-1#/welcome

Services Resource Groups

Elastic Beanstalk

Environments Applications

AWS Elastic Beanstalk

End-to-end web application management.

AWS Elastic Beanstalk is an easy-to-use service for deploying and scaling web applications and services developed with Java, .NET, PHP, Node.js, Python, Ruby, Go, and Docker on familiar servers such as Apache, Nginx, Passenger, and IIS.

Get started

Easily deploy your web application in minutes.

[Create Application](#)

Pricing

There's no additional charge for Elastic Beanstalk. You pay for AWS resources that we create to store and run your web application, like Amazon S3 buckets and Amazon EC2 instances.

How it works

You simply upload your code and Elastic Beanstalk automatically handles the deployment, from capacity provisioning, load balancing, and automatic scaling to web application health monitoring, with ongoing fully managed patch and security updates. [Learn more](#)

Click on Create application.

console.aws.amazon.com/elasticbeanstalk/home?region=us-east-1#/gettingStarted

Services Resource Groups

Elastic Beanstalk

Environments Applications

Elastic Beanstalk > Getting started

Create a web app

Create a new application and environment with a sample application or your own code. By creating an environment, you allow AWS Elastic Beanstalk to manage AWS resources and permissions on your behalf. [Learn more](#)

Application information

Application name

tehreempalindrome

Up to 100 Unicode characters, not including forward slash (/).

Application tags

Apply up to 50 tags. You can use tags to group and filter your resources. A tag is a key-value pair. The key must be unique within the resource and is case-sensitive. [Learn more](#)

Key	Value
-----	-------

Name: Tehreem Tunekar
CWID: 10457940

Give it a name, I have named my application as tehreempalindrome.

You will be asked to choose your platform for your application. Choose PHP. In the application code select sample application for now. Click on Configure more options.

The screenshot shows the AWS Elastic Beanstalk console. The left sidebar has 'Elastic Beanstalk' selected, with 'Environments' and 'Applications' listed below. The main content area is titled 'Platform' and contains three dropdown menus: 'Platform' (set to 'PHP'), 'Platform branch' (set to 'PHP 7.3 running on 64bit Amazon Linux'), and 'Platform version' (set to '2.9.4 (Recommended)'). Below this is the 'Application code' section with two radio buttons: 'Sample application' (selected) and 'Upload your code'. At the bottom right of the console are three buttons: 'Cancel', 'Configure more options', and 'Create application'.

On configure more options, edit your instances to select a security group. I have selected a security group, also make sure your instances will use t2.micro to be in free tier.

Make sure the security group allows inbound traffic to access port 80 and you can connect using SSH 22 port. The IP Address for SSH is my machine's IP.

Name: Tehreem Tunekar
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console.aws.amazon.com/ec2/v2/home?region=us-east-1#SecurityGroups:

Services Resource Groups

New EC2 Experience

EC2 Dashboard New

Events New

Tags

Reports

Limits

INSTANCES

Instances

Instance Types

Launch Templates

Spot Requests

Savings Plans

Reserved Instances

Dedicated Hosts New

Scheduled Instances

Capacity Reservations

IMAGES

AMIs

Bundle Tasks

ELASTIC BLOCK STORE

Volumes

Inbound security group rules successfully modified on security group (sg-045a7b90e4ffbeb9b | awseb-e-wbpvkgghay-stack-AWSEBSecurityGroup-1MX3W6Q5TN673)

Details

EC2 > Security Groups

Security Groups (1/5) Info

Filter security groups

	Security group ID	Security group name	VPC ID	Description	Owner	Int
<input type="checkbox"/>	sg-01ead077fd8b6decc	default_elb_8c284046...	vpc-cc0435b6	ELB created security gr...	112619478712	1 F
<input checked="" type="checkbox"/>	sg-045a7b90e4ffbeb9b	awseb-e-wbpvkgghay-...	vpc-cc0435b6	VPC Security Group	112619478712	2 F

Type	Protocol	Port range	Source	Description - optional
HTTP	TCP	80	0.0.0.0/0	-
SSH	TCP	22	76.116.178.250/32	-

console.aws.amazon.com/elasticbeanstalk/home?region=us-east-1#/gettingStarted

Services Resource Groups

Elastic Beanstalk

Environments

Applications

PHP 7.3 running on 64bit Amazon Linux/2.9.4

Change platform version

Software

Rotate logs: disabled (default)

Log streaming: disabled (default)

Environment properties: 0

Edit

Instances

Root volume type: container default

Root volume size (GB): container default

Root volume IOPS: container default

Security groups: sg-0dca28d9521765d4d

Edit

Capacity

Environment type: single instance

Fleet composition: On-Demand instance

EC2 instance type: t2.micro

EC2 image ID: ami-0be1dbf13b802b49f

Edit

Load balancer

This configuration does not contain a load balancer.

Rolling updates and deployments

Deployment policy: All at once

Rolling updates: disabled

Security

Service role: arn:aws:iam::112619478712:role/aws-elasticbeanstalk-service-role

Virtual machine key pair: -

Virtual machine instance profile: aws-elasticbeanstalk-ec2-role

Name: Tehreem Tungekar
CWID: 10457940



Under Services, you can add a key-pair to connect to your instance, I added my key named myKeyTT.

The screenshot shows the AWS Elastic Beanstalk console. The left sidebar has 'Elastic Beanstalk' selected. The main content area is titled 'Service role' and 'Virtual machine permissions'. The 'Service role' dropdown is set to 'aws-elasticbeanstalk-service-role'. The 'Virtual machine permissions' section has two dropdowns: 'EC2 key pair' set to 'myKeyTT' and 'IAM instance profile' set to 'aws-elasticbeanstalk-ec2-role'. At the bottom right, there are 'Cancel' and 'Save' buttons.

Click on save. Also, I have added my email address ttungeka@stevens.edu to notify me for all updates.

I have also selected my VPC as us-east-1.

Name: Tehreem Tungekar
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The screenshot shows the AWS Elastic Beanstalk console with the following configuration options:

- Load balancer:** This configuration does not contain a load balancer. (Edit)
- Rolling updates and deployments:** Deployment policy: All at once; Rolling updates: disabled. (Edit)
- Security:** Service role: `arn:aws:iam::112619478712:role/aws-elasticbeanstalk-service-role`; Virtual machine key pair: `myKeyTT`; Virtual machine instance profile: `aws-elasticbeanstalk-ec2-role`. (Edit)
- Monitoring:** Health reporting system: Enhanced; Health event log streaming: disabled. (Edit)
- Managed Updates:** Managed updates: enabled; Weekly update window: Sat:01:00 UTC. (Edit)
- Notifications:** Email address: `ttungeka@stevens.edu`. (Edit)
- Network:** VPC: `vpc-cc0435b6` (172.31.0.0/16) (default). (Edit)
- Database:** Engine: --; Instance class: --. (Edit)
- Tags:** Tags: none. (Edit)

Click on Create App.

