

KUMAR GAURAV 20122065

LAB 4, CLOUD COMPUTING

1. List the different types of SQL and NoSQL database services available in AWS.

SQL databases are relational, NoSQL databases are non-relational. ... SQL databases are table-based, while NoSQL databases are document, key-value, graph, or wide-column stores. SQL databases are better for multi-row transactions, while NoSQL is better for unstructured data like documents or JSON

Amazon Aurora. ...

Amazon Relational Database Service (RDS) ...

Amazon Redshift. ...

Key-value Database. ...

Amazon DynamoDB. ...

In-memory Database. ...

Amazon ElastiCache for Memcached.

RDS is an SQL database service and DynamoDB, Neptune, Amazon QLDB,

Amazon DocumentDB, Amazon Keyspaces and Amazon Timestream are NoSQL database services in AWS. The database services available in AWS are RDS (Relational Database Services) , DynamoDB,

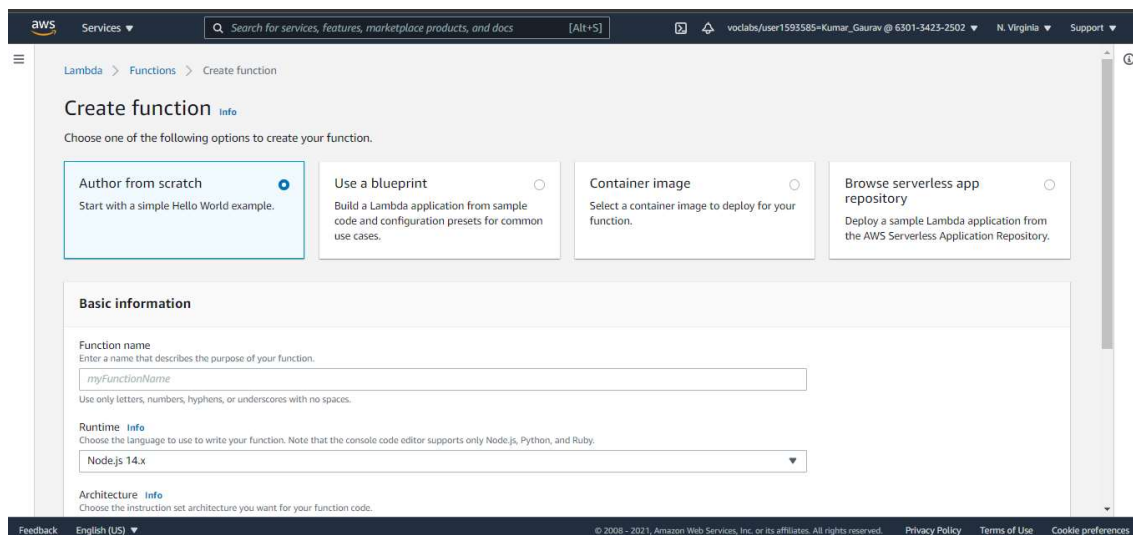
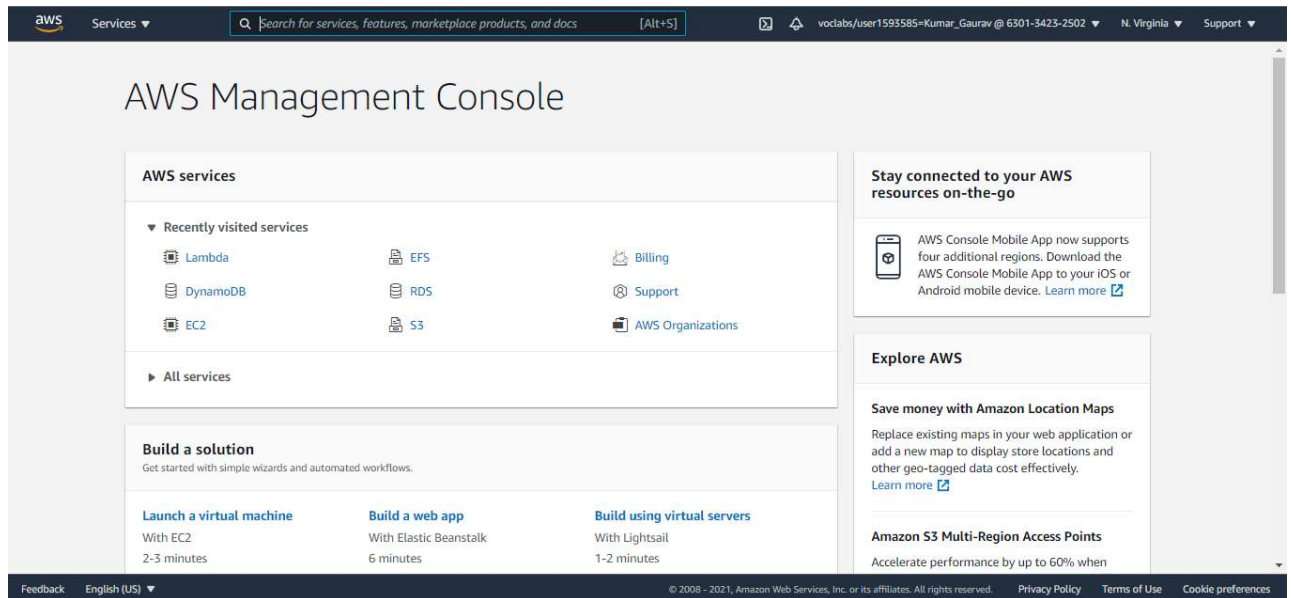
ElastiCache, Neptune, Amazon QLDB (Quantum Ledger Database), Amazon DocumentDB, Amazon

