PROGRAM 1: Exploring AWS CloudShell and the AWS Cloud9 IDE

Steps for creating CloudShell Step 1:

Login to AWS Account

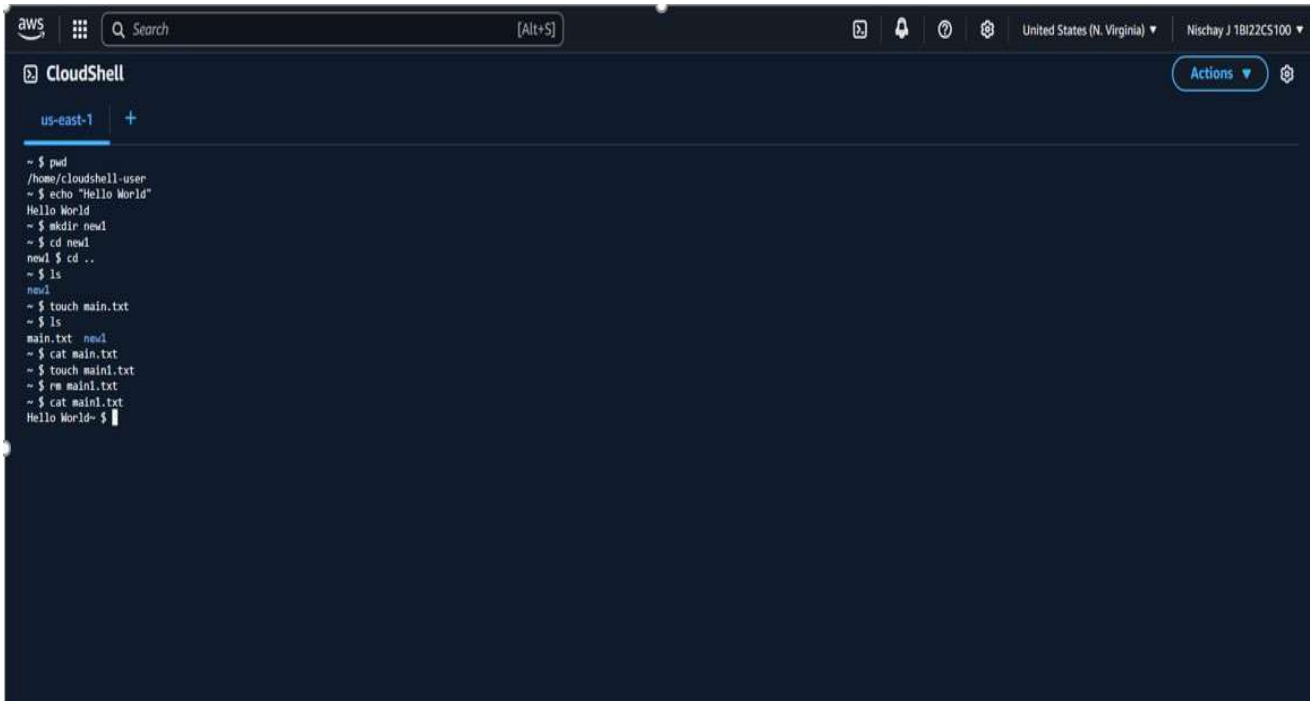
Step 2: Open CloudShell

Step 3: Execute shell commands in the terminal
Step 4: Choose Download file from Actions dropdown menu

Step 5: Provide the path to the file created (demo.txt)
Step 6: An empty file "demo.txt" is downloaded

Step 7: Add content in the downloaded file(demo.txt) and save
Step 8: Execute 'rm' command. To upload file, click on Upload file option from the Actions dropdown menu

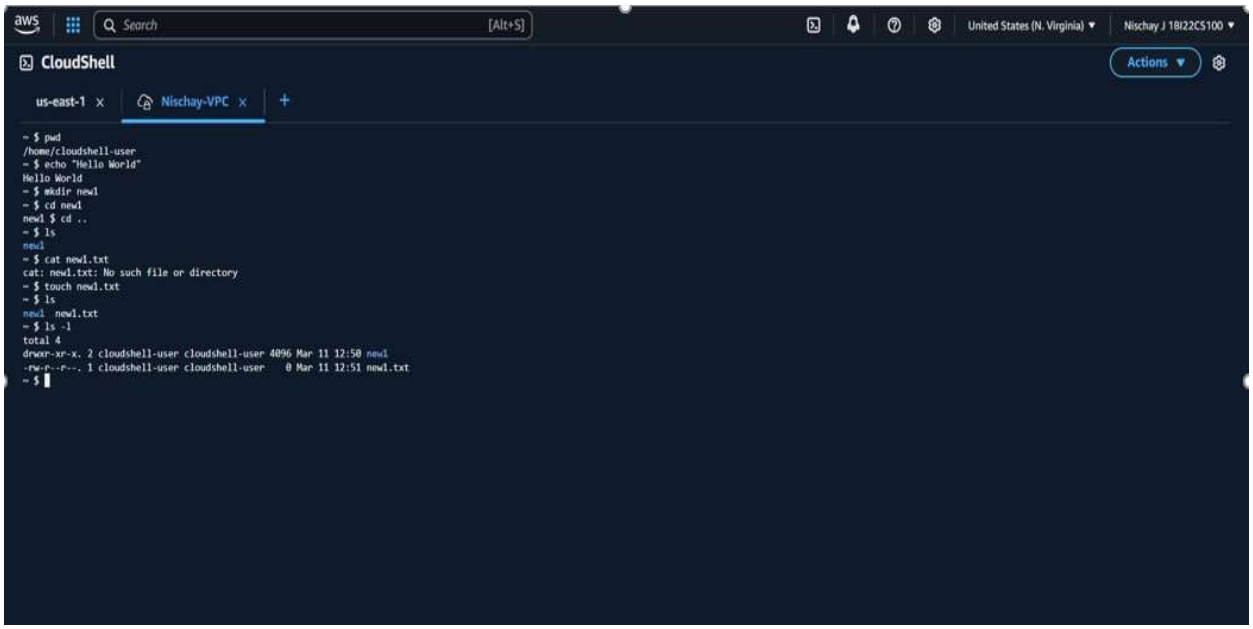
Step 9: Upload demo.txt file
Step 10: Once uploaded successfully, check the contents of demo.txt using the 'cat' command



Steps for creating VPC Environment

Step 1: From the Actions menu choose 'Create VPC environment'
Step 2: Give a VPC name and choose VPC, Subnet and the default security group. Click on Create

Step 3: Execute the same commands as of CloudShell in the VPC window except for download and upload file options



Step 4: Once all the commands are executed delete the VPC

Step 5: Also delete the CloudShell once the commands are executed

Steps to create EC2 instance

Step 1: Open EC2 in AWS Console and click on Launch Instance

Step 2: Name the instance and proceed below

Step 3: Click on create new key pair .Create a new key pair by providing a name

Step 4: Keep the default options for the rest and click on Launch Instance

Step 5: Confirmation of the launch of our new instance

Step 6: Click on Instances. It displays the instances that are running. Click on Instance ID to know about a particular instance.

