Cycle 08 AWS Homework

PartiQL Editor in DynamoDB

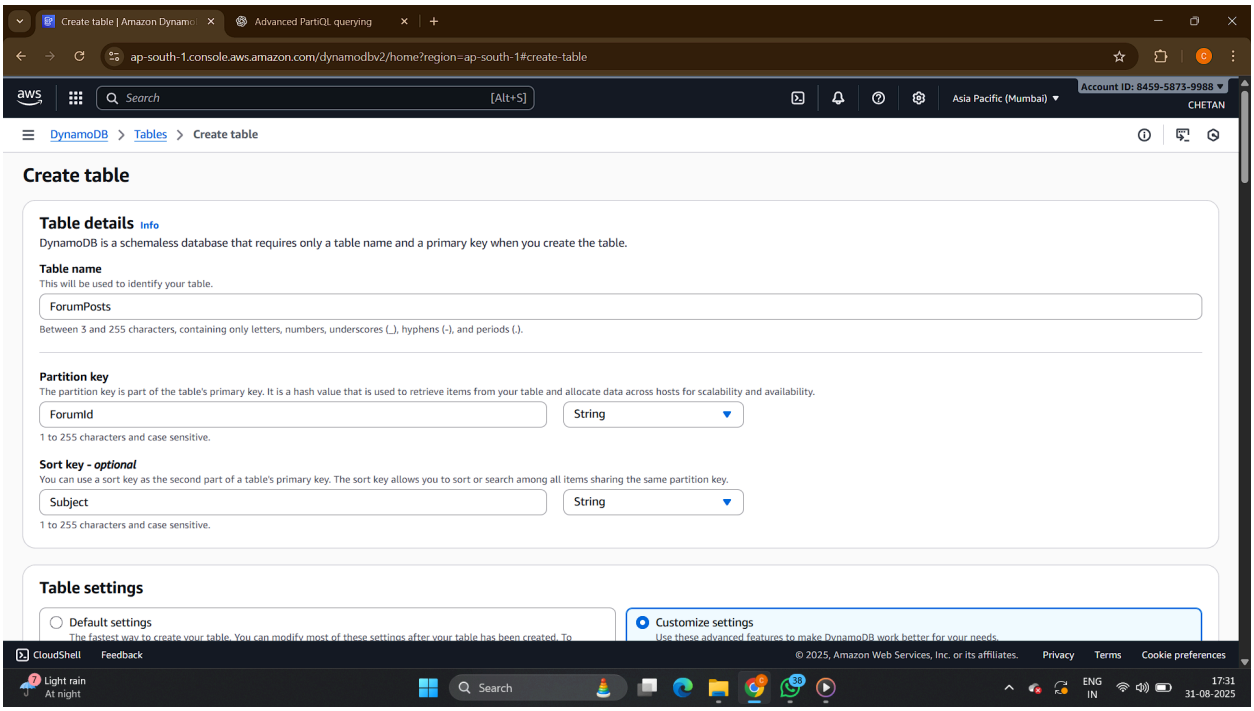
Task 1: Basic PartiQL Operations

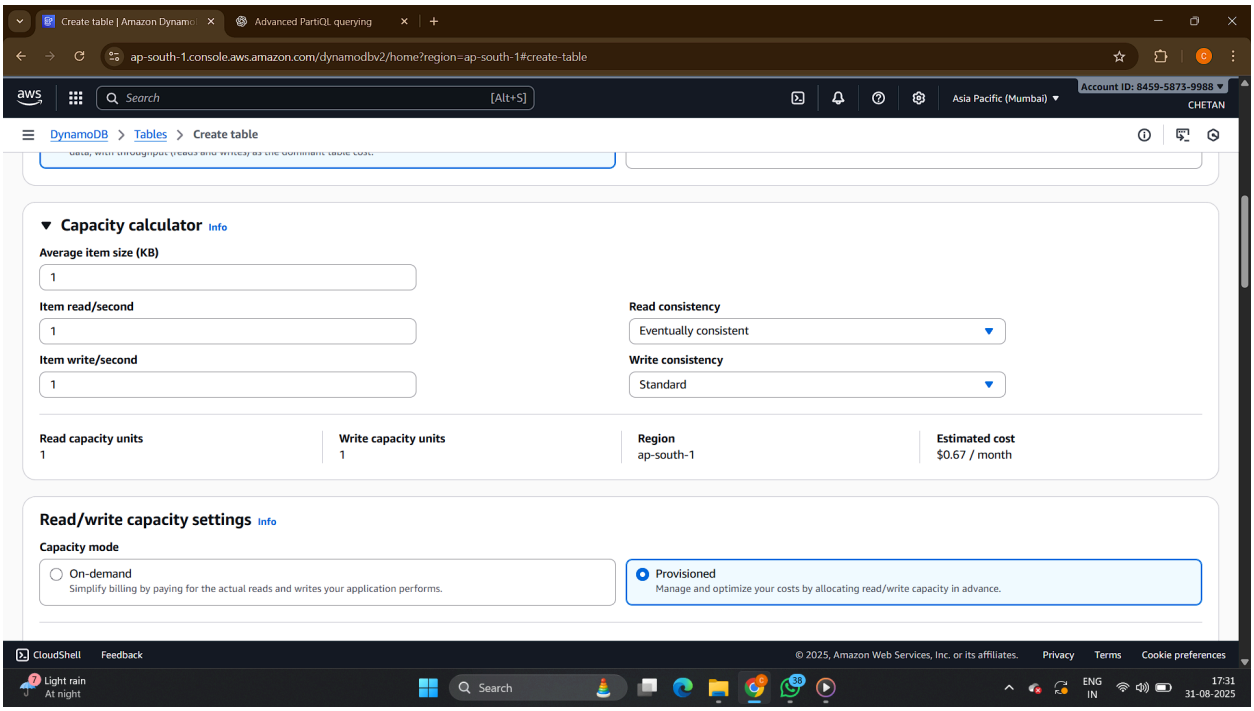
Objective: Practice CRUD (Create, Read, Update, Delete) operations