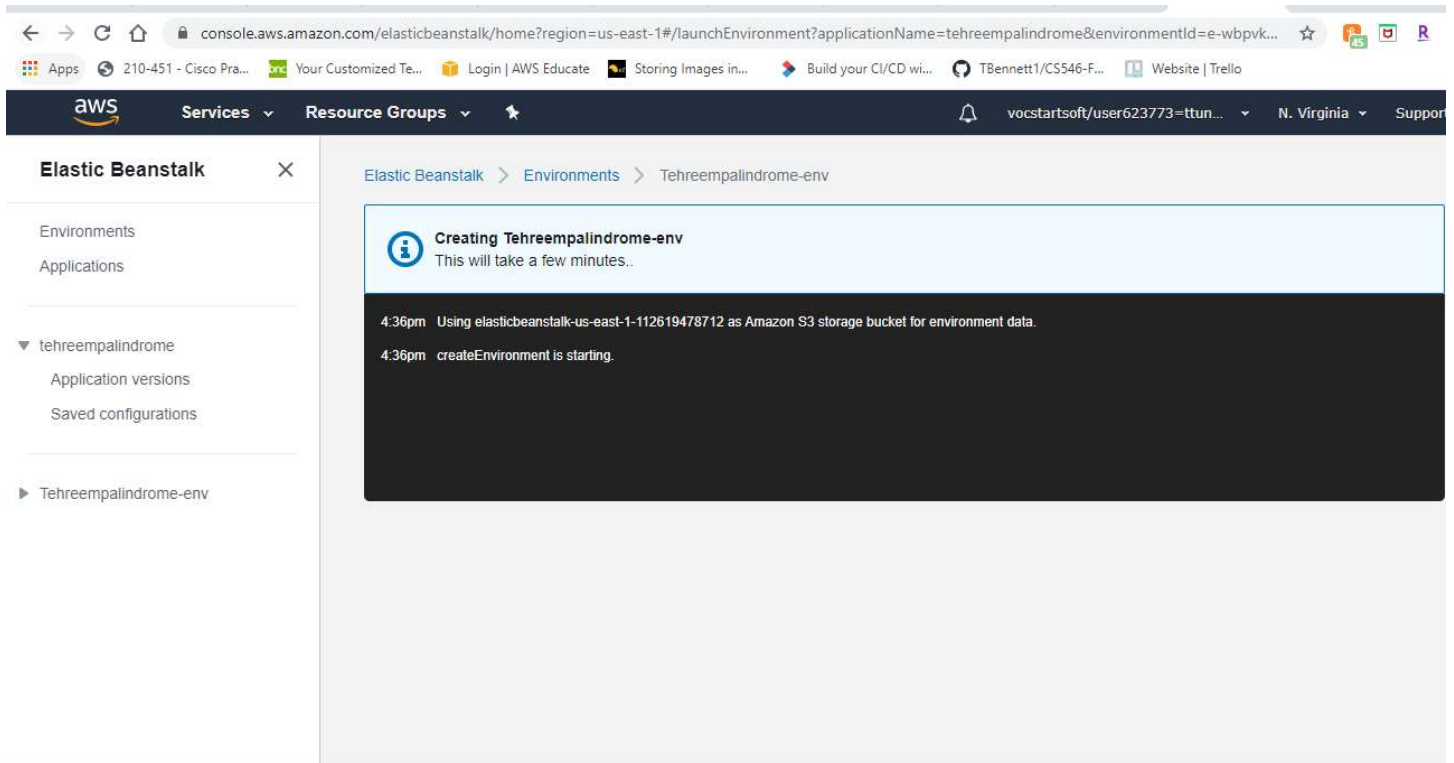
The screenshot shows the AWS Elastic Beanstalk console with the following configuration options:

- Monitoring:** Health reporting system: Enhanced; Health event log streaming: disabled. (Edit)
- Managed Updates:** Managed updates: enabled; Weekly update window: Sat:01:00 UTC. (Edit)
- Notifications:** Email address: `ttungeka@stevens.edu`. (Edit)
- Network:** VPC: `vpc-cc0435b6` (172.31.0.0/16) (default); Associate public IP address: disabled; Instance subnets: `subnet-3e0bbe73`. (Edit)
- Database:** Engine: --; Instance class: --; Storage (GB): --; Multi-AZ: --. (Edit)
- Tags:** Tags: none. (Edit)

At the bottom right, there are three buttons: **Cancel**, **Previous**, and **Create app** (highlighted in orange).

Name: Tehreem Tungekar
CWID: 10457940

You will see the status of your app environment on the next page:



The screenshot shows the AWS Elastic Beanstalk console. The left sidebar displays the 'Elastic Beanstalk' menu with options for 'Environments' and 'Applications'. Under 'Environments', there is a section for 'tehreempalindrome' with sub-items 'Application versions' and 'Saved configurations'. Below that, 'Tehreempalindrome-env' is listed. The main content area shows the 'Creating Tehreempalindrome-env' status, indicating it will take a few minutes. A log shows two messages: '4:36pm Using elasticbeanstalk-us-east-1-112619478712 as Amazon S3 storage bucket for environment data.' and '4:36pm createEnvironment is starting.'

After some time, you can see the status like:

Elastic Beanstalk ×

Environments
Applications

▼ tehreempalindrome
Application versions
Saved configurations

► Tehreempalindrome-env

Elastic Beanstalk > Environments > Tehreempalindrome-env

Creating Tehreempalindrome-env
This will take a few minutes....

```

4:37pm Created EIP: 3.90.24.179
4:37pm Environment health has transitioned to Pending. Initialization in progress (running for 6 seconds). There are no instances.
4:37pm Created security group named: sg-045a7b90e4f1beb9b
4:36pm Created SNS Notification Topic. ARN: arn:aws:sns:us-east-1:112619478712:ElasticBeanstalkNotifications-Environment-Tehreempalindrome-env
4:36pm Using elasticbeanstalk-us-east-1-112619478712 as Amazon S3 storage bucket for environment data.
4:36pm createEnvironment is starting.
  
```

After a few minutes, you can see that your environment has been created successfully.

Elastic Beanstalk ×

Environments
Applications

Elastic Beanstalk > Environments

All environments Actions Create a new environment

Filter results matching the display values

Environment name	Health	Application name	Date created	Last modified	URL	Running versions	Platform	Platform state	Tier name
Tehreempalindrome-env	OK	tehreempalindrome	2020-04-26 18:35:45 UTC-0400	2020-04-26 18:38:58 UTC-0400	Tehreempalindrome-env-aba-rg1aaw-us-east-1.elasticbeanstalk.com	Sample Application	PHP 7.3 running on 64bit Amazon Linux	Supported	WebServer

Click on the URL of the Elastic Beanstalk to see if everything is working.