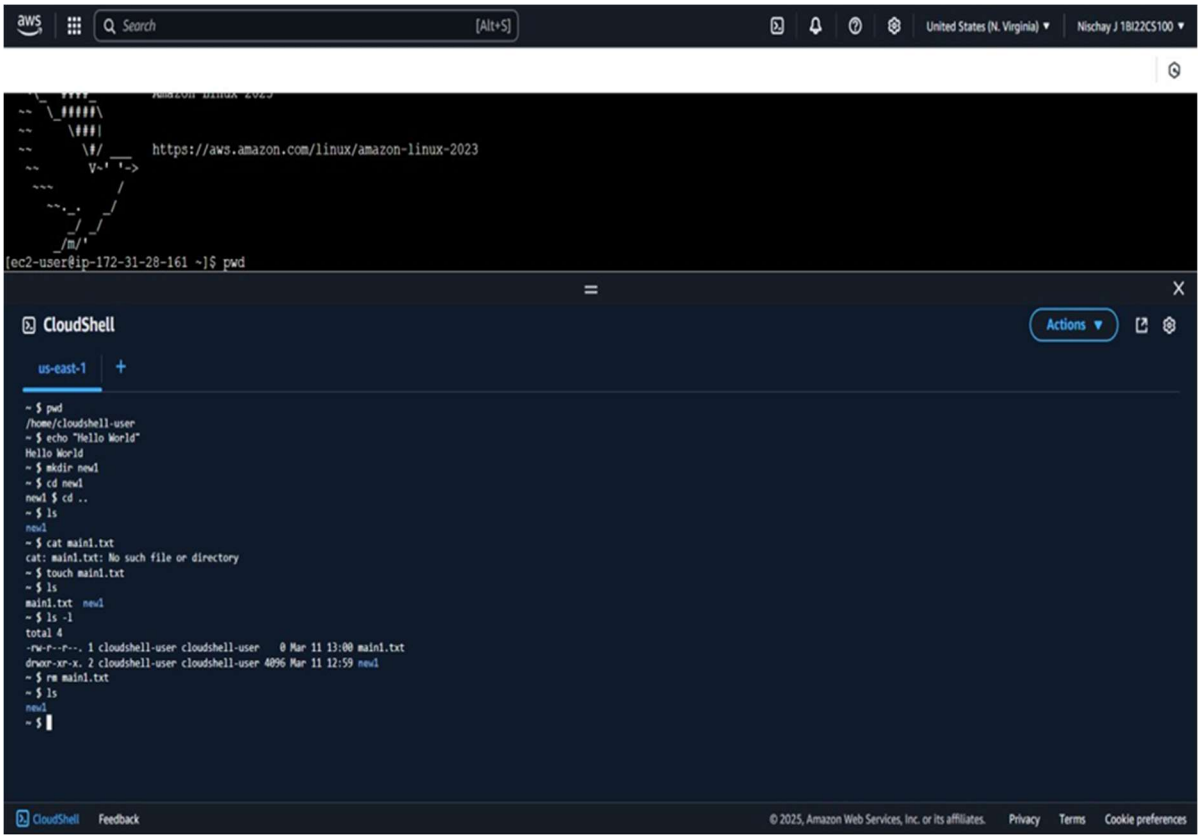
Step 7: Click on the Connect option on the top-right to connect to an instance

Step 8: Keep the default options and click on Connect

Step 9: An Amazon-Linux terminal is displayed

Step 10: Execute the commands executed in VPC in this terminal

Step 11: The CloudShell button on the bottom-left corner can be clicked to open a shell terminal. We can execute commands and create VPC here



Step 12: Delete the EC2 instance after execution by clicking on Terminate(delete) instance

Step 13: Indicates the successful termination of the instance. Also delete the corresponding key pair and Security groups associated with this instance

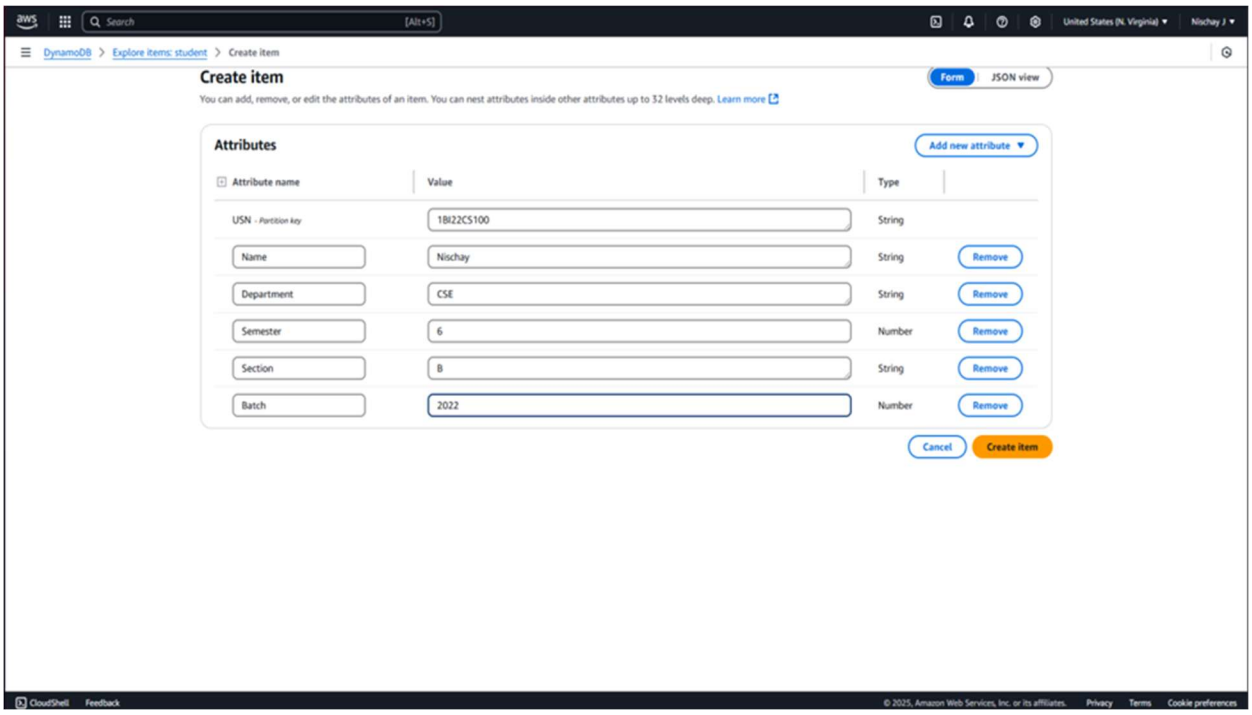
User can sign-out of the AWS account after these steps.