Keyspaces, Amazon Timestream and Amazon MemoryDB for Redis

SQL databases provide great benefits for transactional data whose structure doesn't change frequently (or at all) and where data integrity is paramount. It's also best for fast analytical queries. NoSQL databases provide much more flexibility and scalability, which lends itself to rapid development and iteration.

2. Consider a weather forecast dataset stored in S3 (JSON or CSV) which has

3. temperature as one of the feature. Extract at-least 5 most important feature from the
4. dataset and check if the temperature value of the day is > 20 degree then only store
5. the data in the DynamoDB for Analysis.



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Services

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Support

demo

Enter a name that describes the purpose of your function.
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 3.9

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.
LabRole
[View the LabRole role on the IAM console.](#)

Feedback

English (US)

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Services

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Support

Successfully created the function demo. You can now change its code and configuration. To invoke your function with a test event, choose "Test".

Lambda > Functions > demo

demo

Throttle Copy ARN Actions

Function overview Info

demo

Layers (0)

+ Add trigger

+ Add destination

Description

-

Last modified

6 seconds ago

Function ARN

arn:aws:lambda:us-east-1:630134232502:function:demo

Code

Test

Monitor

Configuration

Aliases

Versions

Code source

Info

Upload from

Feedback

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The test event gaurav1 was successfully saved.

+ Add trigger + Add destination

Function ARN
arn:aws:lambda:us-east-1:630134232502:function:demo

Code

Test

Monitor

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Aliases

Versions

Code source

Info

Upload from

File Edit Find View Go Tools Window

Test

Deploy

Changes deployed

Go to Anything (Ctrl-F)