using PartiQL on DynamoDB.

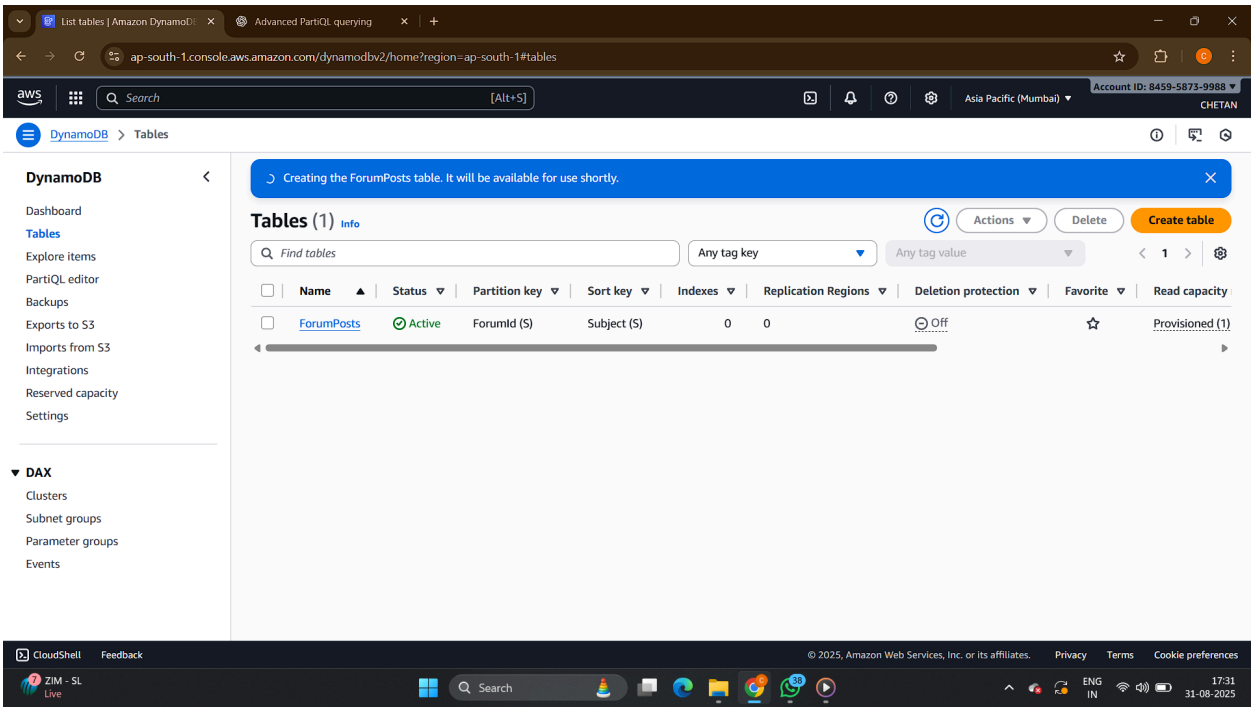
Step 1: Create a new table

- **Table Name**: Example: `ForumPosts`
- **Partition Key**: `ForumName` (String)
- **Sort Key**: `Subject` (String)