PROGRAM 2: Working with DynamoDB which makes use of PartiQL

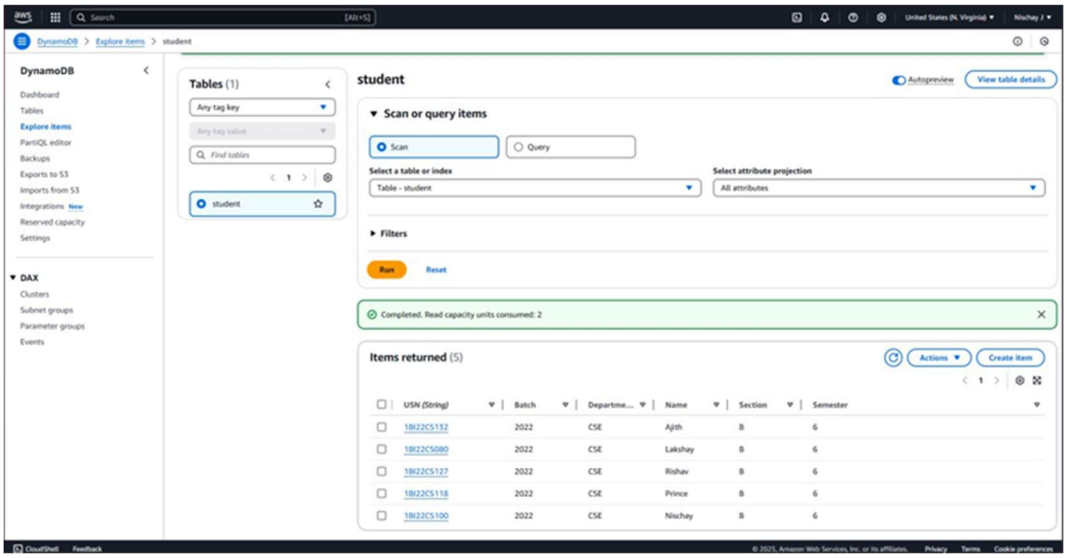
Steps for creation of DynamoDB User

Step 1: Login to AWS account. Search for DynamoDB
Step 2: Select "Tables" from the left panel and click on "Create Table"
Step 3: Enter the details by giving the table name as "student" and partition key as "USN"
Step 4: Select "Customize Settings" under Table Settings and select "DynamoDB standard- IA" under Table Class
Step 5: Click on "Create Table". Once the table is created successfully click on the highlighted table link
Step 6: Click on the "Explore table items"

Step 7: Click on "Create item"

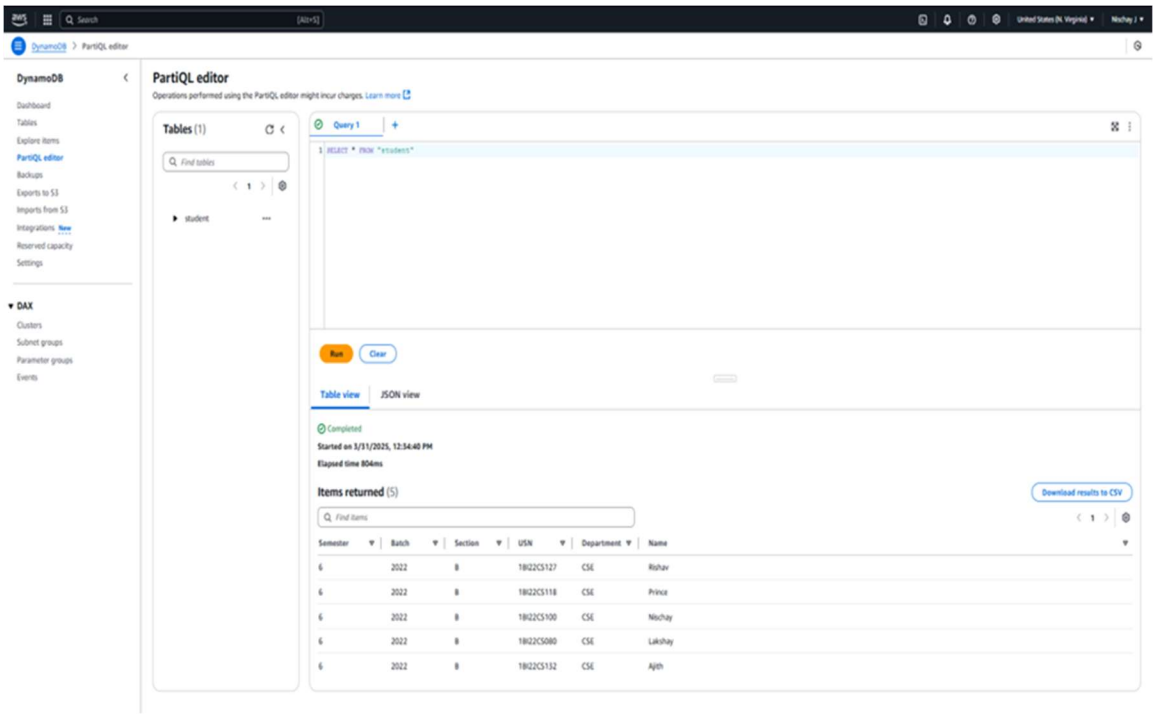


Step 8: Create a new item by filling up the Attributes such as Name, Dept, Sem, Sec, Batch. And click on "Create item"
Step 9: The Table shows the item created
Step 10: Create another item using JSON view (Java Script Object Notation)
Step 11: Create a total of 4-5 items using Form or JSON view



Step 12: Click on the "PartiQL editor" on the left panel. Click on the 3 dots next to the students and it will provide ways in the table can be viewed

Step 13: If we click on "scan table" the whole table will be visible



Step 14: Click on "Query table" -> Clear ->Replace the USN value with any of the given values->Run
Step 15: Now Click on "Set item", once it is executed, select "scan table" for the updated table

