CSC SKILL – 08

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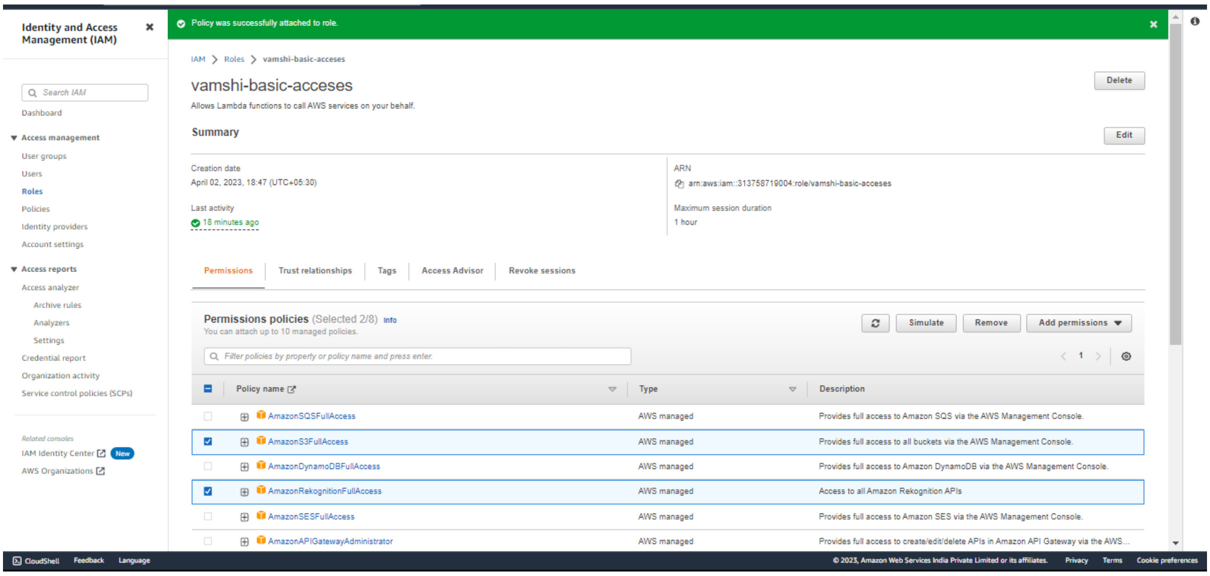
Sec: 13

Build a Serverless Application for Amazon Rekognition Service for given Image using Lambda, S3Bucket, IAM role and API Gateway

Create a role, with required permissions:



Policy was successfully attached to role.

vamshi-basic-acceses

Allows Lambda functions to call AWS services on your behalf.

Summary

Creation date
April 02, 2023, 18:47 (UTC+05:30)

Last activity
18 minutes ago

ARN
arn:aws:iam::313758719004:role/vamshi-basic-acceses

Maximum session duration
1 hour

Permissions policies (Selected 2/8) Info

You can attach up to 10 managed policies.

	Policy name	Type	Description
□	AmazonSQSFullAccess	AWS managed	Provides full access to Amazon SQS via the AWS Management Console.
☑	AmazonS3FullAccess	AWS managed	Provides full access to all buckets via the AWS Management Console.
□	AmazonDynamoDBFullAccess	AWS managed	Provides full access to Amazon DynamoDB via the AWS Management Console.
☑	AmazonRekognitionFullAccess	AWS managed	Access to all Amazon Rekognition APIs
□	AmazonSESFullAccess	AWS managed	Provides full access to Amazon SES via the AWS Management Console.
□	AmazonAPIGatewayAdministrator	AWS managed	Provides full access to create/edit/delete APIs in Amazon API Gateway via the AWS...

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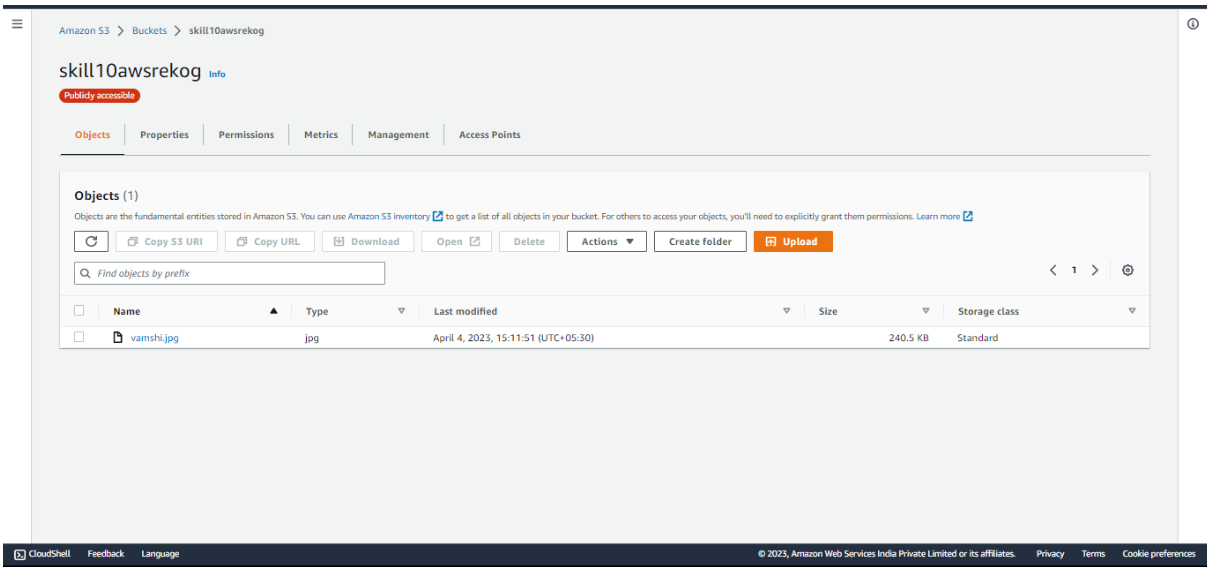
Create a Bucket to store images: (make sure image you are adding images):



skill10awsrekog

Publicly accessible

Objects (1)