lambda_function

demo /

1 import json

2

Feedback

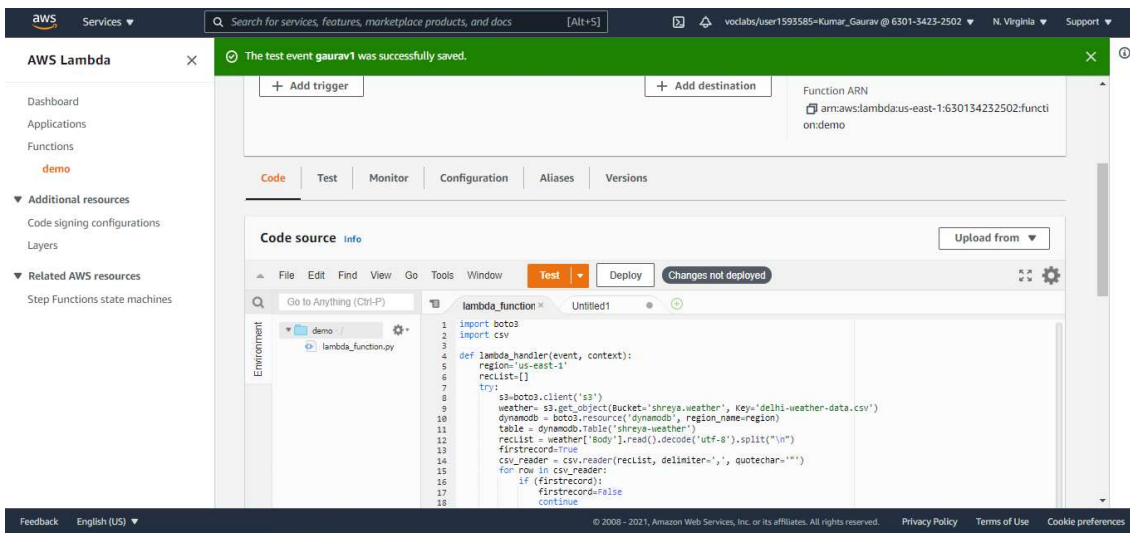
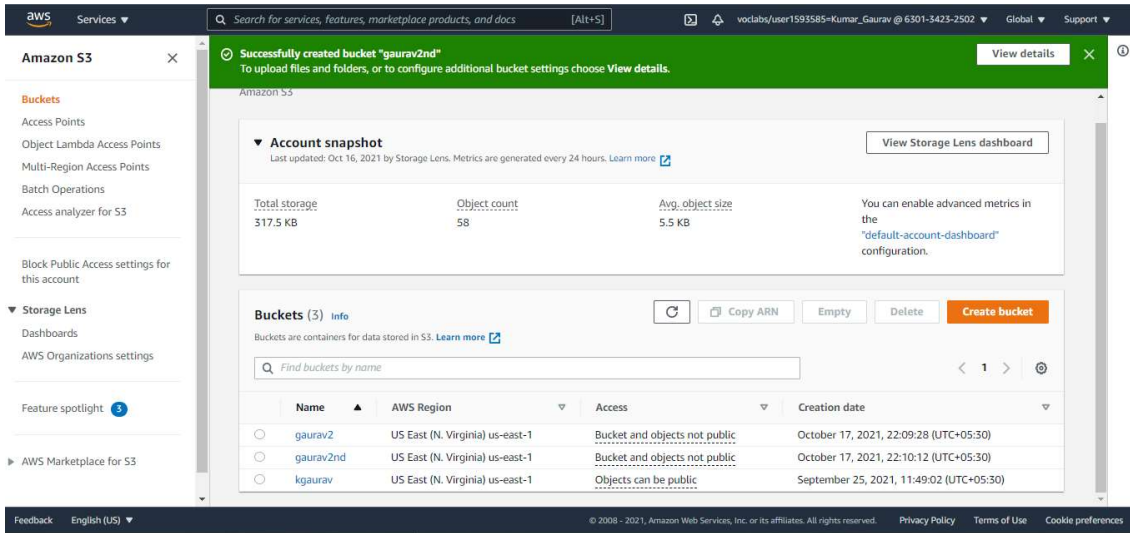
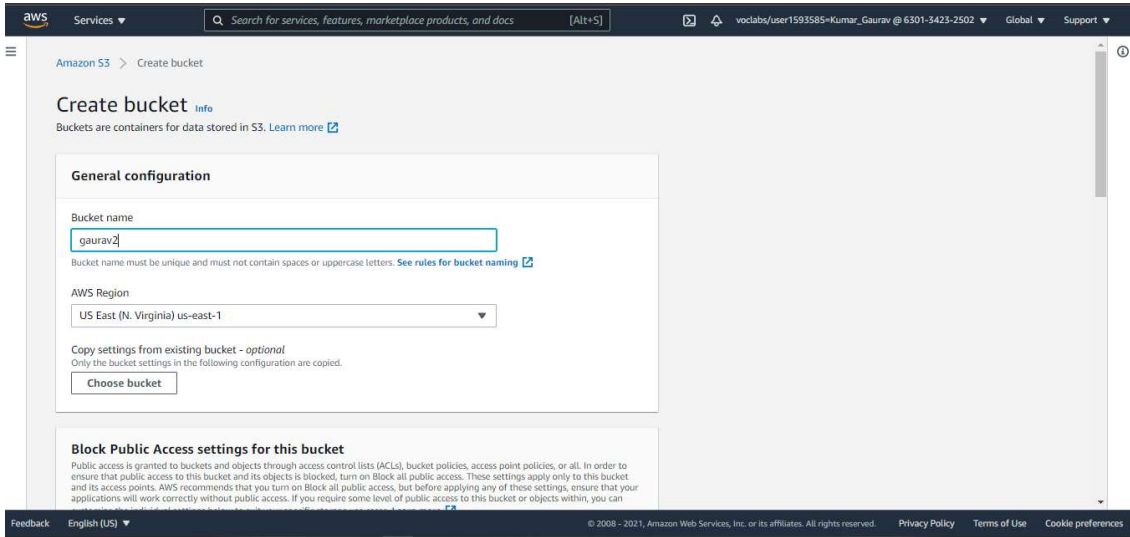
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File Edit Find View Go Tools Window Test Deploy Changes not deployed