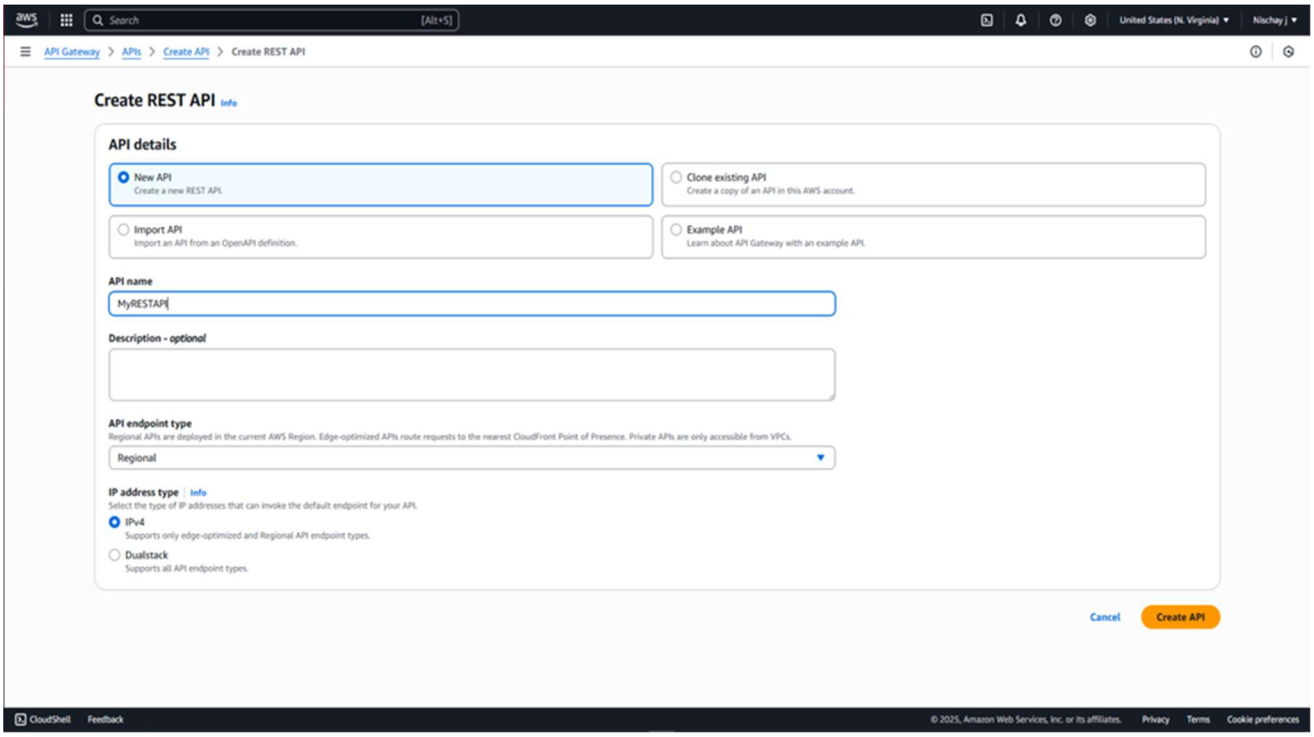
Step 16: Click on "Drop item", and once again select the "scan table" for the updated table

Step 17: Delete the table "student", by clicking on "Delete" under "Actions"

PROGRAM 3 : Developing REST APIs with Amazon API Gateway

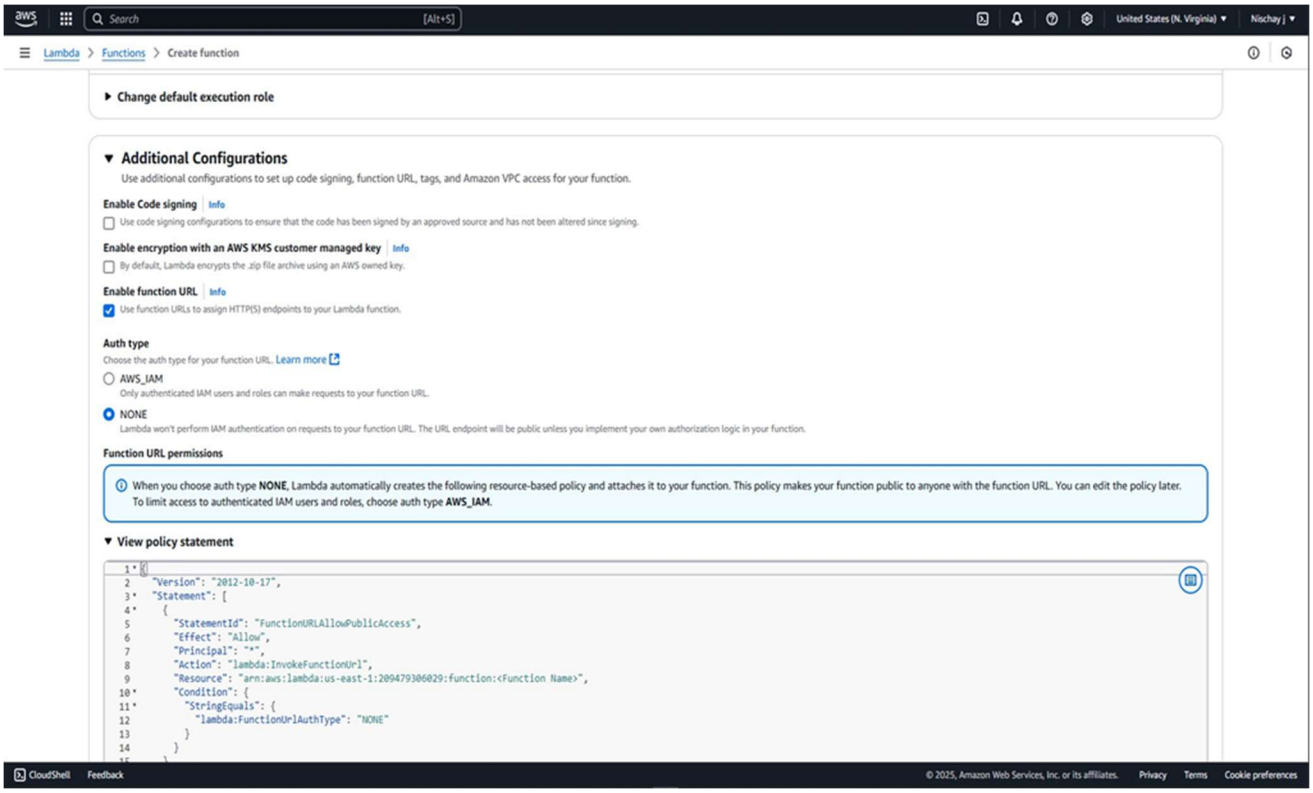
Steps for creating a REST API:

Step 1: Open AWS and Sign In to the Console.
Step 2: Open Amazon API Gateway dashboard.
Step 3: Choose an API type window appears scroll down to find REST API and click Build.
Step 4: Select New API, give a name and scroll down, click on Create API.



Step 5: Successful creation notification is displayed, click on Create method.
Step 6: Open link in new tab and create Lambda Function.
Step 7: Enter the function name and 'Python 3.13' as runtime.
Step 8: Enable function URL and keep Auth type as NONE.
Step 9: Now, go to REST API, choose create method, choose HTTP and HTTP method, and choose lambda function, paste function ARN and create method.

Step 10: Successfully created 'GET' method.
Step 11: In Deploy API dialog box give Stage as 'New Stage' and give it name then click on Deploy
Step 12: Successfully created deployment for MyRESTAPI.
Step 13: copy the Invoke URL to new Tab and view Output.