You will get a page shown below so your environment has been created successfully and sample application has been deployed.

Name: Tehreem Tunekar
CWID: 10457940

Congratulations!

Your AWS Elastic Beanstalk *PHP* application is now running on your own dedicated environment in the AWS Cloud

You are running PHP version 7.3.15

What's Next?

- [AWS Elastic Beanstalk overview](#)
- [Deploying AWS Elastic Beanstalk Applications in PHP Using Eb and Git](#)
- [Using Amazon RDS with PHP](#)
- [Customizing the Software on EC2 Instances](#)
- [Customizing Environment Resources](#)

AWS SDK for PHP

- [AWS SDK for PHP home](#)
- [PHP developer center](#)
- [AWS SDK for PHP on GitHub](#)

By Clicking on the name of your environment, you can check the health of the environment:

Elastic Beanstalk

Environments

Applications

▼ tehreempalindrome

Application versions

Saved configurations

▼ **Tehreempalindrome-env**

Go to environment

Configuration

Logs

Health

Monitoring

Alarms

Managed updates

Events

Tags

▼ Recent environments

Tehreempalindrome-env

Tehreempalindrome-env

Tehreempalindrome-env.eba-rgjiiaaw.us-east-1.elasticbeanstalk.com (e-wopvkyghay)

Application name: tehreempalindrome

Refresh Environment actions

Health

Ok

Causes

Running version

Sample Application

Upload and deploy

Platform

PHP

PHP 7.3 running on 64bit Amazon Linux/2.9.4

Change

Recent events

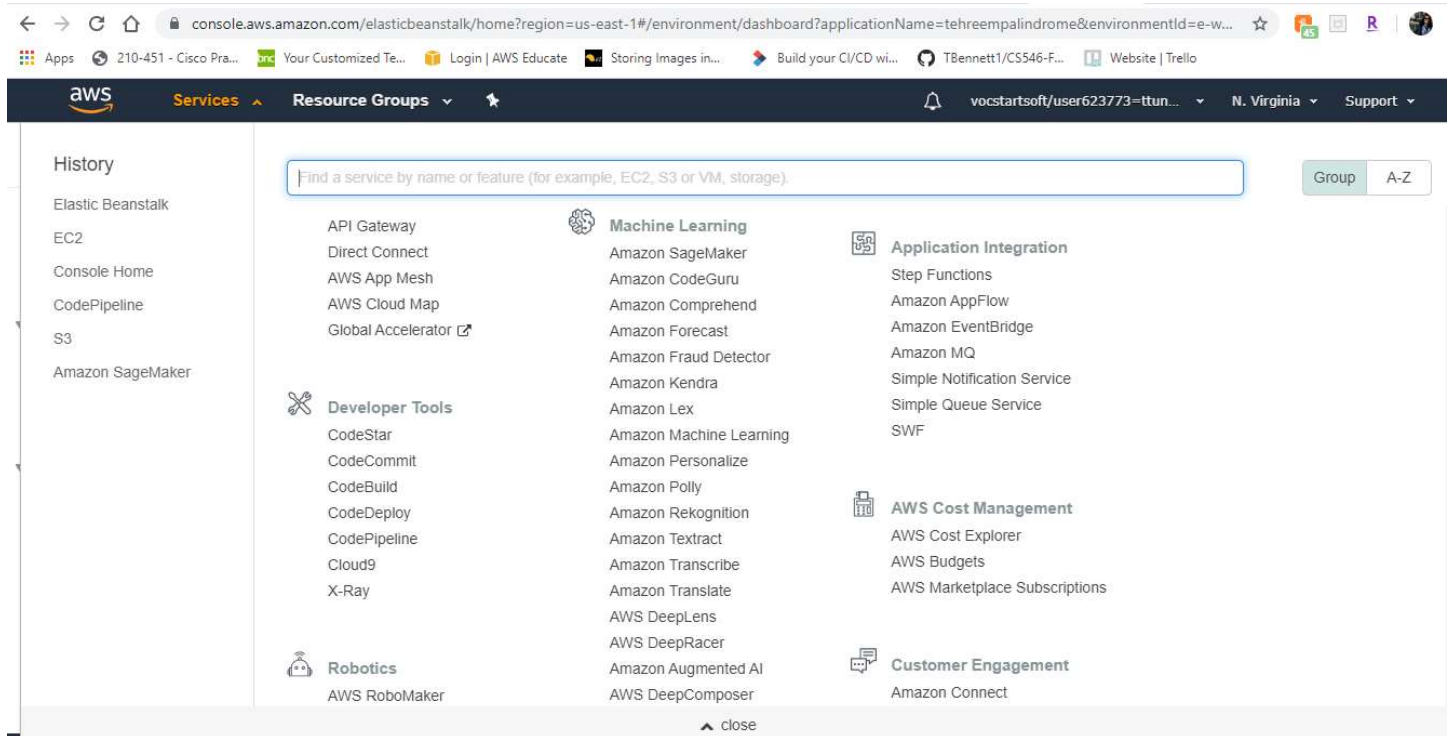
Show all

Time	Type	Details
2020-04-26 16:38:15 UTC-0400	INFO	Environment health has transitioned from Pending to Ok. Initialization completed 8 seconds ago and took 2 minutes.
2020-04-26 16:38:56 UTC-0400	INFO	Successfully launched environment: Tehreempalindrome-env
2020-04-26 16:38:55 UTC-0400	INFO	Application available at Tehreempalindrome-env.eba-rgjiiaaw.us-east-1.elasticbeanstalk.com.
2020-04-26 16:38:28 UTC-0400	INFO	Waiting for EC2 instances to launch. This may take a few minutes.
2020-04-26 16:38:16 UTC-0400	INFO	Added instance [i-07c80f08880651f63] to your environment.

