Cloud Deployment Models Group Project

Group Number: - 06

Group Name: - E-Curio

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Introduction to AWS

AWS (Amazon Web Services) is a cloud computing platform that offers infrastructure as a service (IaaS) and platform as a service (PaaS) service. AWS services provide scalable computing, storage, databases, analytics, and other services. AWS helps businesses grow up by providing database storage, computational capacity, content distribution, and networking, among other services. It allows you to pick and choose your desired solutions while only paying for the services you use. AWS is cost-effective, which means it lets you save money while delivering more value without sacrificing application speed or user experience. AWS provides a variety of remote cloud services for application development, such as analytics, blockchain, and artificial intelligence (AI), and can support individuals and businesses in their development and long-term success.

Some of the most common services used in AWS are: -

1. Amazon IAM: -

   AWS Identity and Access Management is the tenth and final service on our list of the most popular AWS services (IAM). Without a doubt, access and what is accessed have a lot to do with security. This service ensures that sensitive data and AWS resources are adequately protected. It can also be utilised in conjunction with your company's two-factor authentication and multi-factor authentication systems. It's just another layer of protection that never hurts.

2. Amazon EC2: -

   You don't have to spend money on expensive physical services. Instead, you may use Amazon EC2 to build virtual machines while also managing other server functions like ports, security, and storage. Spend less time on server maintenance and more time on key projects. Amazon EC2 is unquestionably one of the most popular and fastest-growing AWS offerings.

3. Amazon S3: -

   We now live in the Big Data era. It's been dubbed "the never-ending data flood" by some. As a result, we require more storage than we have in the past. S3 (Amazon Simple Storage Service) has saved the day. It's

understandable that this would be included in our top ten AWS services list. It provides a file storage solution that is both secure and redundant. It also keeps data in three data centres located in different parts of the country. There's even more. Amazon S3 also has PCI-DSS, HIPAA/HITECH, and FedRAMP connections to assist avoid breaches. You have data flexibility while experiencing near-zero latency.

4. Amazon RDS: -

   The Amazon Relational Database Service (RDS) was created to improve the usability of your infrastructure. You may establish dedicated database instances in minutes with this AWS offering. These instances can also handle a variety of database engines, including SQL Server, SQL, PostgreSQL, and others. Take control of your time and quit wasting it on database server maintenance. Allow Amazon RDS to perform the heavy lifting for you.

5. Amazon Lambda: -

   Are you overwhelmed when your server receives a flood of requests and you don't know how to respond? It's possible that your current server infrastructure can't keep up with the demands of your current development pace. In this situation, AWS Lambda is built to handle any development demand. You handle the coding, and AWS Lambda will provide the necessary support and resources while scaling to guarantee that your systems are not overburdened.

6. Amazon Autoscaling: -

   If your company is aiming to expand, you'll need an IT infrastructure that can support that expansion. AWS Autoscaling can handle large server fleets as well as incoming traffic. When necessary, multiple instances are created. It's almost as though you'll never be able to get big enough. It also provides predictive scaling, which allocates the optimal number of EC2 instances in front of projected traffic, such as seasonal spikes. It can also recognise daily and weekly patterns using machine learning techniques and modify accordingly.

The Services used in this project with working screenshots of the project

We used three major services in this project: -

1. Amazon IAM:

   This service is used to create the roles. This service is used as it is a service that provides fine-grained access control across all of AWS. We can control who has access to which services and resources, and under what conditions, using IAM. As well as we manage permissions to our workforce and systems with IAM policies to ensure least-privilege permissions. IAM is a free service provided by Amazon Web Services.

2. Amazon S3:

   Amazon S3 is an object storage service with industry-leading scalability, data availability, security, and performance. Customers of all sizes and sectors can store and protect nearly any amount of data for use cases including data lakes, cloud-native apps, and mobile apps. You can optimise expenses, organise data, and establish fine-tuned access restrictions to suit specific business, organisational, and compliance requirements with cost-effective storage classes and easy-to-use management tools.

3. Amzon Lambda:

   It's a computing service that runs code in response to events and maintains the computing resources needed by that code autonomously. AWS Lambda is a serverless, event-driven computing solution that allows us to run code for almost any form of application or backend service without having to provision or manage servers. Over 200 AWS services and

software as a service (SaaS) apps can trigger Lambda, and we only pay for what we use.