Lambda > Functions > Create function
Change default execution role
Additional Configurations
Use additional configurations to set up code signing, function URL, tags, and Amazon VPC access for your function.
Enable Code signing
Enable encryption with an AWS KMS customer managed key
Enable function URL
Use function URLs to assign HTTP(S) endpoints to your Lambda function.
Auth type
Choose the auth type for your function URL. Learn more
AWS_IAM
Only authenticated IAM users and roles can make requests to your function URL.
NONE
Lambda won't perform IAM authentication on requests to your function URL. The URL endpoint will be public unless you implement your own authorization logic in your function.
Function URL permissions
When you choose auth type NONE, Lambda automatically creates the following resource-based policy and attaches it to your function. This policy makes your function public to anyone with the function URL. You can edit the policy later. To limit access to authenticated IAM users and roles, choose auth type AWS_IAM.
View policy statement
{
"Version": "2012-10-17",
"Statement": [
{
"StatementId": "FunctionURLAllowPublicAccess",
"Effect": "Allow",
"Principal": "*",
"Action": "lambda:InvokeFunctionUrl",
"Resource": "arn:aws:lambda:us-east-1:209479306029:function:<Function Name>",
"Condition": {
"StringEquals": {
"lambda:FunctionUrlAuthType": "NONE"
}
}
}
CloudShell
Feedback
© 2025, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
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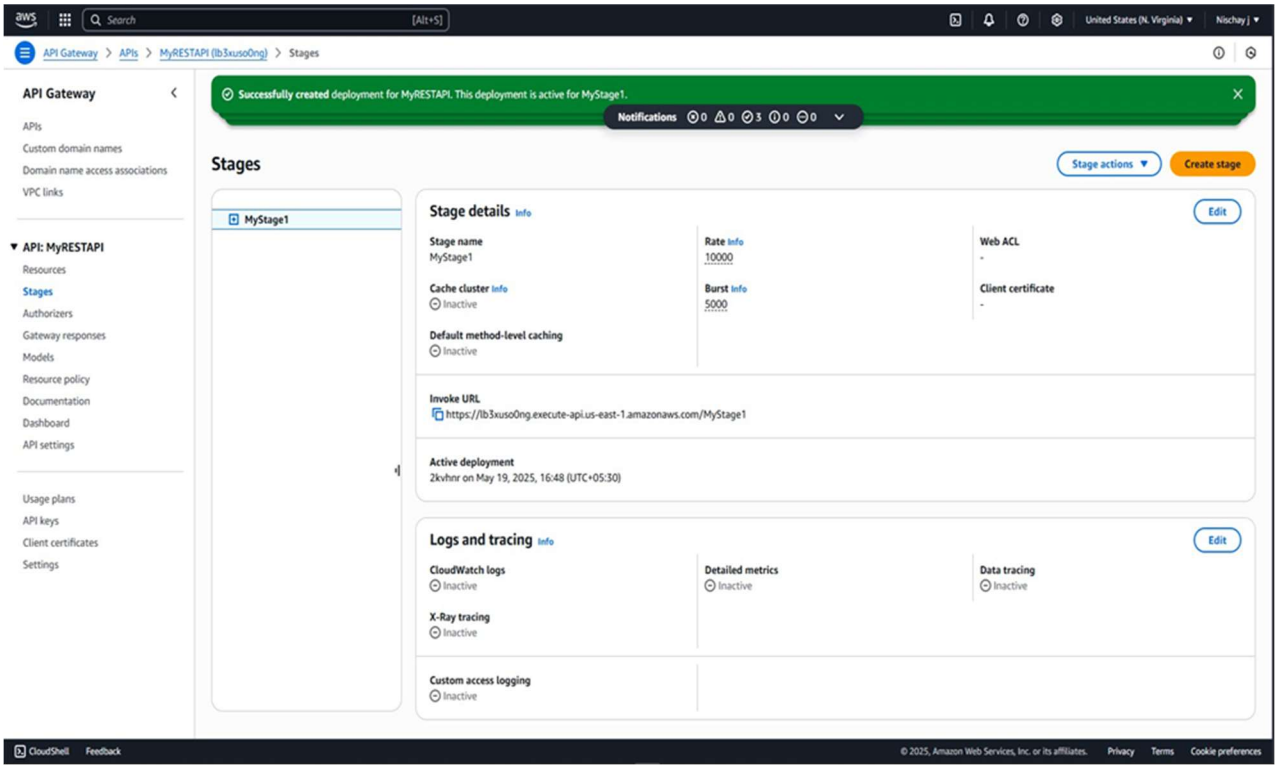
API Gateway > APIs > MyRESTAPI (lb3xuso0ng) > Stages
API Gateway
APIs
Custom domain names
Domain name access associations
VPC links
API: MyRESTAPI
Resources
Stages
Authorizers
Gateway responses
Models
Resource policy
Documentation
Dashboard
API settings
Usage plans
API keys
Client certificates
Settings
Successfully created deployment for MyRESTAPI. This deployment is active for MyStage1.
Notifications
Stages
Stage actions
Create stage
MyStage1
Stage details
Edit
Stage name
MyStage1
Rate
10000
Web ACL
-
Cache cluster
Inactive
Burst
5000
Client certificate
-
Default method-level caching
Inactive
Invoke URL
https://lb3xuso0ng.execute-api.us-east-1.amazonaws.com/MyStage1
Active deployment
2kvhnr on May 19, 2025, 16:48 (UTC+05:30)
Logs and tracing
Edit
CloudWatch logs
Inactive
Detailed metrics
Inactive
Data tracing
Inactive
X-Ray tracing
Inactive
Custom access logging
Inactive
CloudShell
Feedback
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Privacy
Terms
Cookie preferences

Steps for Deletion of REST API:

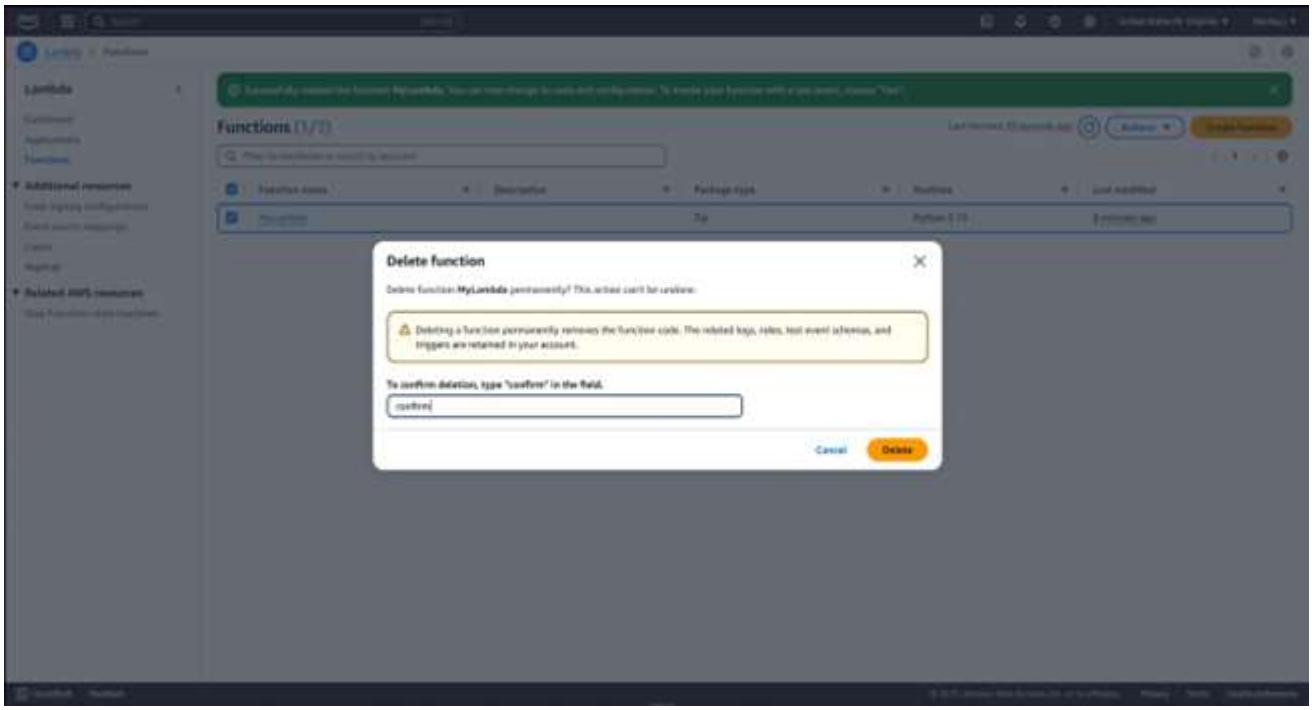
Step 1: Select the API been created and click on 'Delete'.