Name: Tehreem Tunekar
CWID: 10457940

Creating a CodePipeline

Click on services dropdown, under Developer Tools select CodePipeline:



On the redirected next page, click on Create Pipeline:

The screenshot shows the AWS CodePipeline console. The sidebar on the left contains the following links: Developer Tools, CodePipeline, Source • CodeCommit, Build • CodeBuild, Deploy • CodeDeploy, Pipeline • CodePipeline (selected), Getting started (highlighted), Pipelines, and Settings. Below these are links for 'Go to resource' and 'Feedback'. The main content area has a dark blue header with 'Developer Tools' and a large white heading 'AWS CodePipeline visualize and automate the different stages of your software release process'. Below this heading is a paragraph: 'AWS CodePipeline is a continuous integration and continuous delivery service for fast and reliable application and infrastructure updates. CodePipeline builds, tests, and deploys your code every time there is a code change, based on the release process models you define..'. To the right of this text is a white box with the heading 'Create AWS CodePipeline pipeline', a paragraph 'Get started with AWS CodePipeline by creating your first continuous delivery and continuous integration pipeline.', and an orange 'Create pipeline' button. At the bottom right, a 'Pricing (US)' table shows 'Each active pipeline**' for '\$1/month*'. At the bottom left, a 'How it works' section is partially visible.

Give your pipeline a name, I have named it palindromepipeline and I will be creating a New Service Role for it.

console.aws.amazon.com/codesuite/codepipeline/pipeline/new?region=us-east-1

Services Resource Groups

Step 1
Choose pipeline settings

Step 2
Add source stage

Step 3
Add build stage

Step 4
Add deploy stage

Step 5
Review

Choose pipeline settings [Info](#)

Pipeline settings

Pipeline name
Enter the pipeline name. You cannot edit the pipeline name after it is created.

palindromepipe

No more than 100 characters

Service role

☒ New service role
Create a service role in your account

☐ Existing service role
Choose an existing service role from your account

Role name

AWSCodePipelineServiceRole-us-east-1-palindromepipe

Type your service role name

☒ Allow AWS CodePipeline to create a service role so it can be used with this new pipeline

[Advanced settings](#)

In the Advanced Settings option, keep location and managed key to default values. Click Next.

console.aws.amazon.com/codesuite/codepipeline/pipeline/new?region=us-east-1

Services Resource Groups

Step 1
Choose pipeline settings

Step 2
Add source stage

Step 3
Add build stage

Step 4
Add deploy stage

Step 5
Review

Choose pipeline settings [Info](#)

Pipeline settings

Pipeline name
Enter the pipeline name. You cannot edit the pipeline name after it is created.

palindromepipe

No more than 100 characters

Service role

☒ New service role
Create a service role in your account

☐ Existing service role
Choose an existing service role from your account

Role name

AWSCodePipelineServiceRole-us-east-1-palindromepipe

Type your service role name

☒ Allow AWS CodePipeline to create a service role so it can be used with this new pipeline

Advanced settings

Artifact store

☒ Default location
Use the default artifact store (Amazon S3 codepipeline-us-east-1-810631869467) designated in the same region and account as your pipeline

☐ Custom location
Choose an existing S3 location from your account in the same region and account as your pipeline

Encryption key

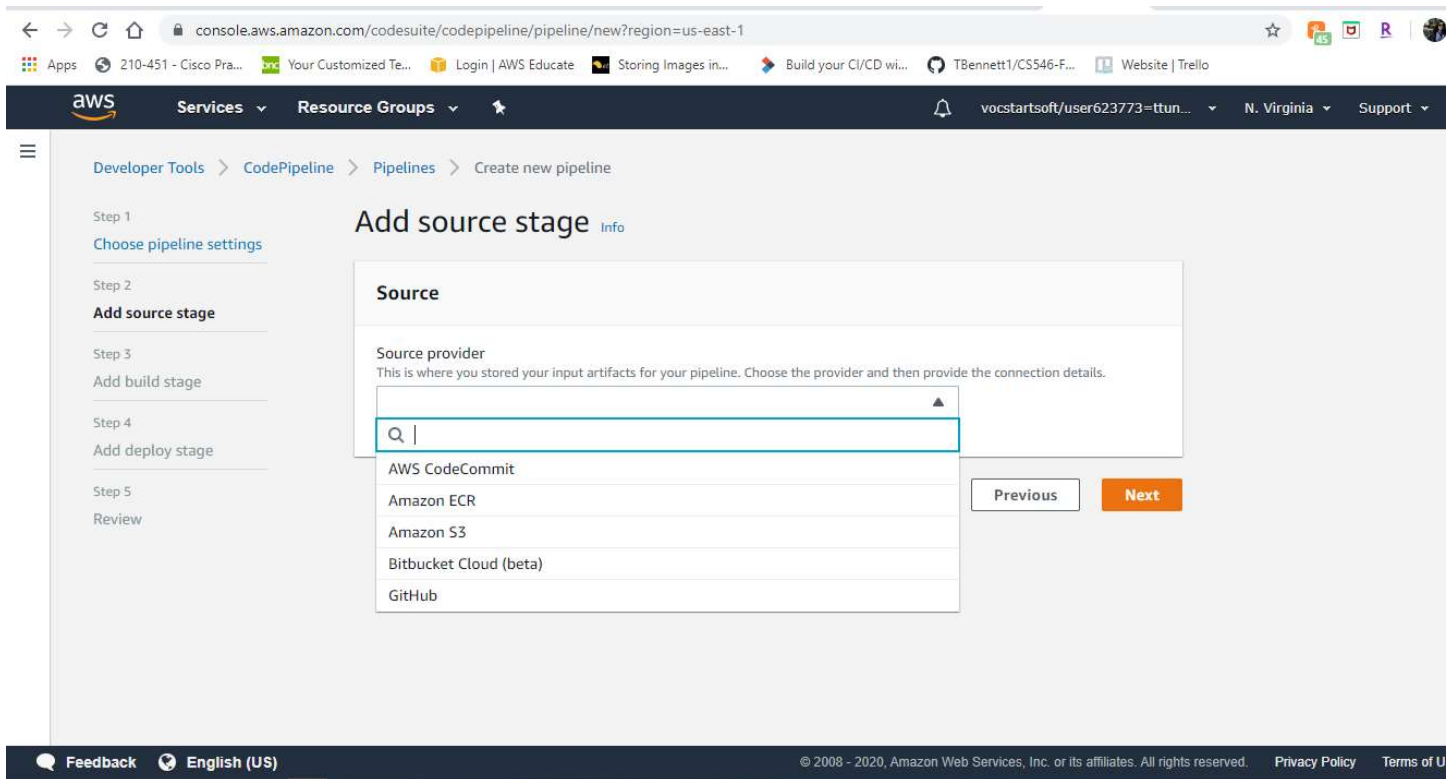
☒ Default AWS Managed Key
Use the AWS managed customer master key for CodePipeline in your account to encrypt the data in the artifact store.

☐ Customer Managed Key
To encrypt the data in the artifact store under an AWS KMS customer managed key, specify the key ID, key ARN, or alias ARN.

Cancel **Next**

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Under Source provider, there will be various options from where you want to get your code, in our case, it is GitHub.