Objects are the fundamental entities stored in Amazon S3. You can use Amazon S3 inventory to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. Learn more

	Name	Type	Last modified	Size	Storage class
□	vamshi.jpg	jpg	April 4, 2023, 15:11:51 (UTC+05:30)	240.5 KB	Standard

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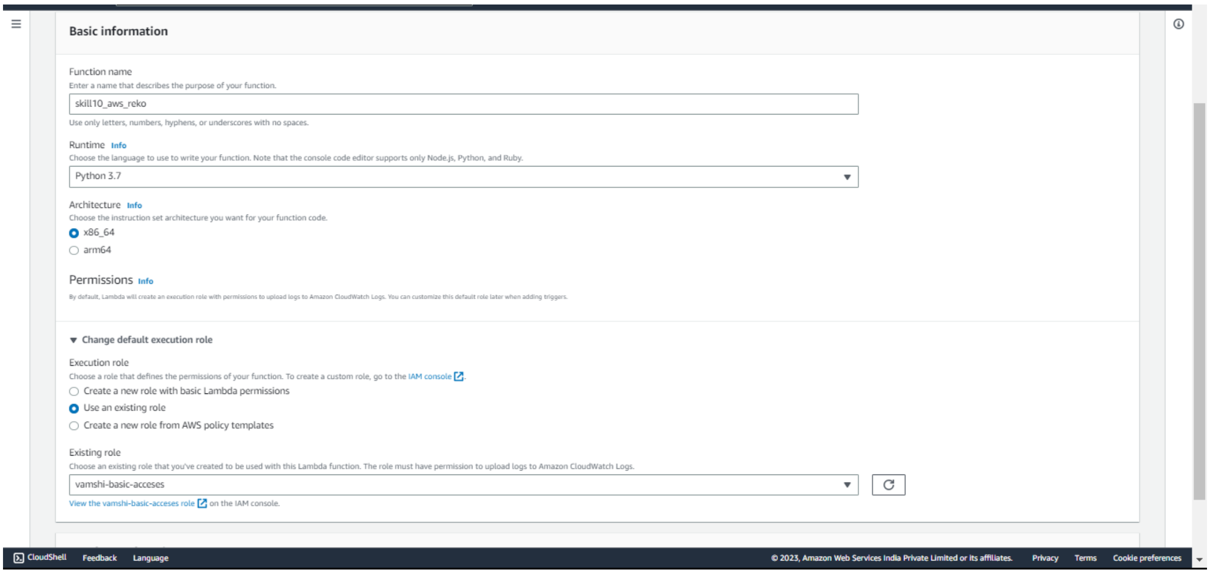
Create a Lambda function:



Basic information

Function name

Enter a name that describes the purpose of your function.

skill10_aws_reko

Use only letters, numbers, hyphens, or underscores with no spaces.

Runtime Info

Choose the language to use to write your function. Note that the console code editor supports only Node.js, Python, and Ruby.

Python 3.7

Architecture Info

Choose the instruction set architecture you want for your function code.

● x86_64

○ arm64

Permissions Info

By default, Lambda will create an execution role with permissions to upload logs to Amazon CloudWatch Logs. You can customize this default role later when adding triggers.

▼ Change default execution role

Execution role

Choose a role that defines the permissions of your function. To create a custom role, go to the IAM console.

○ Create a new role with basic Lambda permissions

● Use an existing role

○ Create a new role from AWS policy templates

Existing role

Choose an existing role that you've created to be used with this Lambda function. The role must have permission to upload logs to Amazon CloudWatch Logs.

vamshi-basic-acceses

View the vamshi-basic-acceses role on the IAM console.