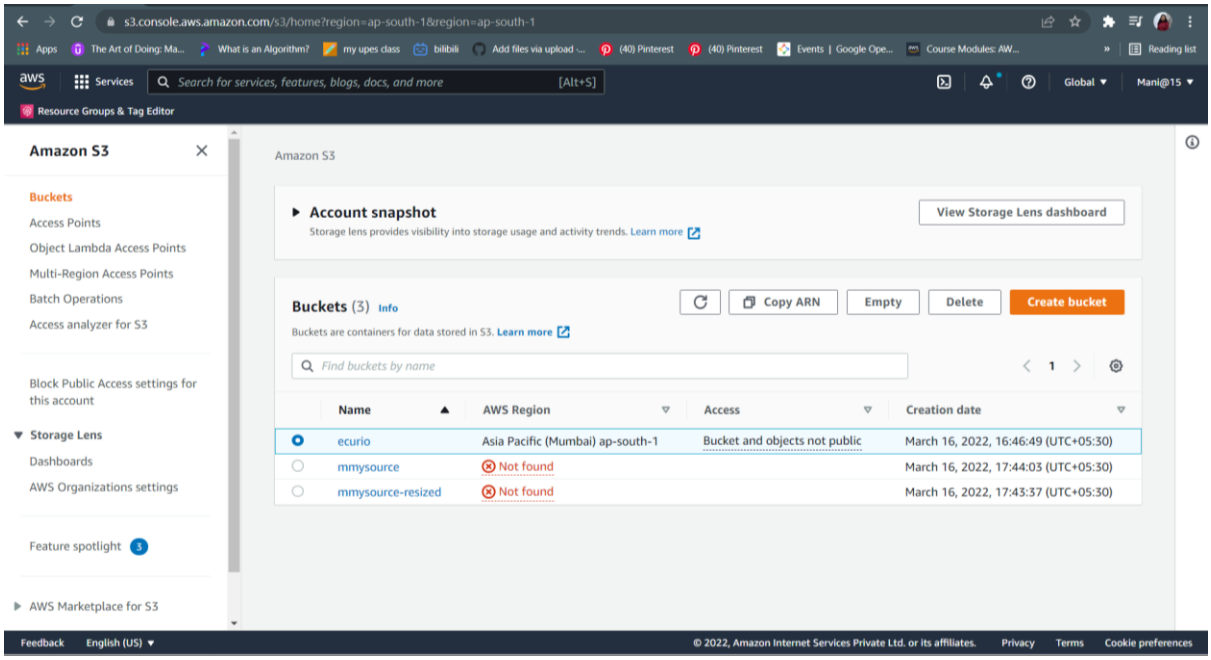
4. Amazon Rekognition:

   Amazon Rekognition is a cloud-based computer vision technology that provides software as a service. Amazon Rekognition extracts information and insights from your photographs and videos using pre-trained and configurable computer vision (CV) capabilities. Adding image and video analysis to your applications is simple with Amazon Rekognition. Simply upload a photo or video to the Amazon Rekognition API, and the service will recognise objects, people, text, scenes, and activities. It can also detect any offensive content.

S3 bucket – ecurio:

Amazon S3 is object storage built to store and retrieve any amount of data from anywhere on the Internet. It's a simple storage service that offers an extremely durable, highly available, and infinitely scalable data storage infrastructure at very low costs.

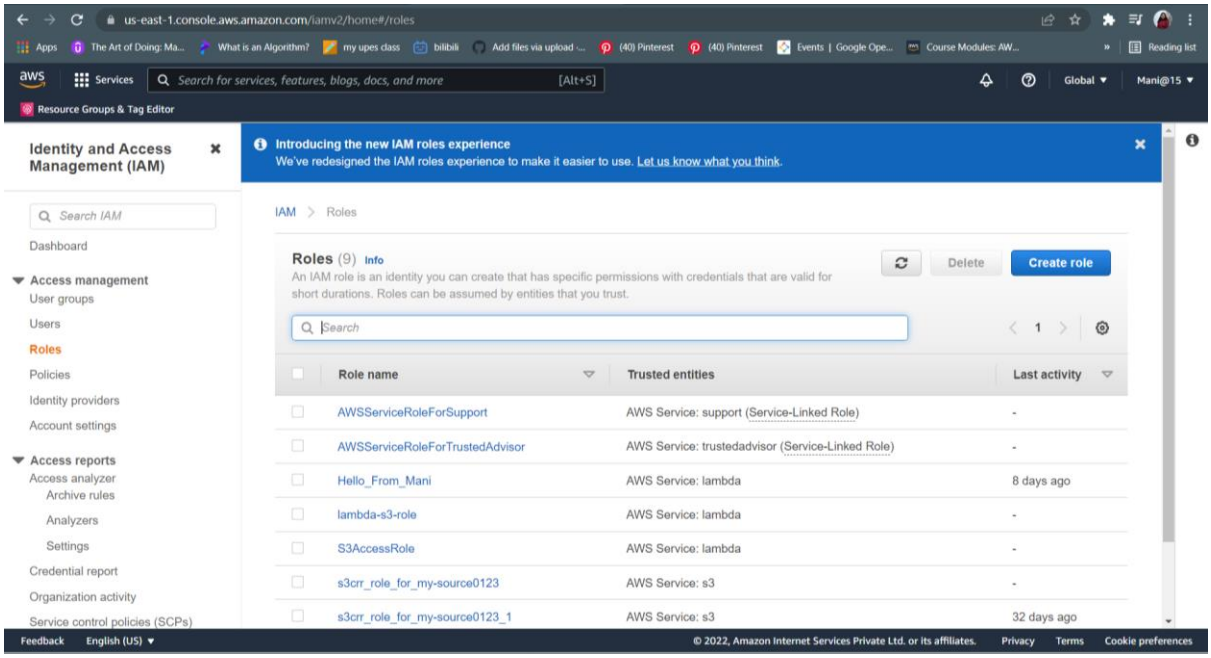
1. We created a S3 bucket "ecurio" in Amazon S3 management console and uploaded the images we wanted to use for the image detection.