You can create this table either via the **DynamoDB Console > Tables > Create Table**, or use the AWS CLI or SDK. PartiQL itself doesn't create tables.







Step 2: INSERT 5–7 new items

Using the **PartiQL Editor**:

```
INSERT INTO "ForumPosts" VALUE {'ForumName': 'DynamoDB Deep Dive', 'S
ubject': 'How to optimize reads', 'Author': 'Alice', 'Replies': 2};
INSERT INTO "ForumPosts" VALUE {'ForumName': 'DynamoDB Deep Dive', 'S
ubject': 'How to use PartiQL', 'Author': 'Bob', 'Replies': 5};
INSERT INTO "ForumPosts" VALUE {'ForumName': 'DynamoDB Tips', 'Subjec
t': 'Secondary Indexes Explained', 'Author': 'Charlie', 'Replies': 1};
INSERT INTO "ForumPosts" VALUE {'ForumName': 'DynamoDB Deep Dive', 'S
ubject': 'Table Design Best Practices', 'Author': 'Alice'};
INSERT INTO "ForumPosts" VALUE {'ForumName': 'DynamoDB Basics', 'Subje
ct': 'Getting Started Guide', 'Author': 'Eve', 'Replies': 0};
```

Step 3: SELECT all items (SCAN)

```
SELECT * FROM "ForumPosts";
```

This performs a **full scan** and reads all items from the table.

Step 4: SELECT where ForumName = 'DynamoDB Deep Dive' (Query)

```
SELECT * FROM "ForumPosts" WHERE ForumName = 'DynamoDB Deep Div
e';
```

This is a **query operation** and is more efficient than a full scan because it uses the partition key.

Step 5: UPDATE an item

```
UPDATE "ForumPosts"
SET Replies = 5
WHERE ForumName = 'DynamoDB Deep Dive' AND Subject = 'Table Design B
```