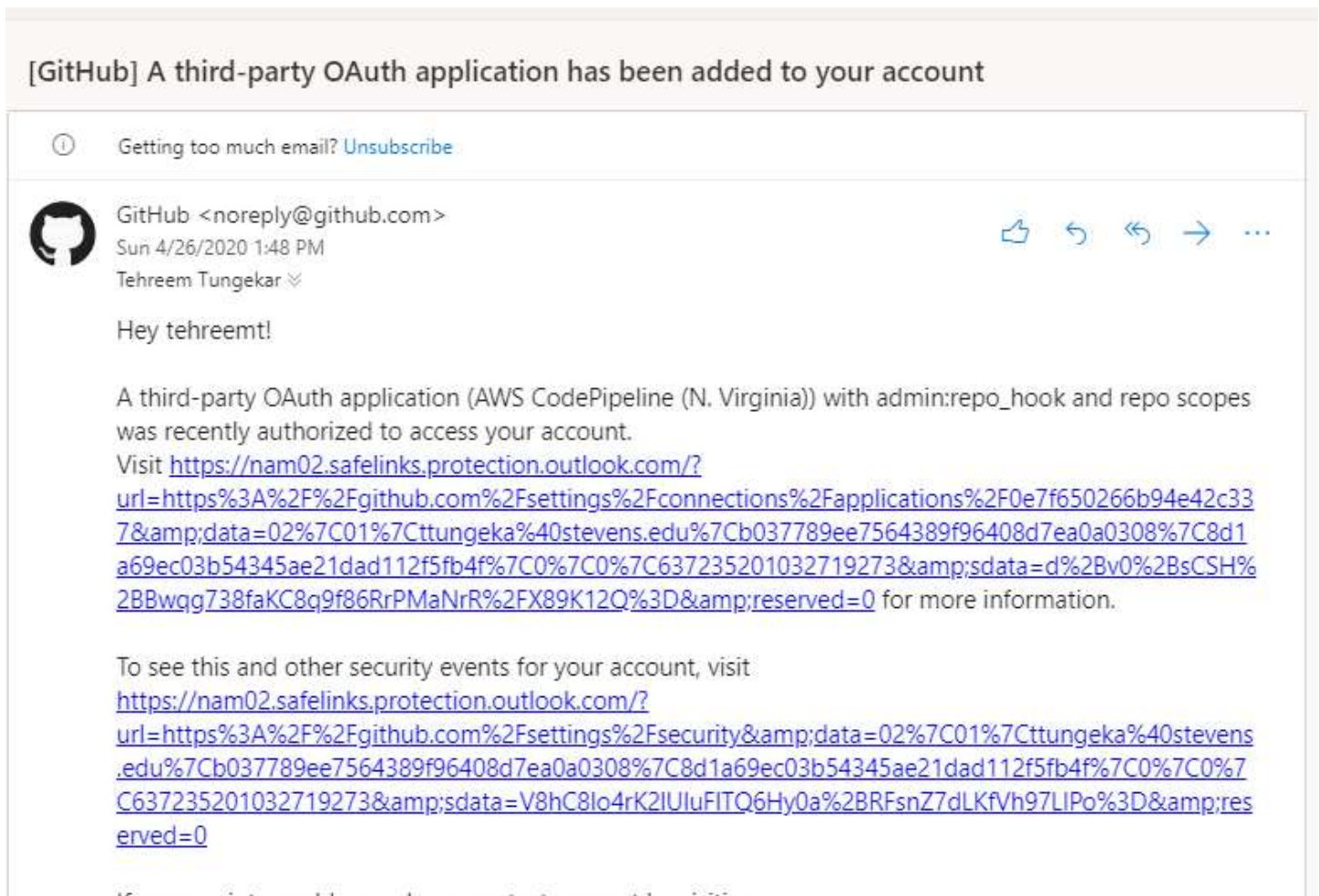


Select GitHub. Then you will be clicking on Connect to GitHub, it will ask you for your GitHub username and password to authenticate, after providing the credentials, you will be connected to GitHub. Input your name of GitHub repository from where you want your code to be fetched and also select master branch as code is in master branch of my repository.

The screenshot shows the AWS CodePipeline console interface. The left sidebar contains a navigation menu with steps: Step 1 (Choose pipeline settings), Step 2 (Add source stage), Step 3 (Add build stage), Step 4 (Add deploy stage), Step 5 (Review), and a Review button. The main content area is titled 'Add source stage' with an 'Info' link. It features a 'Source' section with a 'Source provider' dropdown set to 'GitHub'. Below this, a message states: 'Grant AWS CodePipeline access to your GitHub repository. This allows AWS CodePipeline to upload commits from GitHub to your pipeline.' A 'Connected' button is visible. A green success message box says: 'You have successfully configured the action with the provider.' Below the message, there are input fields for 'Repository' (containing 'tehreemt/aws') and 'Branch' (containing 'master').

One interesting thing about this step is, you will receive an email from GitHub that through OAuth, some third-party application is trying to access your repository.





Returning to our CodePipeline, Click Next.



console.aws.amazon.com/codesuite/codepipeline/pipeline/new?region=us-east-1

Services Resource Groups

Step 4
Add deploy stage
Step 5
Review

Grant AWS CodePipeline access to your GitHub repository. This allows AWS CodePipeline to upload commits from GitHub to your pipeline.

Connected

✓ You have successfully configured the action with the provider.

Repository
tehreemt/aws

Branch
master

Change detection options
Choose a detection mode to automatically start your pipeline when a change occurs in the source code.

☒ GitHub webhooks (recommended)
Use webhooks in GitHub to automatically start my pipeline when a change occurs

☐ AWS CodePipeline
Use AWS CodePipeline to check periodically for changes

Cancel Previous Next

On the next page you will be asked to select your Build, there will be two options, Jenkins or CodeCommit, but since in our case there is no build, click on Skip build stage.



The screenshot shows the AWS CodePipeline console interface. The breadcrumb navigation at the top reads: Developer Tools > CodePipeline > Pipelines > Create new pipeline. On the left, a sidebar lists the steps of the pipeline: Step 1: Choose pipeline settings, Step 2: Add source stage, Step 3: Add build stage (highlighted), Step 4: Add deploy stage, Step 5: Review. The main content area is titled 'Add build stage' with an 'Info' link. Below the title is a form for 'Build - optional'. The 'Build provider' section contains a text input field with a search icon and a dropdown arrow. Below the input field, two options are listed: 'AWS CodeBuild' and 'Add Jenkins'. To the right of the input field are two buttons: 'Skip build stage' and 'Next'.

After confirmation, the next page will ask for deploy provider, in our case, it is Elastic Beanstalk, so select that option. Now select your application name and application environment you created in the previous step. Click Next.



console.aws.amazon.com/codesuite/codepipeline/pipeline/new?region=us-east-1

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aws Services Resource Groups

Choose a provider for either the build stage or deployment stage.