CloudShell
Feedback
Language
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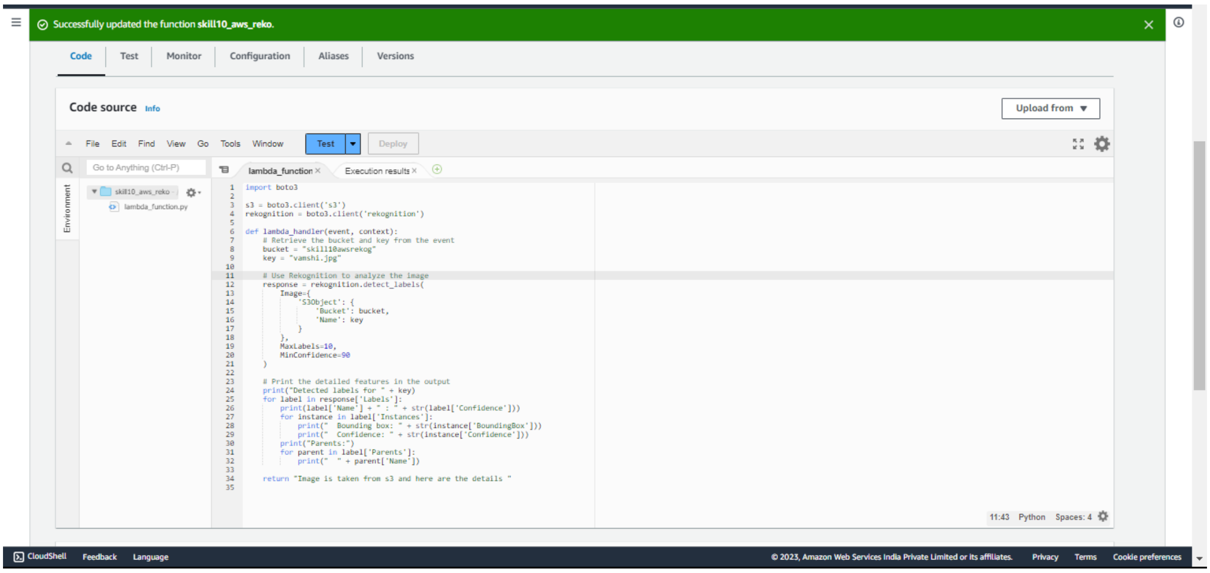
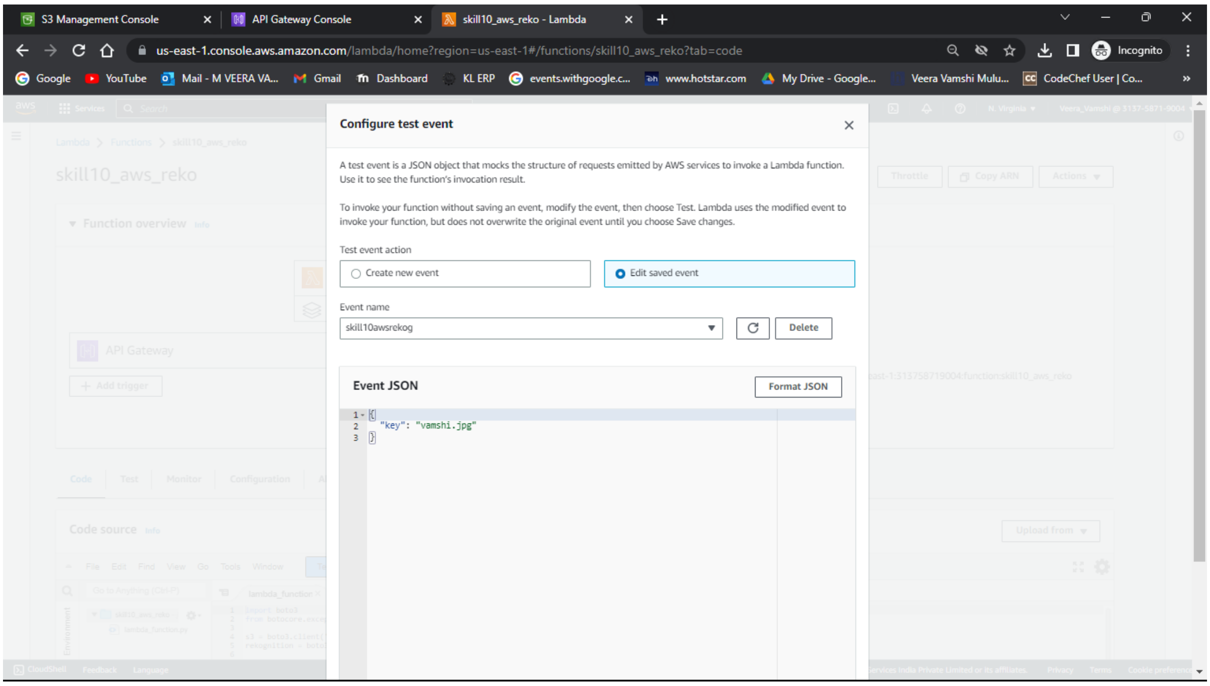
Code:



Successfully updated the function skill10_aws_reko.

```python
import boto3

s3 = boto3.client('s3')
rekognition = boto3.client('rekognition')

def lambda_handler(event, context):
    # Retrieve the bucket and key from the event
    bucket = "skill10awsrekog"
    key = "vamshi.jpg"

    # Use Rekognition to analyze the image
    response = rekognition.detect_labels(
        Image={
            'S3Object': {
                'Bucket': bucket,
                'Name': key
            }
        },
        MaxLabels=10,
        MinConfidence=90
    )

    # Print the detailed features in the output
    print("Detected labels for " + key)
    for label in response['Labels']:
        print(label['Name'] + " : " + str(label['Confidence']))
        for instance in label['Instances']:
            print("  Bounding box: " + str(instance['BoundingBox']))
            print("  Confidence: " + str(instance['Confidence']))
        print("Parents:")
        for parent in label['Parents']:
            print("  " + parent['Name'])

    return "Image is taken from s3 and here are the details "

```

Event:



Configure test event

A test event is a JSON object that mocks the structure of requests emitted by AWS services to invoke a Lambda function. Use it to see the function's invocation result.

To invoke your function without saving an event, modify the event, then choose Test. Lambda uses the modified event to invoke your function, but does not overwrite the original event until you choose Save changes.