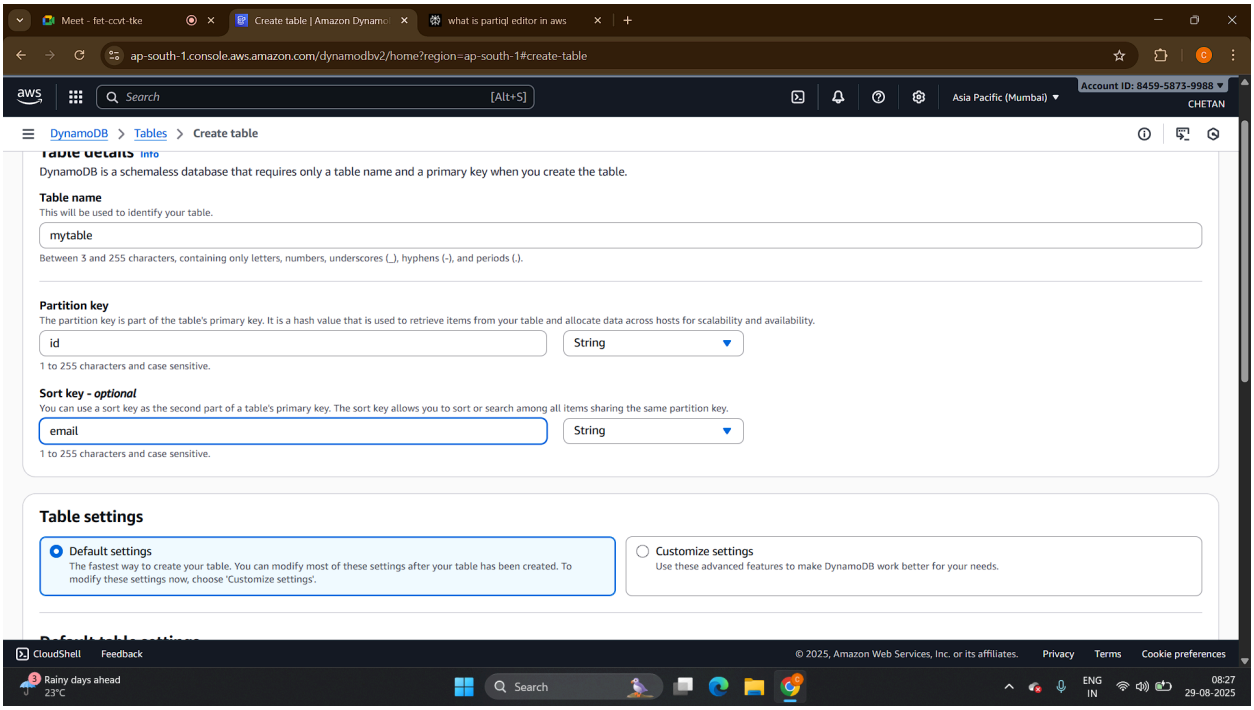
```
est Practices';
```

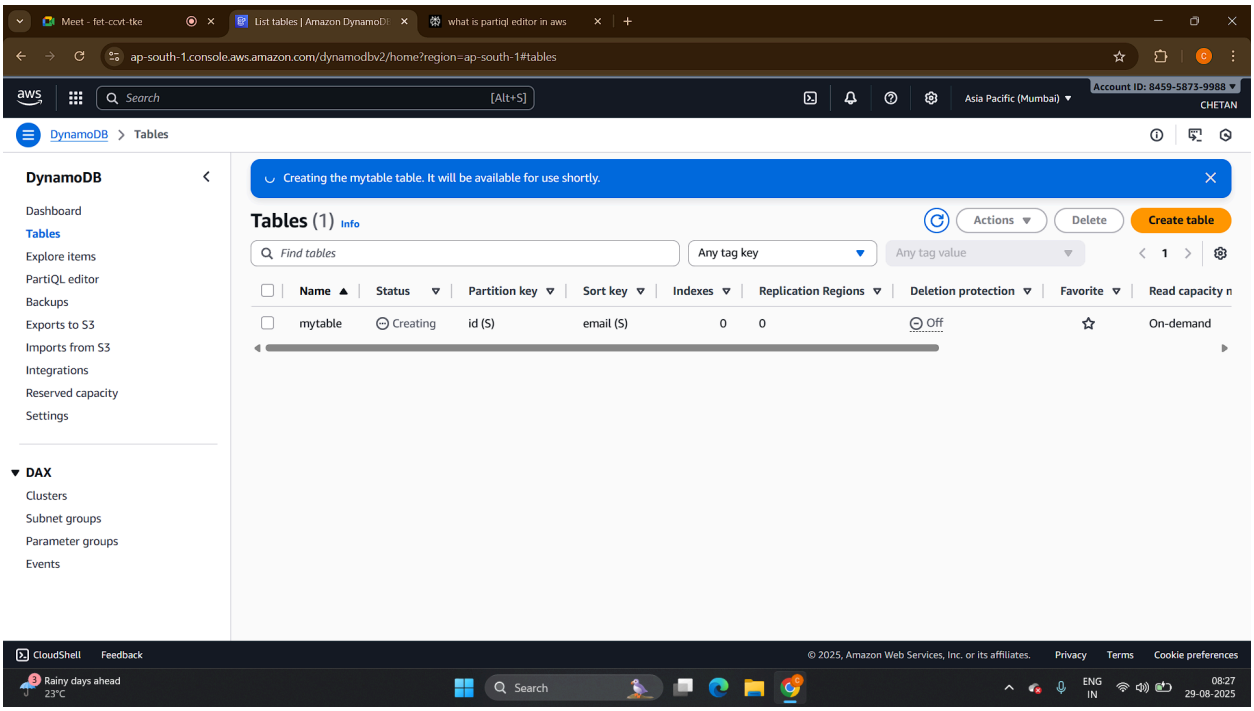
This modifies an existing item by adding or changing the value of an attribute.