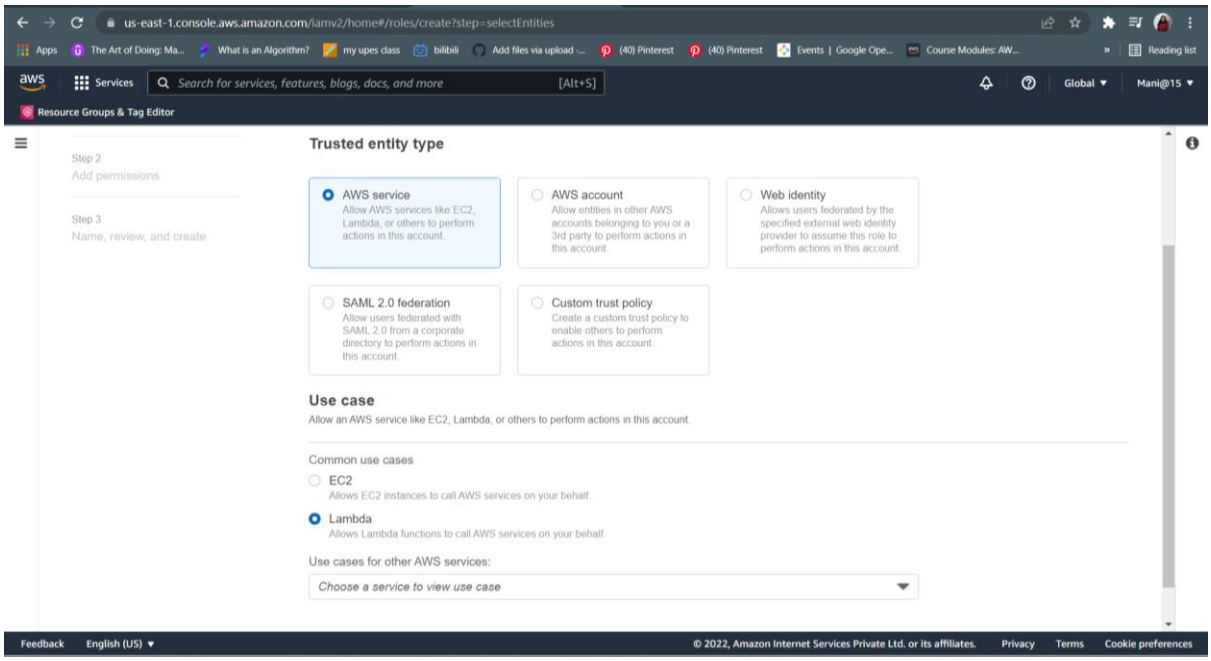
IAM Roles:

AWS Identity and Access Management (IAM) is a web service that enables Amazon Web Services (AWS) customers to manage users and user permissions in AWS. With IAM, you can centrally manage users, security credentials such as access keys, and permissions that control which AWS resources users can access.