Step 2: To confirm the action, enter 'confirm' and click on delete.

Step 3: Select the lambda function been created and click on 'Actions' then click on delete.

Step 4: To confirm the action, enter 'confirm' and click on delete

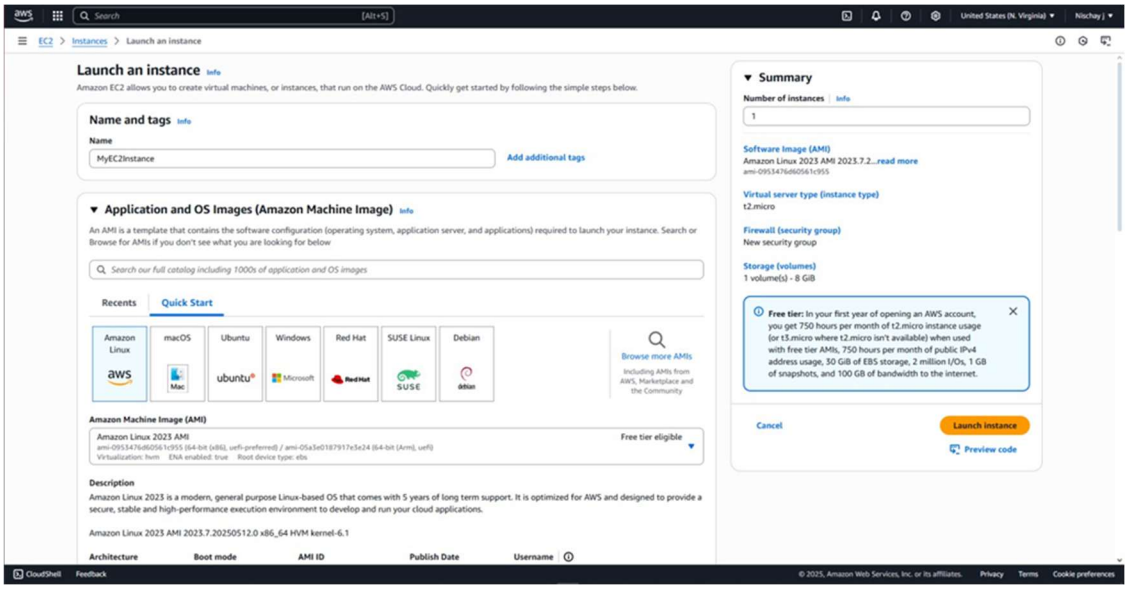
Step 5: Lambda function is deleted successfully



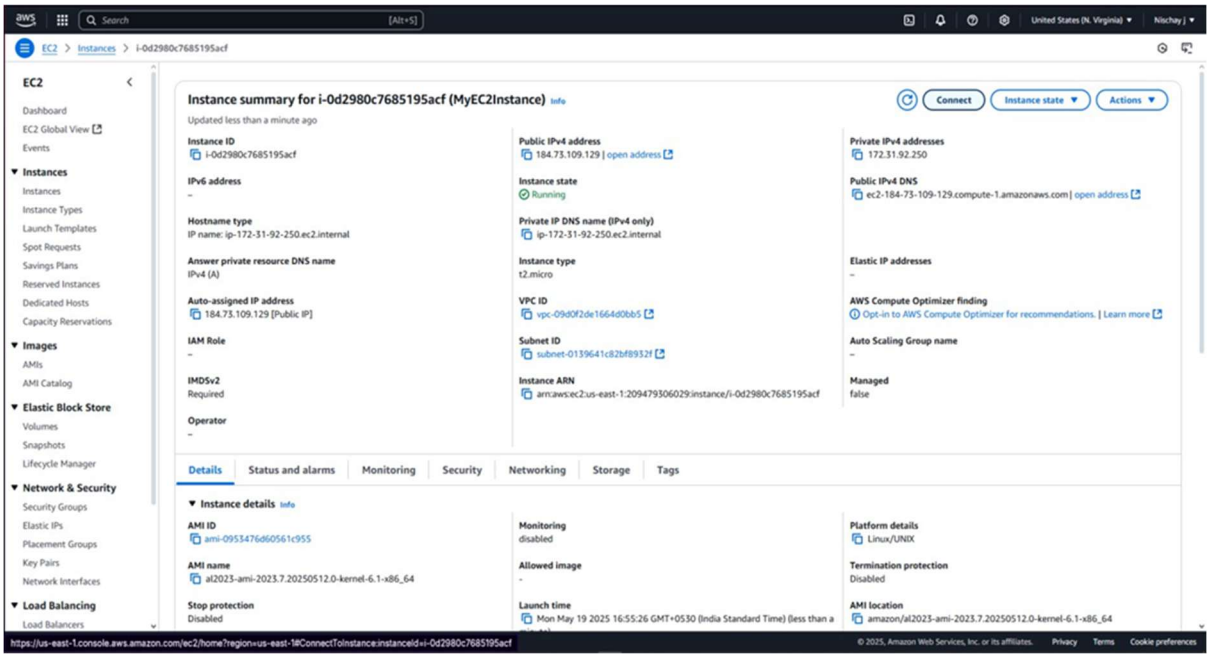
PROGRAM 4: Migrating a Web Application to Docker

Steps for creating an EC2 Instance

Step 1: Open AWS and Sign In to the Console.
Step 2: Open Amazon EC2 dashboard.
Step 3: Fill the Name and select 'Amazon Linux'