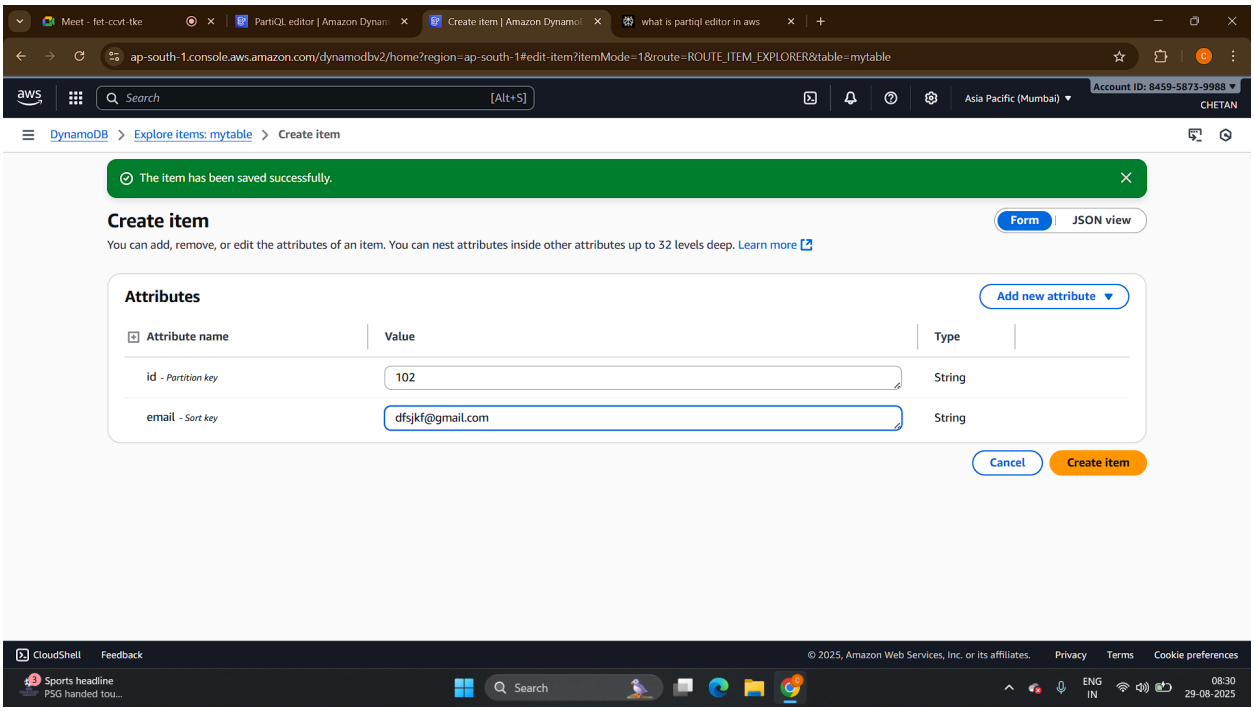
Step 6: DELETE one item

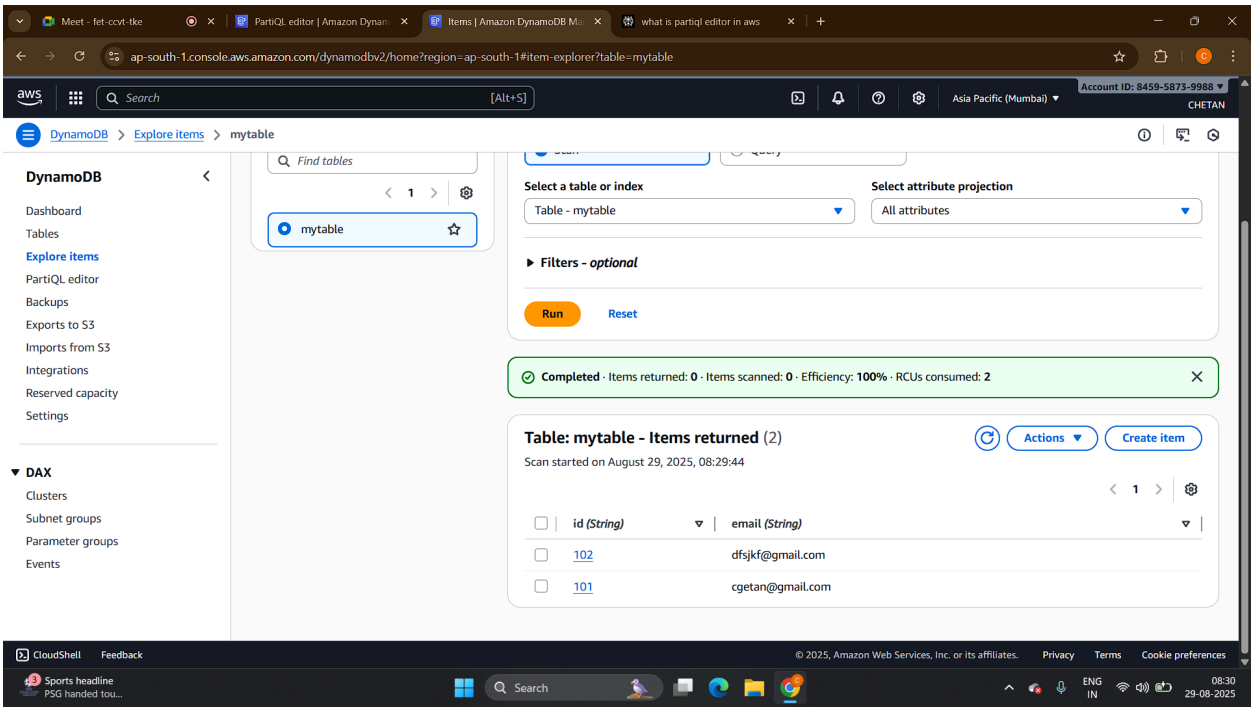
```
DELETE FROM "ForumPosts"
WHERE ForumName = 'DynamoDB Basics' AND Subject = 'Getting Started Gui
de';
```