Go to Anything (Ctrl-P)

Environment demo - / lambda_function.py

1 import boto3
2 import csv
3
4 def lambda_handler(event, context):
5     region='us-east-1'
6     recList=[]
7     try:
8         s3=boto3.client('s3')
9         weather= s3.get_object(Bucket='shreya-weather', Key='delhi-weather-data.csv')
10        dynamodb = boto3.resource('dynamodb', region_name=region)
11        table = dynamodb.Table('shreya-weather')
12        recList = weather['Body'].read().decode('utf-8').split("\n")
13        firstRecord=True
14        csv_reader = csv.reader(recList, delimiter=',', quotechar='"')
15        for row in csv_reader:
16            if (firstRecord):
17                firstRecord=False
18                continue
19                datetime_utc = row[0]
20                conds = row[1] if row[1] else '-'
21                dewpt = row[2] if row[2] else 0
22                fog = row[3] if row[3] else 0
23                hail = row[4] if row[4] else 0
24                humidity = row[5] if row[5] else 0
25                pressure = row[6] if row[6] else 0
26                rain = row[7] if row[7] else 0
27                snow = row[8] if row[8] else 0
28                temperature = row[9] if row[9] else 0
29                thunder = row[10] if row[10] else 0
30                tornado = row[11] if row[11] else 0
31                wind = row[12] if row[12] else 0
32                if int(temperature)>20:
33                    response = table.put_item(
34                        Item={
35                            'datetime_utc': datetime_utc, 'conds': conds, 'dewpt': dewpt, 'fog': fog, 'hail': hail,
36                            'humidity': humidity, 'pressure': pressure, 'rain': rain, 'snow': snow, 'temperature': temperature,
37                            'thunder': thunder, 'tornado': tornado, 'wind': wind
38                        }
39                    )
40            return response
41    except Exception as e:
42        print(e)
43        return None
```

IAM role dashboard

Identity and Access Management (IAM)

Dashboard

Access management

- User groups
- Users
- Roles
- Policies
- Identity providers
- Account settings

Access reports

- Access analyzer
- Archive rules
- Analizers
- Settings
- Credential report
- Organization activity
- Service control policies (SCPs)

Introducing the new IAM dashboard experience

IAM dashboard

Security recommendations 1

Add MFA for root user

IAM resources

User groups	Users	Roles	Policies	Identity providers