Test event action

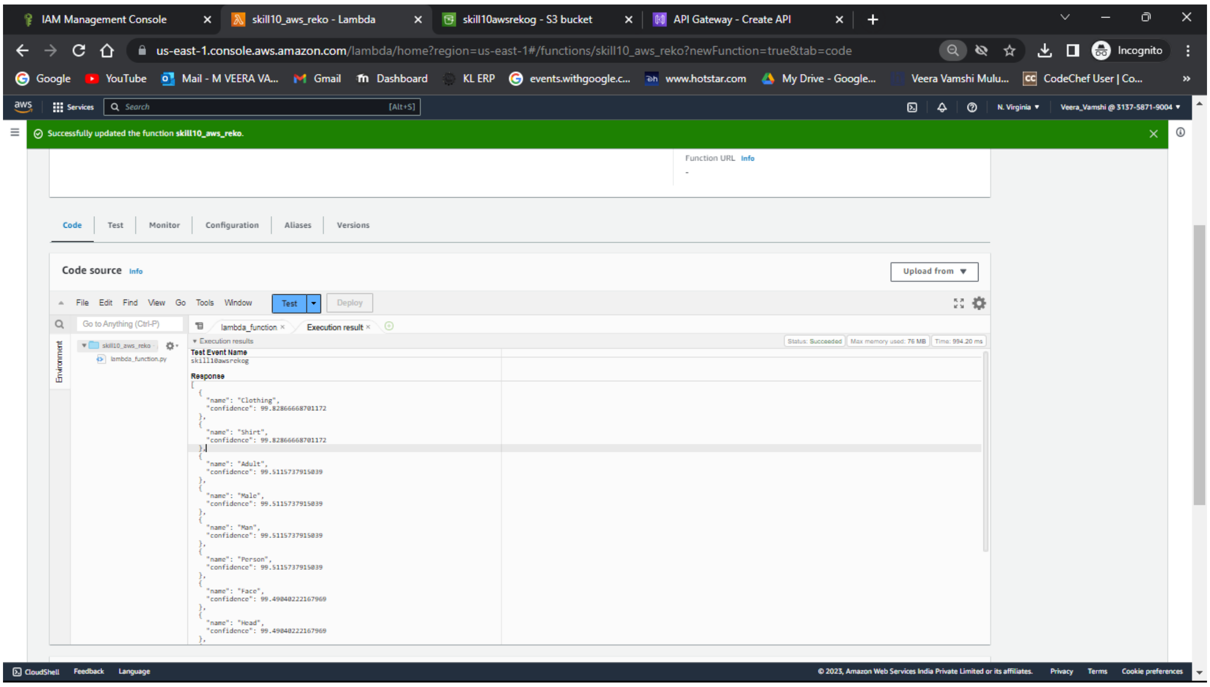
○ Create new event   ● Edit saved event

Event name: skill10awsrekog

Event JSON

```
{
    "key": "vamshi.jpg"
}
```

Test it:



Successfully updated the function **skill10_aws_reko**.