Step 3
Add build stage

Step 4
Add deploy stage

Step 5
Review

Deploy

Deploy provider
Choose how you deploy to instances. Choose the provider, and then provide the configuration details for that provider.

AWS Elastic Beanstalk

Region
US East (N. Virginia)

Application name
Choose an application that you have already created in the AWS Elastic Beanstalk console. Or create an application in the AWS Elastic Beanstalk console and then return to this task.

Q tehreempalindrome X

Environment name
Choose an environment that you have already created in the AWS Elastic Beanstalk console. Or create an environment in the AWS Elastic Beanstalk console and then return to this task.

Q Tehreempalindrome-env X

Cancel Previous Next

Review your configurations on the next page and click on Create pipeline.



console.aws.amazon.com/codesuite/codepipeline/pipeline/new?region=us-east-1

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Developer Tools **CodePipeline**

- Source • CodeCommit
- Build • CodeBuild
- Deploy • CodeDeploy
- Pipeline • CodePipeline
 - Getting started
 - Pipelines
 - Settings

Go to resource Feedback

Pipeline settings

Pipeline name: palindromepipe
 Artifact location: codepipeline-us-east-1-810631669467
 Service role name: AWSCodePipelineServiceRole-us-east-1-palindromepipe

Step 2: Add source stage

Source action provider

Source action provider
 ThirdParty GitHub
 PullForSourceChanges
 false
 Repo
 aws
 Owner
 tehrasmit
 Branch
 master

Step 3: Add build stage

Build action provider

Build stage
 No build

Step 4: Add deploy stage

Deploy action provider

Deploy action provider
 AWS ElasticBeanstalk
 ApplicationName
 tehrasmpalindrome
 EnvironmentName
 Tehrasmpalindrome-env

Cancel Previous **Create pipeline**

Feedback English (US)

You should be redirected to a page which shows that your pipeline has been created and its execution is still in progress.



The screenshot shows the AWS CodePipeline console for a pipeline named 'palindromepipe'. A green success banner at the top states: 'Success Congratulations! The pipeline palindromepipe has been created.' Below this, the pipeline stages are listed: 'Source' (In progress) and 'Deploy' (Didn't Run). The Source stage is currently in progress, with a pipeline execution ID of 12920e4f-594c-4e2d-ac1b-8a95bf780037. The Deploy stage is not yet started. The left sidebar shows the navigation menu for CodePipeline, including Source, Build, Deploy, Pipeline, and Settings.

After a few minutes, the Source status changes to Succeeded and the deploy status will be In Progress.

The screenshot shows the AWS CodePipeline console for the 'palindromepipe' pipeline. The Source stage is now 'Succeeded', with a pipeline execution ID of 12920e4f-594c-4e2d-ac1b-8a95bf780037. The Deploy stage is now 'In progress', with the same pipeline execution ID. The Source stage details show it used GitHub as the provider and completed the action 'Update story.html'. The Deploy stage is currently in progress. The left sidebar and success banner remain the same as in the previous screenshot.

Name: Tehreem Tunekar
CWID: 10457940

After a few minutes, the Deploy status will be shown as Succeeded.

The screenshot shows the AWS CodePipeline console for a pipeline named 'palindromepipe' in the 'us-east-1' region. A green success banner at the top reads: 'Success Congratulations! The pipeline palindromepipe has been created. Create a notification rule for this pipeline'. The pipeline diagram shows two stages: 'Source' and 'Deploy'. The 'Source' stage, using 'CodeCommit' as provider, is marked 'Succeeded - 1 minute ago' with action 'd5244e96' performing 'Source: Update story.html'. A 'Disable transition' button is visible between the stages. The 'Deploy' stage, using 'AWS Elastic Beanstalk' as provider, is marked 'Succeeded' with action 'd5244e96' performing 'Source: Update story.html'. The pipeline execution ID is '12920e4f-594c-4e2d-ac1b-8a95bf780037'. The left sidebar shows the 'CodePipeline' service selected under 'Developer Tools'.

Click on the Elastic Beanstalk URL:

<http://tehreempalindrome-env.eba-rgjiaaw.us-east-1.elasticbeanstalk.com/> as you can see below, the code has been successfully deployed.

→ ↻ 🏠 ⓘ Not secure | tehreempalindrome-env.eba-rgjiiaw.us-east-1.elasticbeanstalk.com | 📄 ☆ |

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Tehreem's Palindrome Checker

Enter Phrase:

Tehreem Tunekar CWID: 10457940

[Index](#)
[Education](#)
[Story](#)

After testing four strings, the ones which are palindromes are coloured blue and the ones which are not are red in colour:



← → ↻ 🏠 ⚠ Not secure | tehreempalindrome-env.eba-rgjiaaw.us-east-1.elasticbeanstalk.com ☆ ⓘ

📱 Apps 🌐 210-451 - Cisco Pra... 📄 Your Customized Te... 📁 Login | AWS Educate 🖼 Storing Images in... 🚀 Build your CI/CD wi... 👤 TBennett1/CS546-F... 🌐 Website | Trello

Tehreem's Palindrome Checker

Enter Phrase:

1. madam
2. hi
3. muskmelon
4. Nurses,run!

Tehreem Tunekar CWID: 10457940

• [Index](#)
• [Education](#)
• [Story](#)

Click on Education link on the bottom of this page.



Not secure | tehreempalindrome-env.eba-rgjiaaw.us-east-1.elasticbeanstalk.com/education.html

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- [Index](#)
- [Education](#)
- [Story](#)

My Education

Stevens Institute Of Technology

Web Programming

Well, since this is my first semester, there are not many memories, but I do remember one incident- I am enrolled in one of the web based courses, so I have not met the professor for the course personally, just saw him in the web lectures in videos. One day I was in the Gateway South building where I have my other on-campus classes and I saw the professor(the web course) and I thought he would not recognise me but I was surprised when he did! The Professor has pretty good memory it seems. Trust me, if I would have been in his place, I would not have recognised my student, as my memory is not that good.

S.G.G.S.I.E.&T.

E-Commerce

During my Bachelors, Sem VI actually, I was the Students Chief Coordinator for a national level technical event in my institute, so I remember, that time, I used to leave my room at 6 am, work in the office till 12 pm, without any breaks, attend college till 6 pm(as my college was damn strict about attendance) and then work again for the event till 12 am. So basically there used to be days on which I just used to forget I did not eat anything since morning, but my friend Sneha, always used to get something for me before the hostel mess closed so that I can eat something. I will never forget her caring nature and thoughtfulness.