This removes the item with the specified primary key.




Creating the mytable table. It will be available for use shortly.
Tables (1) Info
Actions
Delete
Create table
Name
Status
Partition key
Sort key
Indexes
Replication Regions
Deletion protection
Favorite
Read capacity
mytable
Creating
id (S)
email (S)
0
0
Off
On-demand


The item has been saved successfully.
Create item
You can add, remove, or edit the attributes of an item. Learn more
Form
JSON view
Attributes
Add new attribute
Attribute name
Value
Type
id - Partition key
102
String
email - Sort key
dfsjkf@gmail.com
String
Cancel
Create item


ap-south-1.console.aws.amazon.com/dynamodbv2/home?region=ap-south-1#item-explorer?table=mytable
DynamoDB > Explore items > mytable
Dashboard
Tables
Explore items
PartiQL editor
Backups
Exports to S3
Imports from S3
Integrations
Reserved capacity
Settings
DAX
Clusters
Subnet groups
Parameter groups
Events
mytable
Select a table or index
Table - mytable
Select attribute projection
All attributes
Filters - optional
Run
Reset
Completed · Items returned: 0 · Items scanned: 0 · Efficiency: 100% · RCUs consumed: 2
Table: mytable - Items returned (2)
Scan started on August 29, 2025, 08:29:44
Actions
Create item
id (String)
email (String)
102
dfsjkf@gmail.com
101
cgetan@gmail.com
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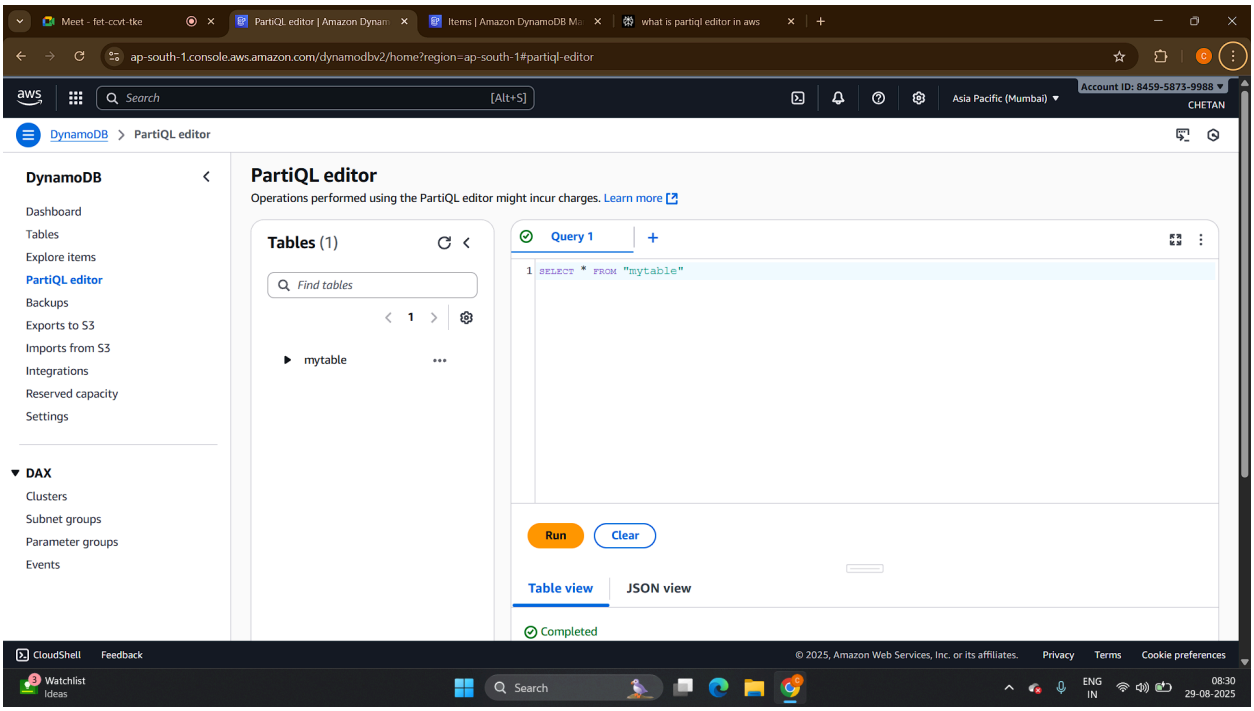
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PartiQL editor
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mytable
Query 1
SELECT * FROM "mytable"
Run
Clear
Table view
JSON view
Completed
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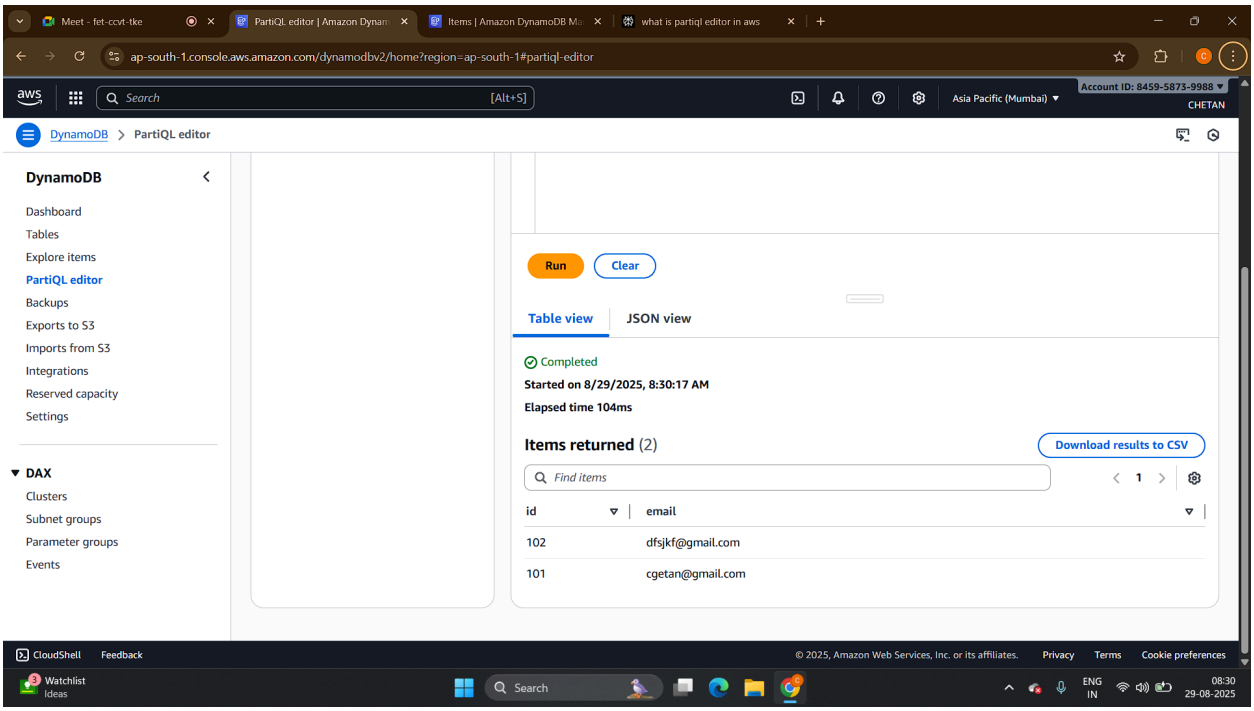
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PartiQL editor
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Exports to S3
Imports from S3
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Reserved capacity
Settings
DAX
Clusters
Subnet groups
Parameter groups
Events
Run
Clear
Table view
JSON view
Completed
Started on 8/29/2025, 8:30:17 AM