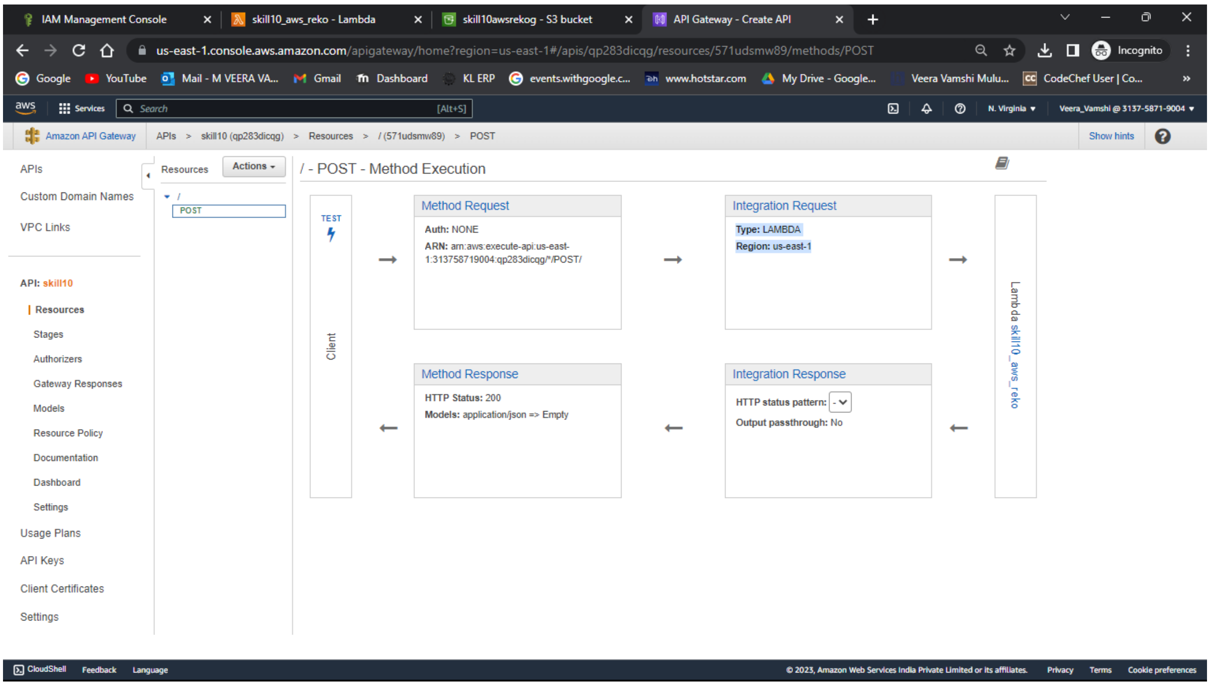
Code source

Execution results

Status: Succeeded | Max memory used: 76 MB | Time: 994.20 ms

```
Test Event Name
skill10awsrekog

Response
[
  {
    "name": "Clothing",
    "confidence": 99.82866668701172
  },
  {
    "name": "Shirt",
    "confidence": 99.82866668701172
  },
  {
    "name": "Adult",
    "confidence": 99.5115737915039
  },
  {
    "name": "Male",
    "confidence": 99.5115737915039
  },
  {
    "name": "Man",
    "confidence": 99.5115737915039
  },
  {
    "name": "Person",
    "confidence": 99.5115737915039
  },
  {
    "name": "Face",
    "confidence": 99.49040222167969
  },
  {
    "name": "Head",
    "confidence": 99.49040222167969
  },
```

Integrate with API Gateway:



/ - POST - Method Execution

Method Request

Auth: NONE

ARN: arn:aws:execute-api:us-east-1:313758719004:qp283dicqg/*/POST/

Integration Request

Type: LAMBDA

Region: us-east-1

Method Response

HTTP Status: 200

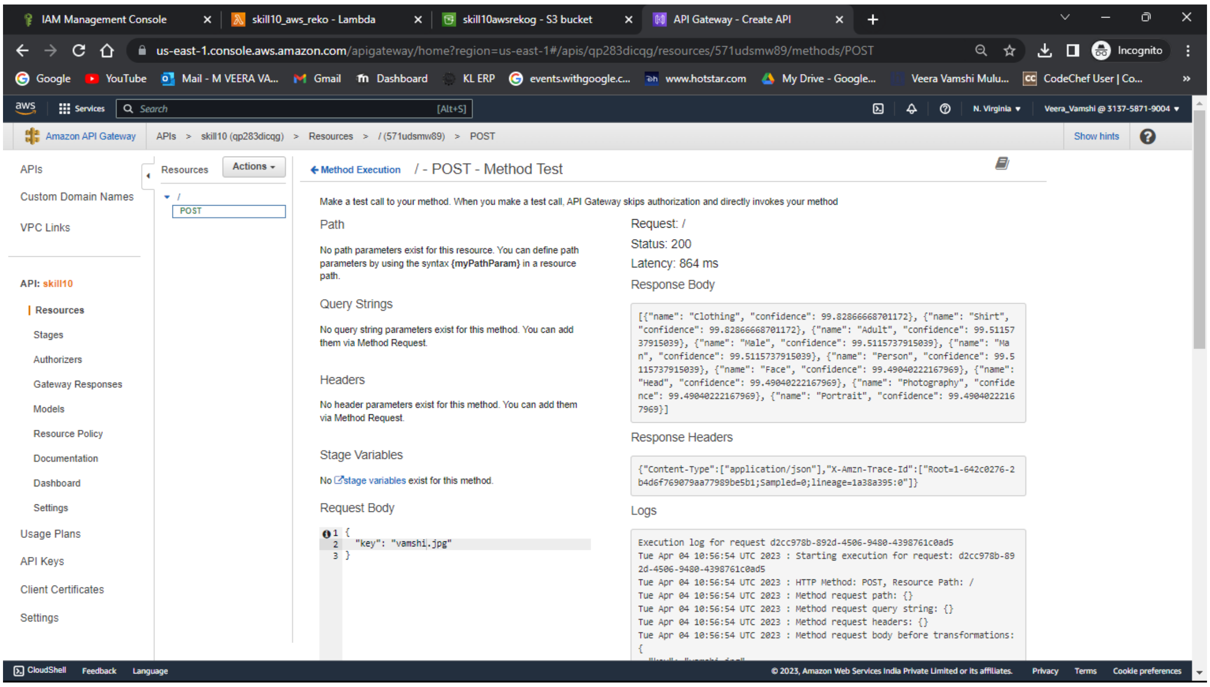
Models: application/json => Empty

Integration Response

HTTP status pattern: -

Output passthrough: No

Test it:



/ - POST - Method Test

Make a test call to your method. When you make a test call, API Gateway skips authorization and directly invokes your method

Path

No path parameters exist for this resource. You can define path parameters by using the syntax **{myPathParam}** in a resource path.

Query Strings

No query string parameters exist for this method. You can add them via Method Request.

Headers

No header parameters exist for this method. You can add them via Method Request.

Stage Variables

No stage variables exist for this method.