St. Mary's Convent

Mathematics

In school, I and my two other friends were(incidentally) the tallest ones in the class, so being tall comes with a price, the teachers always force you to sit on the last bench; well, we did not enjoy sitting in the last rows but the funny thing is we used to eat and talk a lot during some boring lectures like History and Geography because the teachers' focus would always be on the front rows. Those two are still my best friends and we laugh whenever we remember those days!

Now click on story link from the left corner of this page:

Not secure | tehreempalindrome-env.eba-rgjiaaw.us-east-1.elasticbeanstalk.com/story.html

Apps 210-451 - Cisco Pra... Your Customized Te... Login | AWS Educate Storing Images in... Build your CI/CD wi... TBennett1/CS546-F... Website | Trello

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- [Education](#)
- [Story](#)

The Day I wrote my First Story

So I was working as a full-time Programmer Analyst in a multinational company, and suddenly one of my friends asked me if I could write a short story for her company's essay competition. Well, I had never written a story previously(apart from the ones when we had to write in school), so I thought I would not be able to do a good job. Since my friend requested me, I thought, hmm, maybe, I should give it a try atleast. Anyway, its not going to be selected, so why not just write something meaningful.

I wrote this story and I remember writing it in less than an hour and I just gave it to my friend. She thanked me and guess what happened the other day! The story that I wrote was selected by the judges and my friend called up and told me she had received a prize for it. I was so happy for her, eventually my friend ended up giving the prize to me. Anyway, the whole experience was quite overwhelming and now I have so many of my friends asking to write short stories. Haha.

Thanks for reading this piece!

Name: Tehreem Tungekar
CWID: 10457940



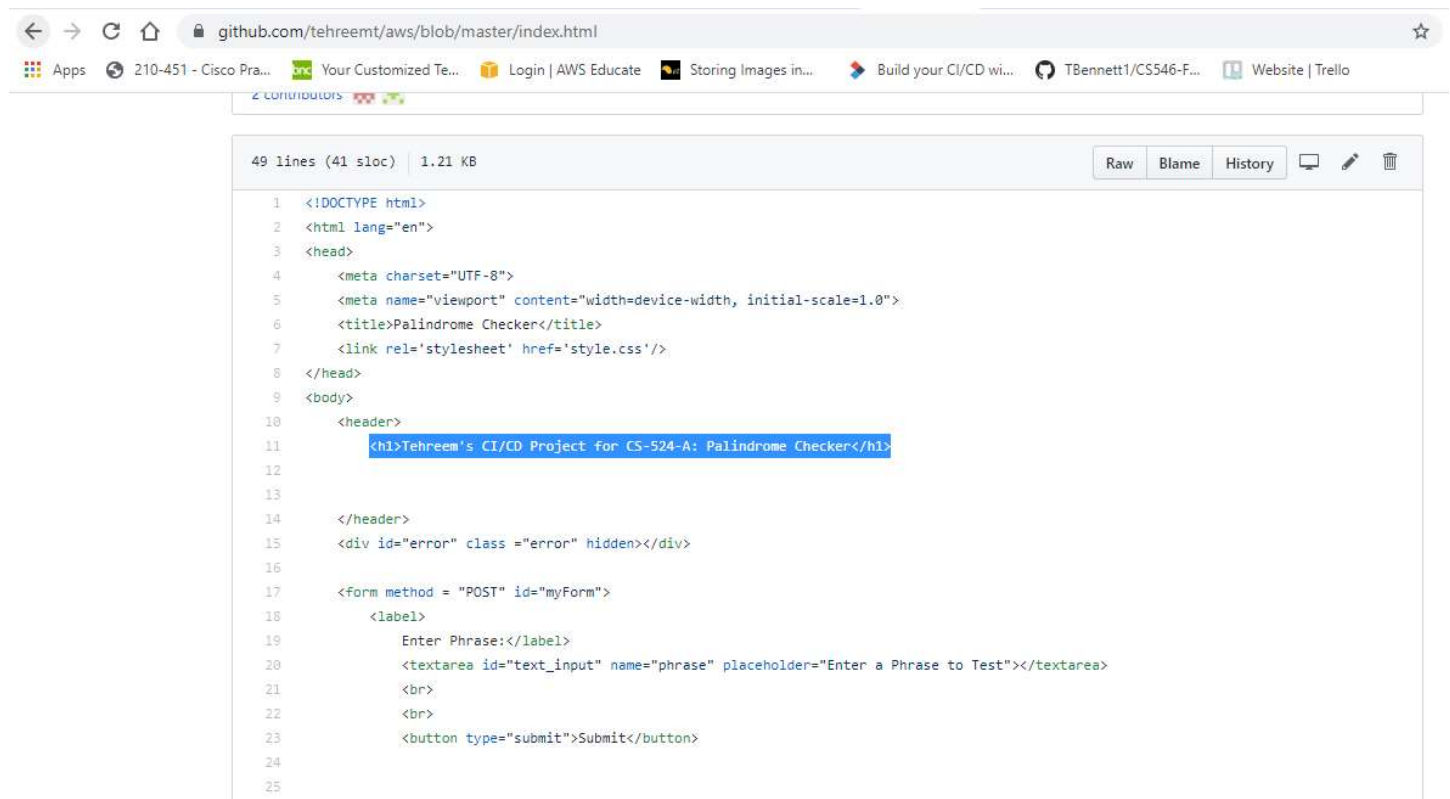
Implementation: Committing changes and updating our app:

Go to your GitHub account and make these changes:

Firstly, the colour of education page looks too dull, so change it to **white** colour.

Also, on the index page, I want the header to be **Tehreem's CI/CD Project for CS-524-A: Palindrome Checker**.

Go to index.html and edit the text:



```

49 lines (41 sloc) | 1.21 KB
Raw Blame History

1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4   <meta charset="UTF-8">
5   <meta name="viewport" content="width=device-width, initial-scale=1.0">
6   <title>Palindrome Checker</title>
7   <link rel="stylesheet" href="style.css"/>
8 </head>
9 <body>
10   <header>
11     <h1>Tehreem's CI/CD Project for CS-524-A: Palindrome Checker</h1>
12   </header>
13
14   <div id="error" class="error" hidden></div>
15
16   <form method="POST" id="myForm">
17     <label>
18       Enter Phrase:</label>
19     <textarea id="text_input" name="phrase" placeholder="Enter a Phrase to Test"></textarea>
20     <br>
21     <br>
22     <button type="submit">Submit</button>
23
24
25

```

After committing, go to education.html to change the colour of the page:

Name: Tehreem Tunekar
CWID: 10457940



The screenshot shows a GitHub repository page for the file `aws/education.html` by user `tehreemt`. The page is viewed on the `master` branch. The commit history shows a single commit titled "Update education.html" by `tehreemt` with commit hash `bf76e3d` and a commit time of 4 minutes. The file is 3 KB and contains 58 lines of code (56 SLOC). The code is an HTML document with a maroon color and a white background. The code is as follows:

```

1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4   <meta charset="UTF-8">
5   <meta name="viewport" content="width=device-width, initial-scale=1.0">
6   <title>My Education</title>
7   <style>
8     body {
9       color: maroon;
10      background-color: white;
11      font-family: Arial, sans-serif;

```

Now go to your CodePipeline:

The Code is being deployed



The screenshot displays the AWS CodePipeline console for a pipeline named 'palindromepipe'. The pipeline is currently in a 'Succeeded' state for the 'Source' stage and 'In progress' for the 'Deploy' stage. The 'Source' stage is using the 'GitHub' provider and has completed successfully. The 'Deploy' stage is using the 'AWS Elastic Beanstalk' provider and is currently in progress. The console interface includes a left-hand navigation menu with options like 'Source', 'Build', 'Deploy', and 'Pipeline'. The top of the console shows the AWS logo and navigation tabs for 'Developer Tools', 'CodePipeline', and 'Pipelines'.

Wait for a few more seconds, until it is Succeeded:

Name: Tehreem Tungekar
CWID: 10457940

The screenshot displays the AWS CodePipeline console interface. The top navigation bar includes the AWS logo, 'Services', and 'Resource Groups'. The left sidebar shows the 'Developer Tools' section with 'CodePipeline' selected. The main content area shows the details of a pipeline named 'palindromepipe'. The pipeline execution ID is 'dfb21661-c239-4c66-958b-c17e1d308e9e'. The pipeline consists of two stages: 'Source' and 'Deploy'. The 'Source' stage is marked as 'Succeeded' and shows a commit from '058a3a3c' with the message 'Update education.html'. The 'Deploy' stage is also marked as 'Succeeded' and shows a deployment to 'AWS Elastic Beanstalk' with the same commit. A 'Disable transition' button is visible between the stages.

Now go to your elastic beanstalk URL:

The background colour has been changed to white.

Name: Tehreem Tunekar
CWID: 10457940



- [Index](#)
- [Education](#)
- [Story](#)

My Education

Stevens Institute Of Technology

Web Programming

Well, since this is my first semester, there are not many memories, but I do remember one incident- I am enrolled in one of the web based courses, so I have not m him in the web lectures in videos. One day I was in the Gateway South building where I have my other on-campus classes and I saw the professor(the web course) surprised when he did! The Professor has pretty good memory it seems. Trust me, if I would have been in his place, I would not have recognised my student, as my

S.G.G.S.I.E.&T.

E-Commerce

During my Bachelors, Sem VI actually, I was the Students Chief Coordinator for a national level technical event in my institute, so I remember, that time, I used to le without any breaks, attend college till 6 pm(as my college was damn strict about attendance) and then work again for the event till 12 am. So basically there used to anything since morning; but my friend Sneha, always used to get something for me before the hostel mess closed so that I can eat something. I will never forget he

St. Mary's Convent

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Click on the link to Index page and see the text has been changed:



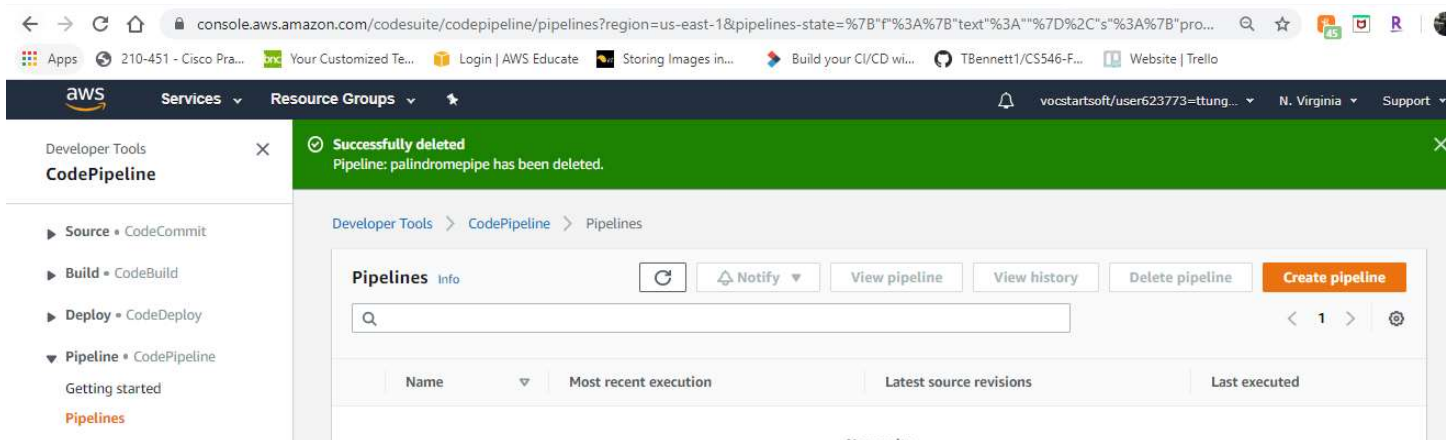
Tehreem's CI/CD Project for CS-524-A: Palindrome Checker

Enter Phrase:

Tehreem Tunekar CWID: 10457940

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[Education](#)
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Lastly, go to CodePipeline, select your pipeline and Click on Delete Pipeline.



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Similarly, terminate your Elastic Beanstalk environment.

Conclusion

It makes perfect sense to go with CodePipeline if you are already on the AWS cloud. Limited to AWS cloud, CodePipeline is fairly simple to use and can get along easily with your existing AWS cloud, AWS tools, and AWS ecosystem. Plus, there are added advantages like Amazon's security and Amazon's IAM controls. Its simplicity is the factor that I think will help it gain more market in near future. It is so simple to use that even a newbie can set a CodePipeline up and running in a matter of hours. One interesting thing about implementing this project is how OAuth 2.0 is used in the backend to authorize the third-party Amazon service to access my code from GitHub. This shows how I do not have to give my username/password credentials to access my GitHub repository through Amazon, instead access tokens are generated in the backend and the whole process is carried out hassle free. CodePipeline can be used in various places where software is being built by multiple people and can be easily tested for Unit testing/ Load Testing.

Appendix

All the sources and references are covered in References section.

References

<https://docs.aws.amazon.com/codepipeline/latest/userguide/tutorials-simple-codecommit.html>

https://aws.amazon.com/elasticbeanstalk/?nc2=type_a

<https://www.opcito.com/blogs/build-your-ci-cd-with-aws-codepipeline-and-elastic-beanstalk/>