0	0	18	4	0

What's new

- IAM Access Analyzer helps you generate fine-grained policies that specify the required actions for more than 50 services. 1 month ago
- IAM Access Analyzer helps you generate IAM policies based on access activity found in your organization trail. 1 month ago
- IAM Access Analyzer adds new policy checks to help validate conditions during IAM policy authoring. 4 months ago
- AWS Amplify announces support for IAM permissions boundaries on Amplify-generated IAM roles. 4 months ago

AWS Account

Account ID

630134232502

Account Alias

630134232502

Create

Sign-in URL for IAM users in this account

https://630134232502.signin.aws.amazon.com/console

Tools

Policy simulator

The simulator evaluates the policies that you choose and determines the effective permissions for each of the actions that you specify.

Web identity federation playground

Identity and Access Management (IAM)

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IAM > Roles

Roles (18)

An IAM role is an identity you can create that has specific permissions with credentials that are valid for short durations. Roles can be assumed by entities that you trust.

Role name

Trusted entities

Last activity

<input type="checkbox"/>	AWSServiceRoleForAmazonElasticFileSystem	AWS Service: elasticfilesystem (Service-Linked Role)	8 days ago
<input type="checkbox"/>	AWSServiceRoleForAWSCloud9	AWS Service: cloud9 (Service-Linked Role)	-
<input type="checkbox"/>	AWSServiceRoleForBackup	AWS Service: backup (Service-Linked Role)	7 hours ago
<input type="checkbox"/>	AWSServiceRoleForCloudWatchEvents	AWS Service: events (Service-Linked Role)	-
<input type="checkbox"/>	AWSServiceRoleForElastiCache	AWS Service: elasticsearch (Service-Linked Role)	-
<input type="checkbox"/>	AWSServiceRoleForGlobalAccelerator	AWS Service: globalaccelerator (Service-Linked Role)	-
<input type="checkbox"/>	AWSServiceRoleForOrganizations	AWS Service: organizations (Service-Linked Role)	-
<input type="checkbox"/>	AWSServiceRoleForRDS	AWS Service: rds (Service-Linked Role)	10 days ago
<input type="checkbox"/>	AWSServiceRoleForSupport	AWS Service: support (Service-Linked Role)	-

Identity and Access Management (IAM)

Dashboard

Access management

User groups

Users

Roles

Policies

Identity providers

Account settings

Access reports

IAM > Roles

Roles (18) [Info](#)

An IAM role is an identity you can create that has specific permissions with credentials that are valid for short durations. Roles can be assumed by entities that you trust.