Request Body

```
{
  "key": "vamshi.jpg"
}
```

Request: /

Status: 200

Latency: 864 ms

Response Body

```
[{"name": "Clothing", "confidence": 99.82866668701172}, {"name": "Shirt",
"confidence": 99.82866668701172}, {"name": "Adult", "confidence": 99.51157
37915039}, {"name": "Male", "confidence": 99.5115737915039}, {"name": "Ma
n", "confidence": 99.5115737915039}, {"name": "Person", "confidence": 99.5
115737915039}, {"name": "Face", "confidence": 99.49040222167969}, {"name":
"Head", "confidence": 99.49040222167969}, {"name": "Photography", "confide
nce": 99.49040222167969}, {"name": "Portrait", "confidence": 99.4904022216
7969}]
```

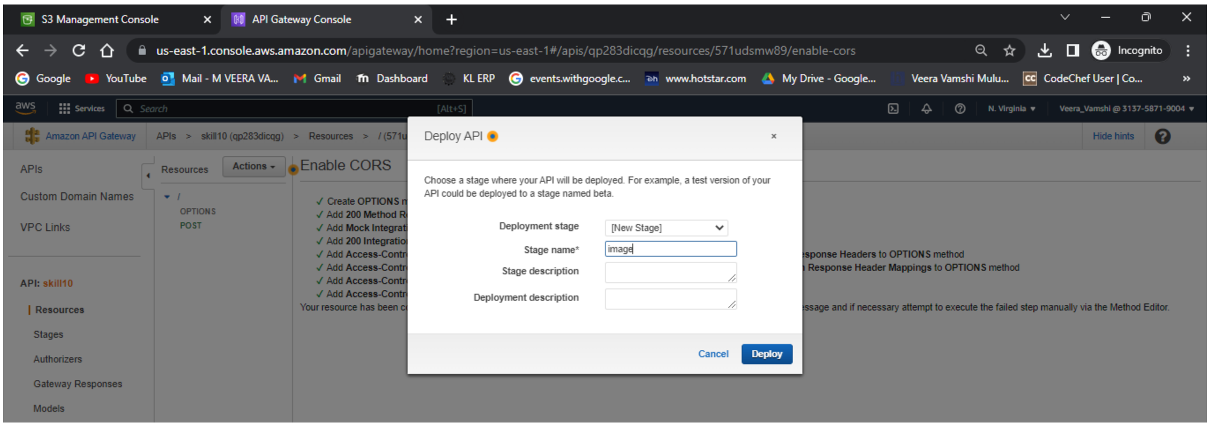
Response Headers

```
{"Content-Type":["application/json"],"X-Amzn-Trace-Id":["Root=1-642c0276-2
b4d6f769079aa77989be5b1;Sampled=0;lineage=1a38a395:0"]}
```

Logs

```
Execution log for request d2cc978b-892d-4506-9480-4398761c0ad5
Tue Apr 04 10:56:54 UTC 2023 : Starting execution for request: d2cc978b-89
2d-4506-9480-4398761c0ad5
Tue Apr 04 10:56:54 UTC 2023 : HTTP Method: POST, Resource Path: /
Tue Apr 04 10:56:54 UTC 2023 : Method request path: {}
Tue Apr 04 10:56:54 UTC 2023 : Method request query string: {}
Tue Apr 04 10:56:54 UTC 2023 : Method request headers: {}
Tue Apr 04 10:56:54 UTC 2023 : Method request body before transformations:
{
```

Since you are getting the response, enable CORS and deploy API:



us-east-1.console.aws.amazon.com/apigateway/home?region=us-east-1#/apis/qp283dicqg/resources/571udsmw89/enable-cors

Deploy API

Choose a stage where your API will be deployed. For example, a test version of your API could be deployed to a stage named beta.

Deployment stage: [New Stage]

Stage name*: image

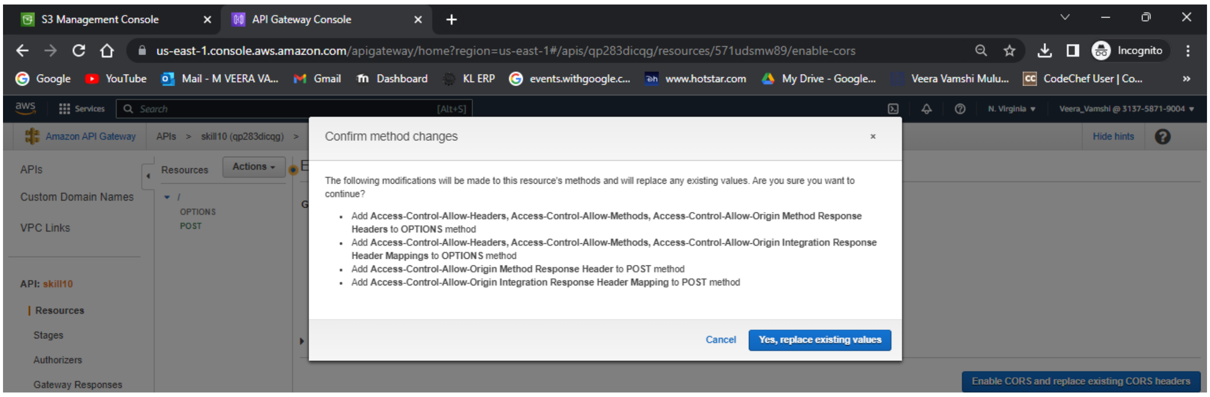
Stage description:

Deployment description:

Cancel | Deploy

✓ Create OPTIONS m
✓ Add 200 Method R
✓ Add Mock Integrati
✓ Add 200 Integratio
✓ Add Access-Contr
✓ Add Access-Contr
✓ Add Access-Contr
✓ Add Access-Contr
Your resource has been c

sponse Headers to OPTIONS method
Response Header Mappings to OPTIONS method
ssage and if necessary attempt to execute the failed step manually via the Method Editor.



us-east-1.console.aws.amazon.com/apigateway/home?region=us-east-1#/apis/qp283dicqg/resources/571udsmw89/enable-cors