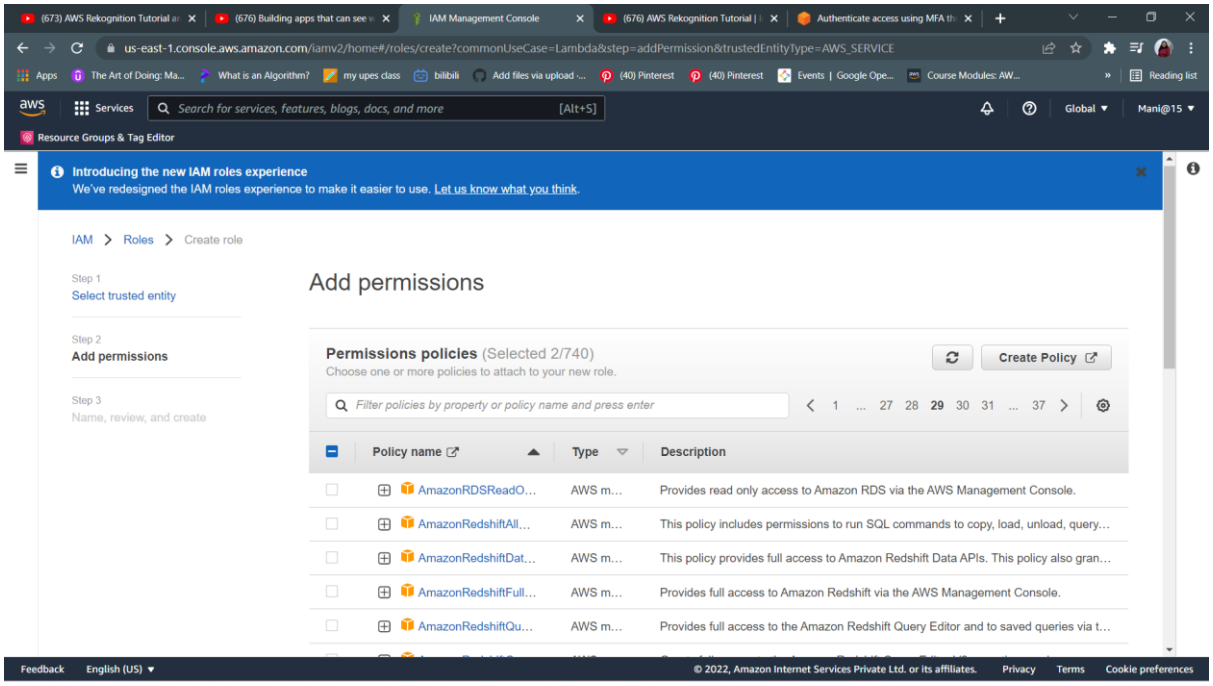
2. We logged into IAM management console to create roles for our respective project bucket.
3. We used “AWSLambdaExecute”; “AmazonRekognitionFullAccess” and “
4. Lambda execute will give access to cloud virtual logs to lambda function and the access to S3 buckets so that we don't need to provide read only access to S3 bucket explicitly.



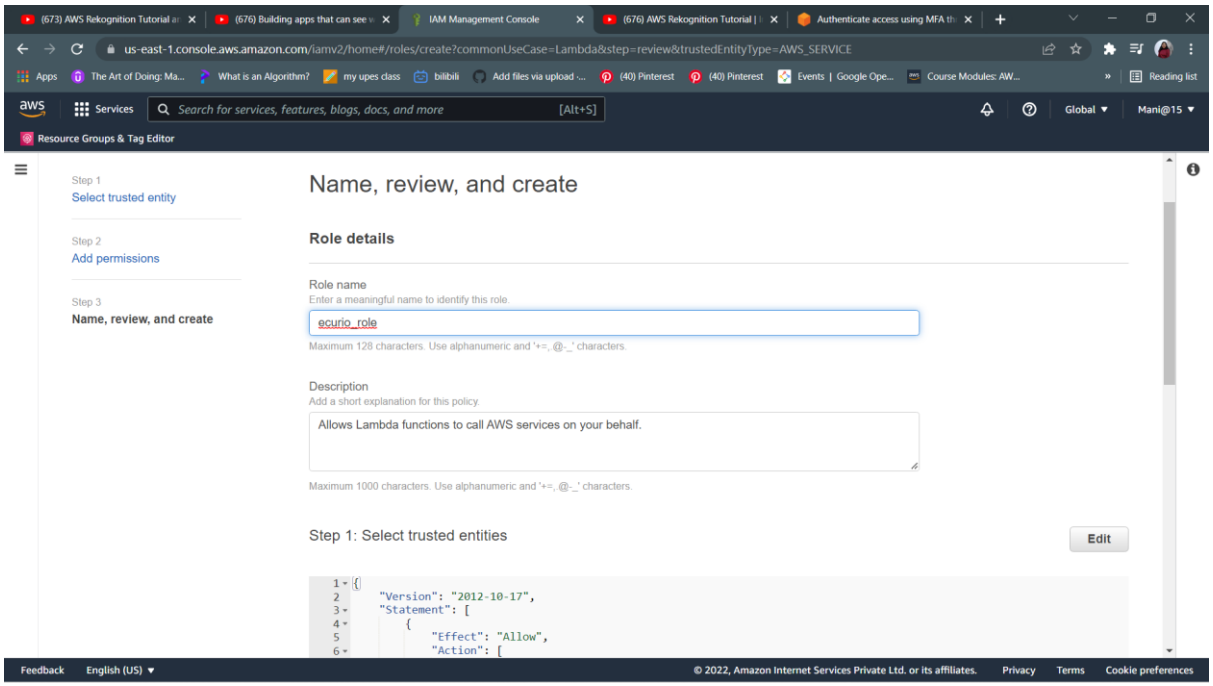
5. We used Lambda function from AWS Service of IAM Roles.