X 2 matches

<input type="checkbox"/>	Role name	Trusted entities
<input type="checkbox"/>	LabRole	AWS Service: codebuild, and 35 more. View all
<input type="checkbox"/>	voclabs	Account: 563884116226

aws Services

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voclabs/user1593585-Kumar_Gaurav @ 6301-3423-2502 Global

Add permissions to LabRole

Attach Permissions

Create policy

Filter policies Showing 4 results

<input type="checkbox"/>	Policy name	Type	Used as
<input type="checkbox"/>	AmazonDynamoDBFullAccess	AWS managed	None
<input type="checkbox"/>	AmazonDynamoDBReadOnlyAccess	AWS managed	None
<input type="checkbox"/>	AWSLambdaDynamoDBExecutionRole	AWS managed	None
<input type="checkbox"/>	AWSLambdaInvocation-DynamoDB	AWS managed	None

Create table in DynamoDb

aws Services

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DynamoDB > Tables > Create table

Create table

Table details [Info](#)

DynamoDB is a schemaless database that requires only a table name and a primary key when you create the table.

Table name

This will be used to identify your table.

Between 3 and 255 characters, containing only letters, numbers, underscores (_), hyphens (-), and periods (.).

Partition key

The partition key is part of the table's primary key. It is a hash value that is used to retrieve items from your table and allocate data across hosts for scalability and availability.

String

1 to 255 characters and case sensitive.

Sort key - optional

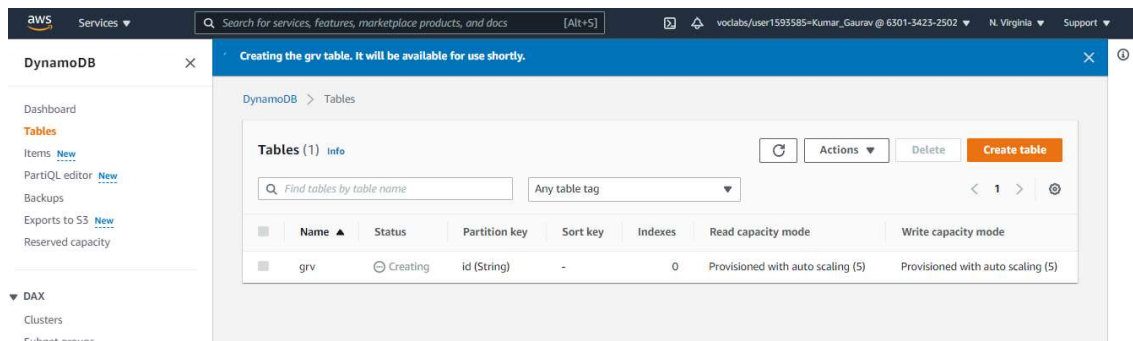
You can use a sort key as the second part of a table's primary key. The sort key allows you to sort or search among all items sharing the same partition key.

String

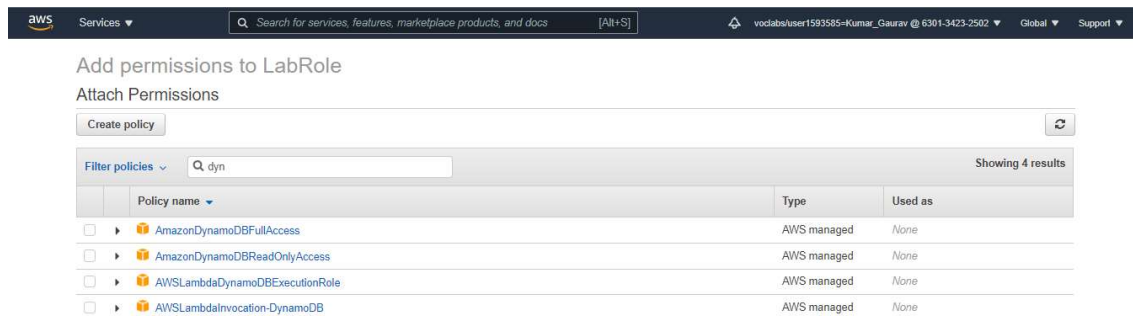
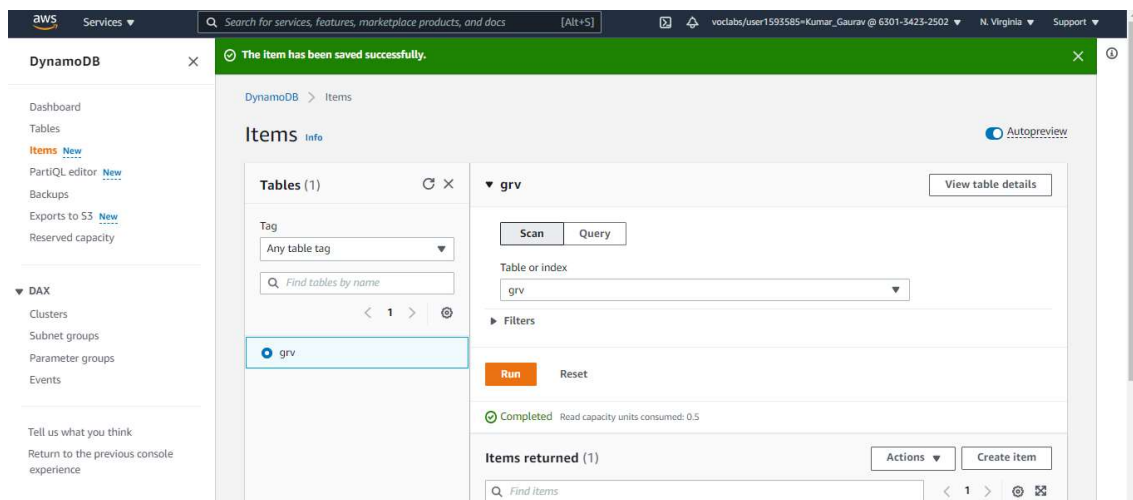
1 to 255 characters and case sensitive.

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Create DynamoDb



Weather report dataset

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	datetime	conds	dewpt	fog	hail	humidity	pressure	rain	snow	temperat	thunder	tornado	wdir			
2	19961101-Smoke		9	0	0	27	1010	0	0	30	0	0	280			
3	19961101-Smoke		10	0	0	32	-9999	0	0	28	0	0	0			
4	19961101-Smoke		11	0	0	44	-9999	0	0	24	0	0	0			
5	19961101-Smoke		10	0	0	41	1010	0	0	24	0	0	0			
6	19961101-Smoke		11	0	0	47	1011	0	0	23	0	0	0			
7	19961101-Smoke		12	0	0	56	1011	0	0	21	0	0	0			
8	19961101-Smoke		13	0	0	60	1010	0	0	21	0	0	0			