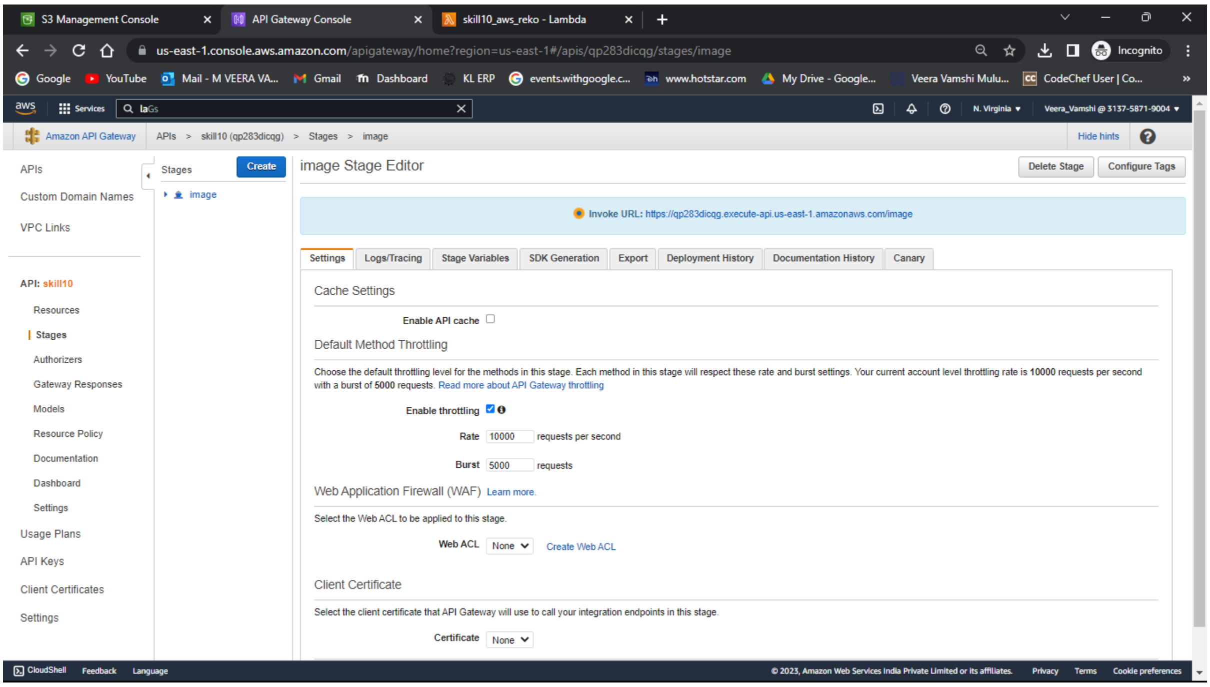
Confirm method changes

The following modifications will be made to this resource's methods and will replace any existing values. Are you sure you want to continue?

- Add **Access-Control-Allow-Headers, Access-Control-Allow-Methods, Access-Control-Allow-Origin Method Response Headers** to **OPTIONS** method
- Add **Access-Control-Allow-Headers, Access-Control-Allow-Methods, Access-Control-Allow-Origin Integration Response Header Mappings** to **OPTIONS** method
- Add **Access-Control-Allow-Origin Method Response Header** to POST method
- Add **Access-Control-Allow-Origin Integration Response Header Mapping** to POST method

Cancel | Yes, replace existing values

Invoke URL is generated use it for application:



us-east-1.console.aws.amazon.com/apigateway/home?region=us-east-1#/apis/qp283dicqg/stages/image

image Stage Editor

Invoke URL: https://qp283dicqg.execute-api.us-east-1.amazonaws.com/image

Cache Settings

Enable API cache ☐

Default Method Throttling

Choose the default throttling level for the methods in this stage. Each method in this stage will respect these rate and burst settings. Your current account level throttling rate is **10000** requests per second with a burst of **5000** requests. Read more about API Gateway throttling

Enable throttling ☑

Rate 10000 requests per second

Burst 5000 requests

Web Application Firewall (WAF) Learn more.

Select the Web ACL to be applied to this stage.