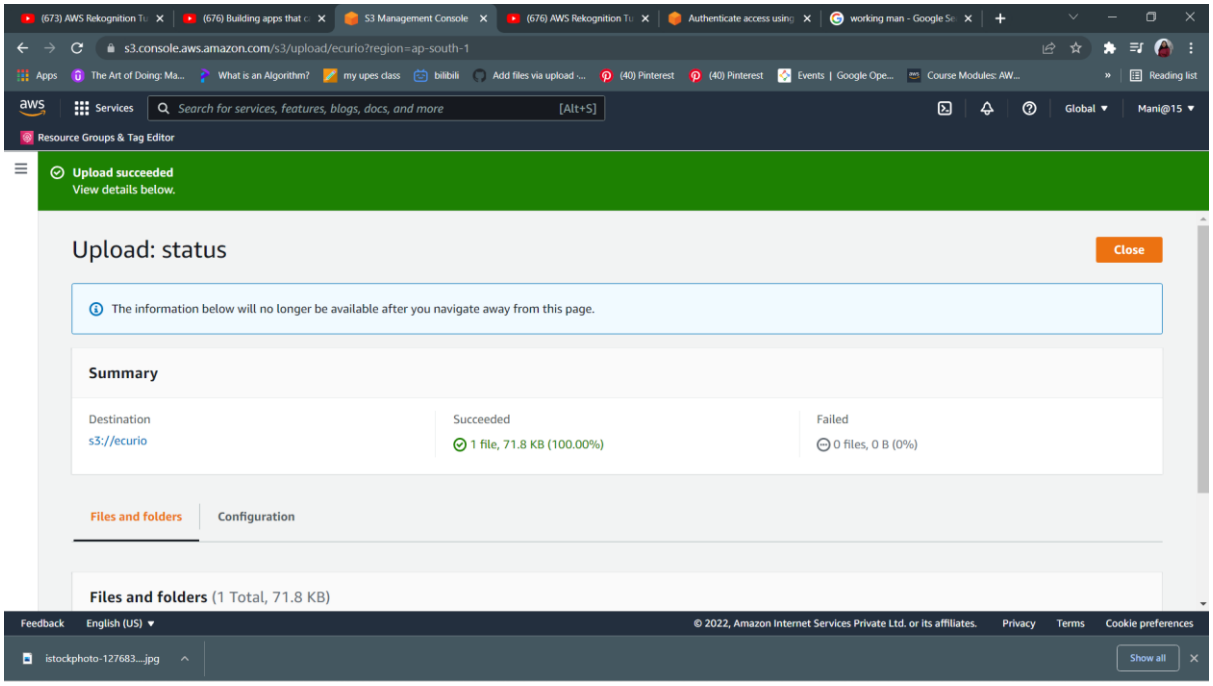


6. We used “AWSLambdaExecute”; “AmazonRekognitionFullAccess”.
7. Lambda execute will give access to cloud virtual logs to lambda function and the access to S3 buckets so that we don't need to provide read only access to S3 bucket explicitly.