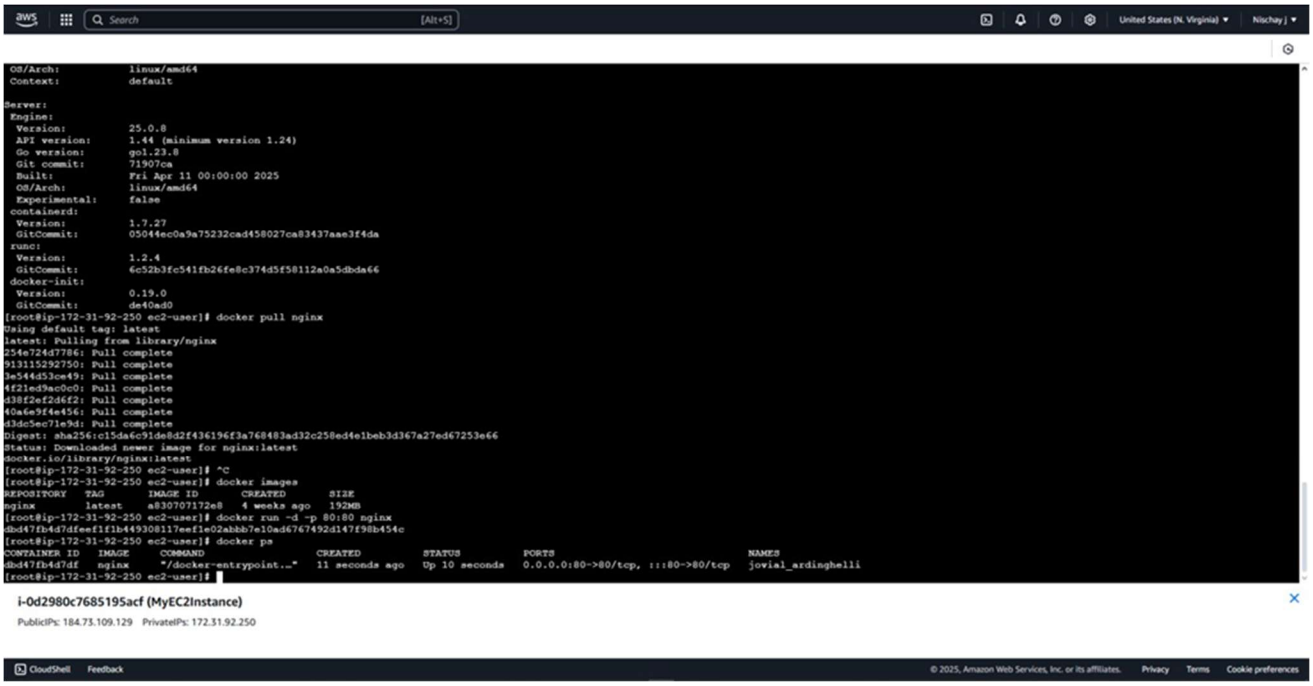


Step 4: Click on create key pair and generate new pair.
Step 5: Enable HTTPS and HTTP traffic.
Step 6: Instance has been successfully launched
Step 7: Click on instance and select 'connect'.
Step 8: Then again click on 'connect'.



Steps for migrating a Web Application to Dockers:

Step 1: Amazon Linux Shell is opened
Step 2: Run 'sudo yum update -y' command to update or get newer features if available
Step 3: Run 'sudo yum install docker -y' command to install Docker application on our instance.
Step 4: Run 'sudo service docker start' command to start docker service on our instance.
Step 5: Run 'sudo service docker status' command to check if Docker is running.
Step 6: Run 'sudo su' and 'docker version' command to go to root directory on our instance and to check version of Docker installed.
Step 7: Run 'docker pull nginx' command to download the nginx web application from Docker's repository.
Step 8: Run 'docker images' command to see downloaded application images.
Step 9: Run 'docker run -d -p 80:80 nginx' and 'docker ps' command to start the nginx application and to check the status of running processes under docker.



Step 10: Copy the public IP Address (e.g. 13.233.73.122/) to a new tab to view the running nginx application.

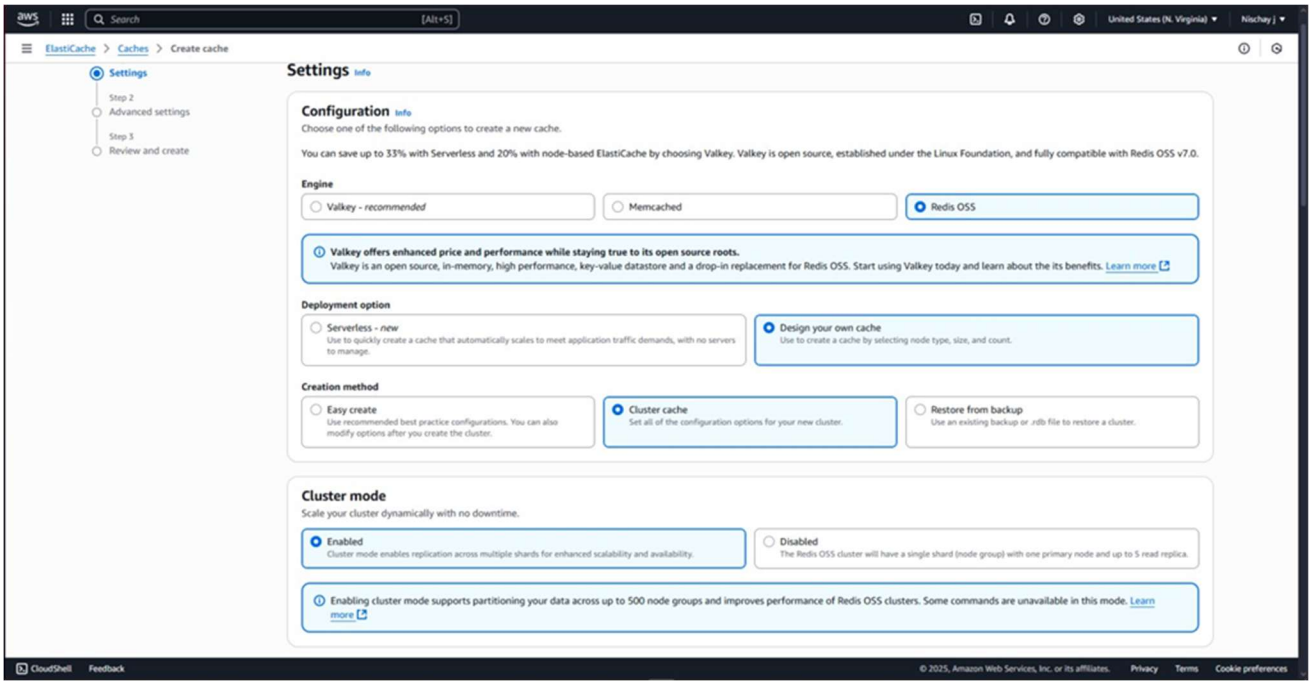
Steps for Deletion of EC2 instance:

Step 1: Select the EC2 instance been created and click on 'Instance state' and the click on 'Terminate instance'.
Step 2: EC2 instance has been successfully terminated.

PROGRAM 5: Caching Application Data with ElasticCache, Caching with Amazon CloudFront, Caching Strategies.

Steps for creating an ElasticCache:

Step 1: Open AWS and Sign In to the Console.
Step 2: Open Amazon ElasticCache
Step 3: On the left side of the screen click on 'Redis OSS caches' and click on 'create cache'.
Step 4: Click on 'Continue with Redis OSS'.
Step 5: Select 'Redis OSS' as an Engine, select 'Design your own cache' for Deployment option, select 'Cluster cache' for Creation method and enable the cluster mode.