Web ACL None Create Web ACL

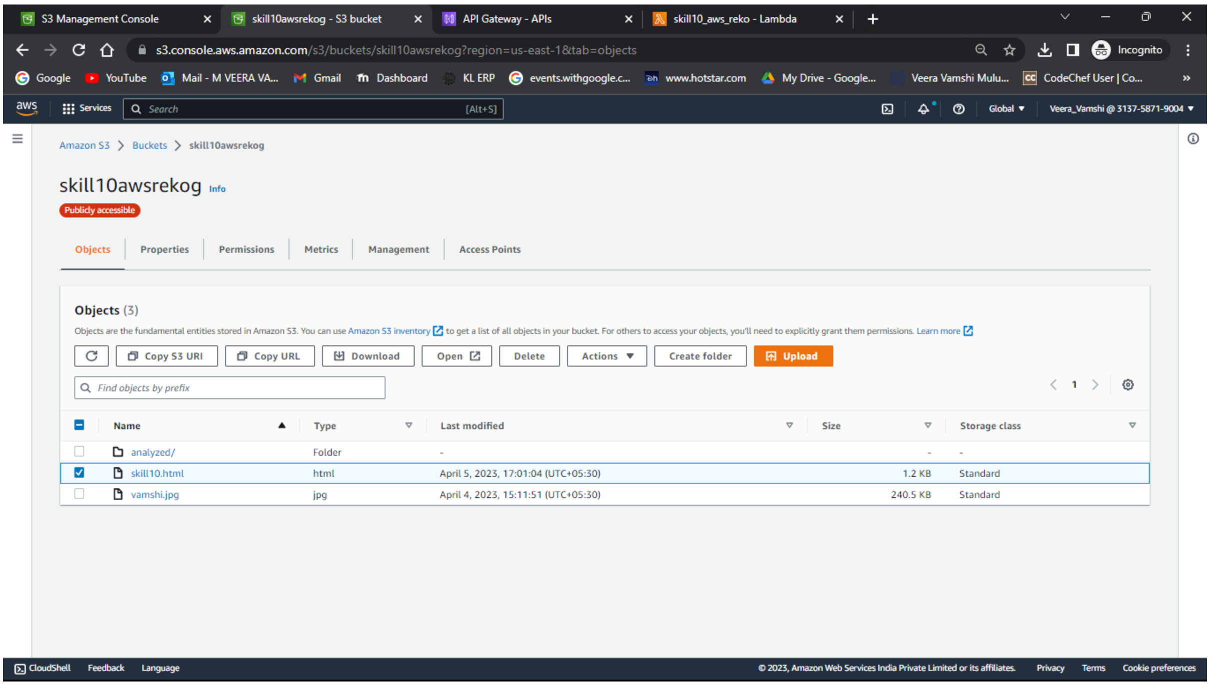
Client Certificate

Select the client certificate that API Gateway will use to call your integration endpoints in this stage.

Certificate None

Use S3 which we have already created previously for hosting application:

Make sure u r hitting the same file name in the bucket else it will not show any details of pic:



skill10awsrekog Info

Publicly accessible

Objects (3)

Objects are the fundamental entities stored in Amazon S3. You can use Amazon S3 inventory to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. Learn more

	Name	Type	Last modified	Size	Storage class
□	analyzed/	Folder	-	-	-
☑	skill10.html	html	April 5, 2023, 17:01:04 (UTC+05:30)	1.2 KB	Standard
□	vamshi.jpg	jpg	April 4, 2023, 15:11:51 (UTC+05:30)	240.5 KB	Standard

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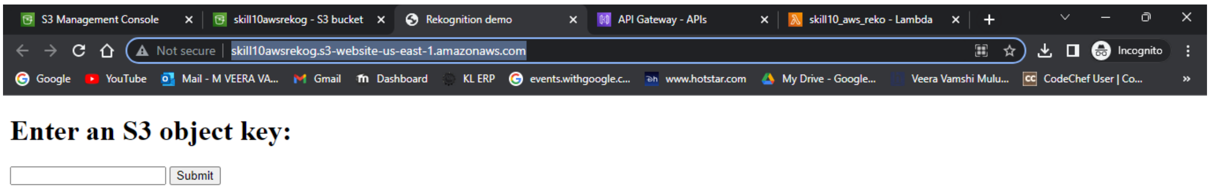
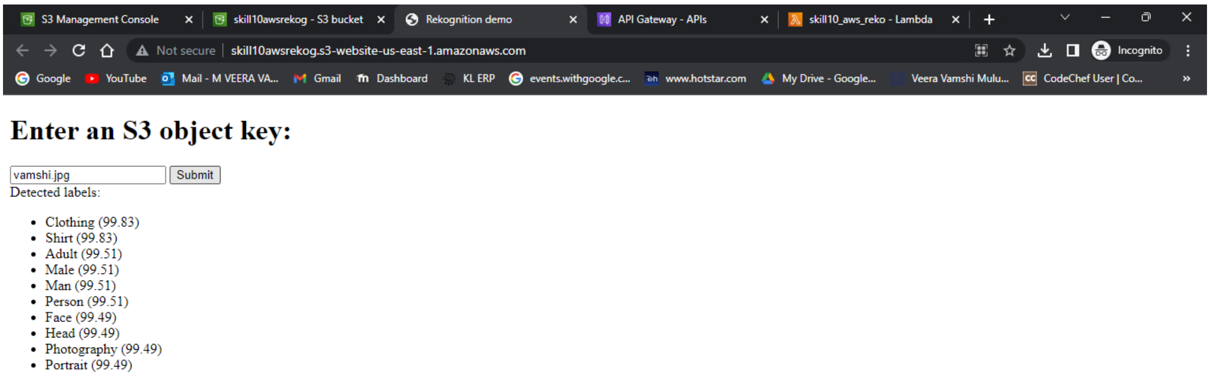


S3 Management Console
skill10awsrekog - S3 bucket
Rekognition demo
API Gateway - APIs
skill10_aws_reko - Lambda
Not secure
skill10awsrekog.s3-website-us-east-1.amazonaws.com

Enter an S3 object key:

Submit



S3 Management Console
skill10awsrekog - S3 bucket
Rekognition demo
API Gateway - APIs
skill10_aws_reko - Lambda
Not secure
skill10awsrekog.s3-website-us-east-1.amazonaws.com

Enter an S3 object key:

vamshi.jpg Submit

Detected labels:

- Clothing (99.83)
- Shirt (99.83)
- Adult (99.51)
- Male (99.51)
- Man (99.51)
- Person (99.51)
- Face (99.49)
- Head (99.49)
- Photography (99.49)
- Portrait (99.49)

You can even update lambda and frontend such that if the files is not present in the s3, then an warning will be notified, that there is no image in the s3 of that particular file name to analyse.