8. Next, we created “ecurio_role”.

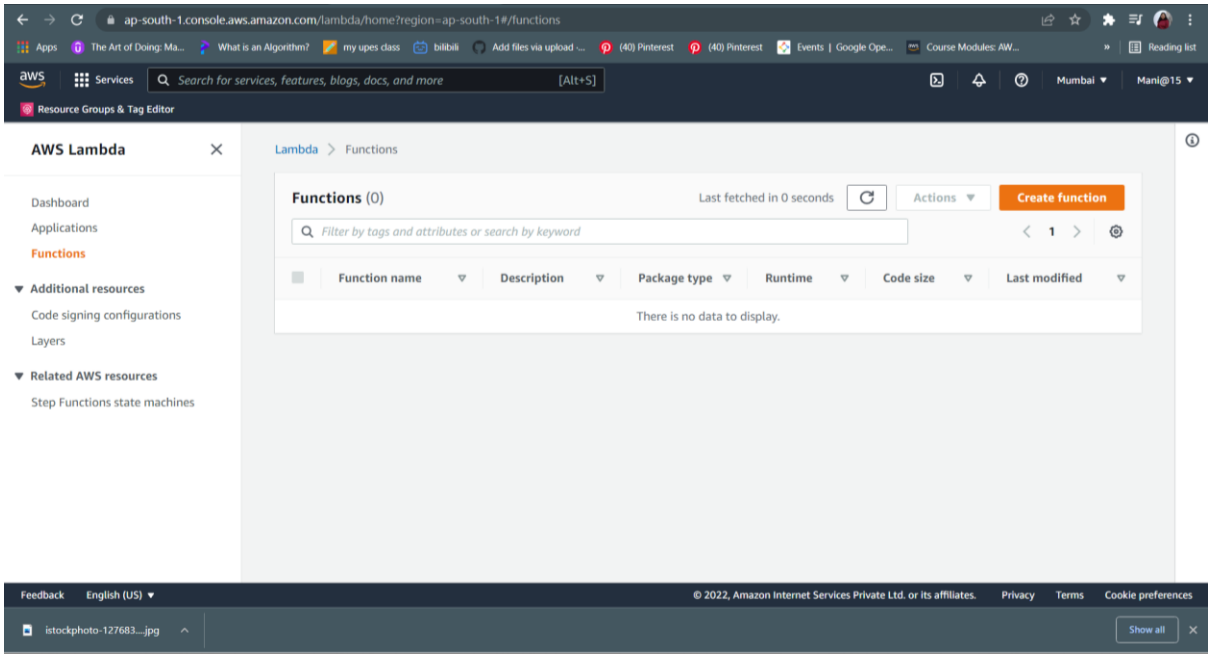


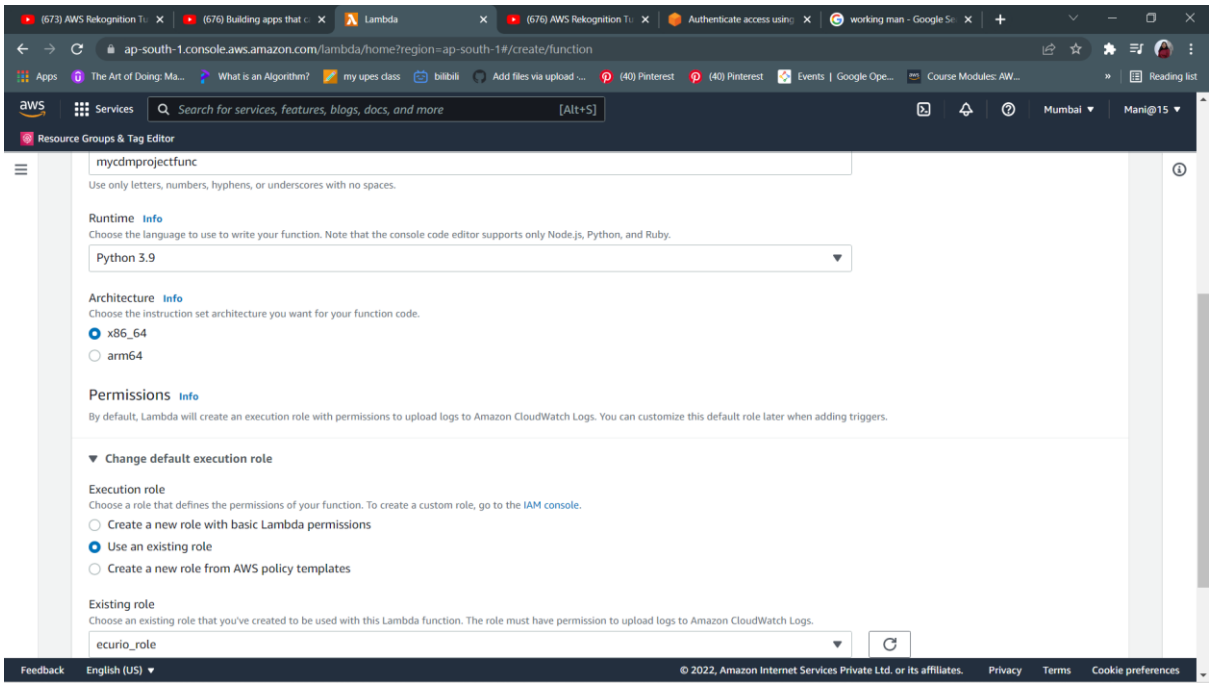


Lambda Function:

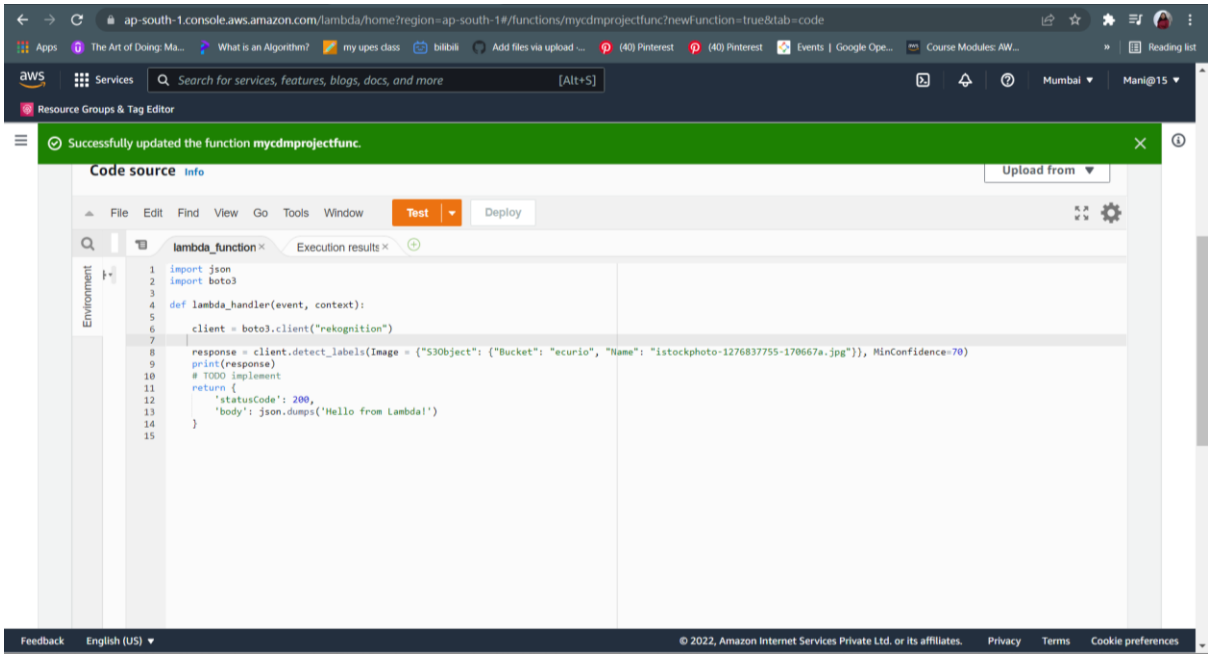
AWS Lambda is a cost-effective and strong medium that ensures our company's power and scalability at all times. We can use this compute service to run code without having to manage servers. It also allows us to upload your code, which is referred to as a Lambda function. We can also set it up to run just when certain conditions are met. Once we've set up the Lambda function, it will run as often as the arguments specify. With Lambda, we're just responsible for your code because it controls the compute fleet for you, ensuring that memory, CPU, storage, and network all run smoothly. We can leverage on instances instead of server-based architecture in Lambda functions.