9	19961101-Smoke		13	0	0	60	-9999	0	0	21	0	0	0			
10	19961101-Smoke		13	0	0	68	-9999	0	0	19	0	0	0			
11	19961101-Smoke		13	0	0	68	1010	0	0	19	0	0	0			
12	19961101-Smoke		13	0	0	68	1009	0	0	19	0	0	0			
13	19961101-Smoke		12	0	0	64	1009	0	0	19	0	0	0			
14	19961102-Smoke		11	0	0	60	1010	0	0	19	0	0	0			
15	19961102-Smoke		11	0	0	60	1010	0	0	19	0	0	0			
16	19961102-Smoke		10	0	0	52	1011	0	0	20	0	0	200			
17	19961102-Smoke		10	0	0	46	1012	0	0	22	0	0	240			
18	19961102-Smoke		10	0	0	44	1012	0	0	23	0	0	250			
19	19961102-Smoke		11	0	0	39	1012	0	0	26	0	0	240			
20	19961102-Clear		10	0	0	32	1011	0	0	28	0	0	260			

Upload Info

Add the files and folders you want to upload to S3. To upload a file larger than 160GB, use the AWS CLI, AWS SDK or Amazon S3 REST API. [Learn more](#)

Drag and drop files and folders you want to upload here, or choose **Add files**, or **Add folders**.

Files and folders (1 Total, 5.0 MB) Remove Add files Add folder

All files and folders in this table will be uploaded.

<input type="checkbox"/>	Name	Folder	Type	Size
<input type="checkbox"/>	delhi-weather-data.csv	-	application/vnd.ms-excel	5.0 MB


Destination

Destination: [s3://shreya.weather](#)

Records successfully inserted into dynamoDb

Get live item count


When you choose "Start scan," you will perform a DynamoDB scan to determine the most-recent item count. This scan might consume additional table read capacity units.

 It is not recommended to perform this action on very large tables or tables that serve critical production data. You can pause the action at any time to avoid consuming extra read capacity.

Item count

2,967

Scan status

 Complete

Last updated

October 17, 2021 1

Scan again

Successfully, show top 20 weather report.

Items returned (50)												Actions	Create item
Find items												< 1 > ⌕	
<input type="checkbox"/>	datetime_utc	conds	dewpt	fog	hail	humidity	pressure	rain	snow	temperature			
<input type="checkbox"/>	19961226-08:00	Smoke	12	0	0	50	1017	0	0	23			
<input type="checkbox"/>	19970528-16:00	Haze	17	0	0	73	1012	0	0	22			
<input type="checkbox"/>	19970710-20:00	Haze	26	0	0	100	994	0	0	26			
<input type="checkbox"/>	19961115-14:00	Smoke	13	0	0	57	1012	0	0	22			
<input type="checkbox"/>	19970411-19:00	Haze	20	0	0	78	1010	0	0	24			
<input type="checkbox"/>	19970411-21:00	Haze	19	0	0	78	1009	0	0	23			
<input type="checkbox"/>	19970528-12:00	Haze	24	0	0	47	999	0	0	37			

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