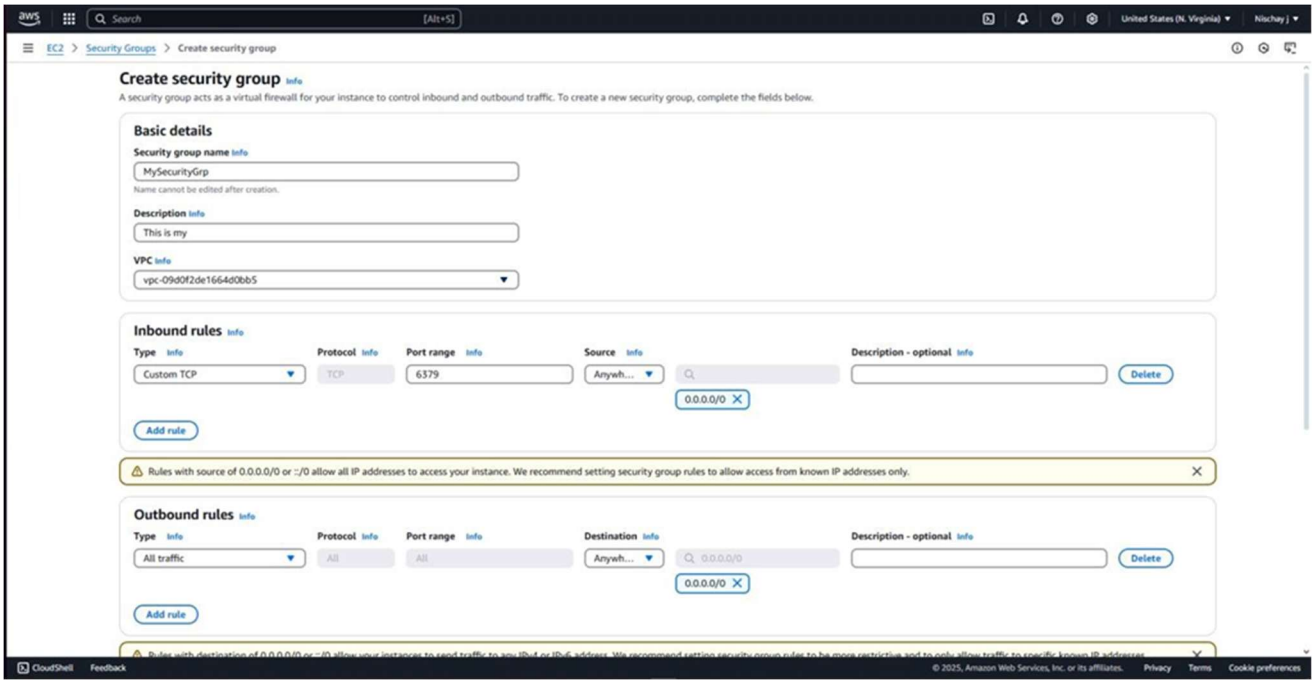


Step 6: Fill the Cluster name and disable 'Multi-AZ'.
Step 7: Select '7.0' as an Engine version, port as '6379' and Node type as 'cache.t3.micro'.
The 'Number of shards' should be 2 and 'Replicas per shard' should be 1.

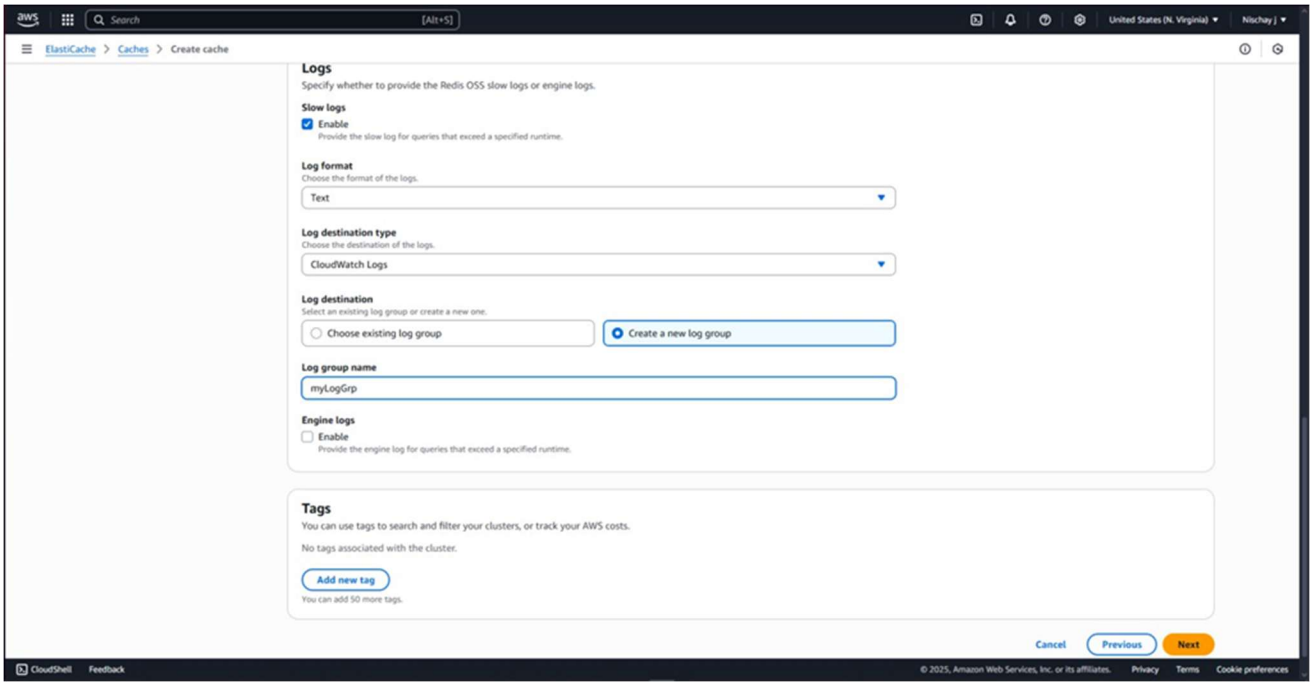
Step 8: Click on 'Create a new subnet group' and fill the name of the subnet.
Step 9: Click on Manage and select 'us-east-1a and us-east-1b'.

Step 10: Select 'Specify Availability Zones' option under Availability Zone placements.

Step 11: Open a new tab and open EC2.
Step 12: On the left side of the screen click on 'Security Groups' and click on 'create security Groups'.
Step 13: Fill the name, port range as '6379' and source as 'Anywhere IP4v'.
Step 14: Security group has been created successfully.
Step 15: Now come back to the ElasticCache, select 'AUTH default user access' in Access control and enter the 'AUTH token'.
Step 16: Disable the 'Backup' and enable 'slow logs'.



Step 17: Select 'Text' for the Log format, click on 'Create a new log group' and then enter the log group name.



Step 18: Click on 'Create' to create a cluster.
Step 19: Cluster has been created successfully.

Steps for Deletion of Cluster:

Step 1: Select the cluster been created and click on 'Actions' and the click on 'Delete'.
Step 2: The cluster been created has been successfully deleted.