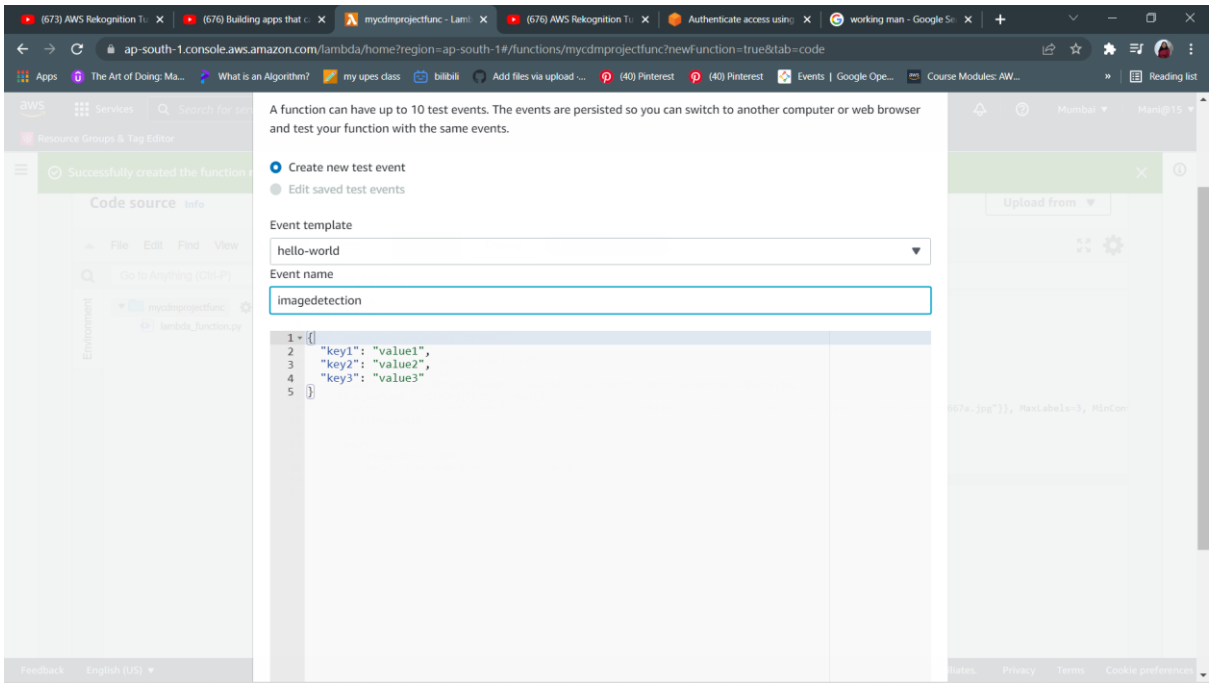
9. Creating “mycdmprojectfunc” for Python 3.9 runtime.

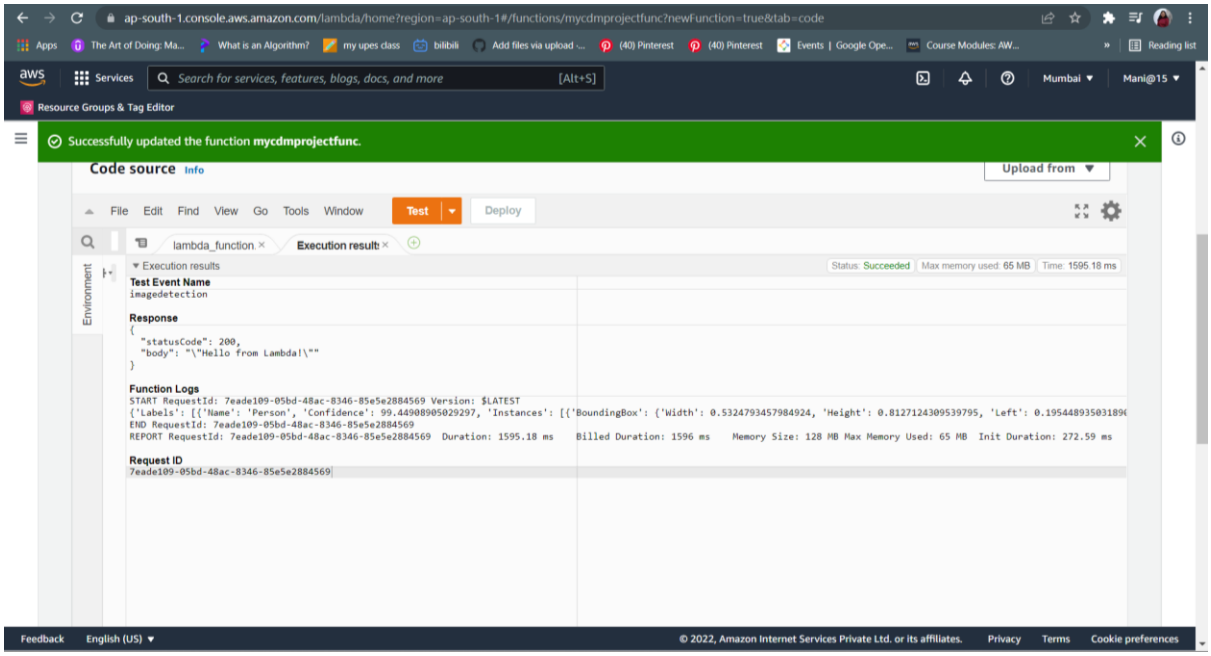




10. We uploaded our source code and tested the code.


ap-south-1.console.aws.amazon.com/lambda/home?region=ap-south-1#/functions/mycdmprojectfunc?newFunction=true&tab=code
Search for services, features, blogs, docs, and more [Alt+S]
Mumbai
Mani@15
Resource Groups & Tag Editor
Successfully updated the function mycdmprojectfunc.
Code source Info
Upload from
File Edit Find View Go Tools Window
Test
Deploy
lambda_function
Execution results
Environment
import json
import boto3
def lambda_handler(event, context):
client = boto3.client("rekognition")
response = client.detect_labels(Image = {"S3Object": {"Bucket": "ecurio", "Name": "istockphoto-1276837755-170667a.jpg"}}, MinConfidence=70)
print(response)
# TODO implement
return {
'statusCode': 200,
'body': json.dumps('Hello from Lambda!')
}
Feedback
English (US)
© 2022, Amazon Internet Services Private Ltd. or its affiliates.
Privacy
Terms
Cookie preferences


ap-south-1.console.aws.amazon.com/lambda/home?region=ap-south-1#/functions/mycdmprojectfunc?newFunction=true&tab=code
A function can have up to 10 test events. The events are persisted so you can switch to another computer or web browser and test your function with the same events.
Create new test event
Edit saved test events
Event template
hello-world
Event name
imagedetection
{
"key1": "value1",
"key2": "value2",
"key3": "value3"
}



All Label output that we got in our project:

{'Labels': [{'Name': 'Person', 'Confidence': 99.44908905029297, 'Instances': [{'BoundingBox': {'Width': 0.5324793457984924, 'Height': 0.8127124309539795, 'Left': 0.19544893503189087, 'Top': 0.1143421158194542}, 'Confidence': 99.44908905029297}], 'Parents': []}, {'Name': 'Human', 'Confidence': 99.44908905029297, 'Instances': [], 'Parents': []}, {'Name': 'Sitting', 'Confidence': 97.13262176513672, 'Instances': [], 'Parents': [{'Name': 'Person'}]}, {'Name': 'Furniture', 'Confidence': 75.2845458984375, 'Instances': [], 'Parents': []}, {'Name': 'Indoors', 'Confidence': 74.0599365234375, 'Instances': [], 'Parents': []}, {'Name': 'Table', 'Confidence': 72.97395324707031, 'Instances': [], 'Parents': [{'Name': 'Furniture'}]}], 'LabelModelVersion': '2.0', 'ResponseMetadata': {'RequestId': 'eeb55713-746f-4abd-a13b-98ef68433da6', 'HTTPStatusCode': 200, 'HTTPHeaders': {'x-amzn-requestid': 'eeb55713-746f-4abd-a13b-98ef68433da6', 'content-type': 'application/x-amz-json-1.1', 'content-length': '693', 'date': 'Wed, 16 Mar 2022 19:09:43 GMT'}, 'RetryAttempts': 0}}