Elapsed time 104ms
Items returned (2)
Download results to CSV
Find items
id
email
102
dfsjkf@gmail.com
101
cgetan@gmail.com
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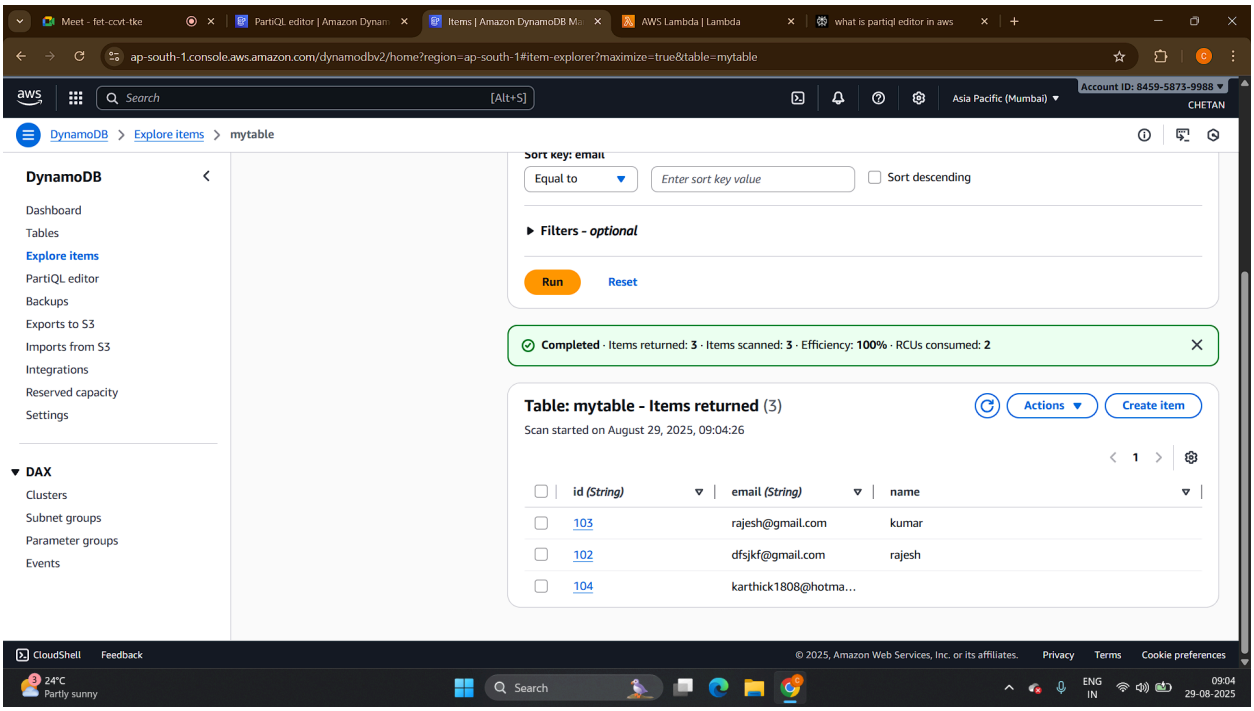
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DynamoDB > Explore items > mytable
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Explore items
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Exports to S3
Imports from S3
Integrations
Reserved capacity
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DAX
Clusters
Subnet groups
Parameter groups
Events
Equal to
Enter sort key value
Sort descending
Filters - optional
Run
Reset
Completed · Items returned: 3 · Items scanned: 3 · Efficiency: 100% · RCUs consumed: 2
Table: mytable - Items returned (3)
Scan started on August 29, 2025, 09:04:26
Actions
Create item
id (String)
email (String)
name
103
rajesh@gmail.com
kumar
102
dfsjkf@gmail.com
rajesh
104
karthick1808@hotma…
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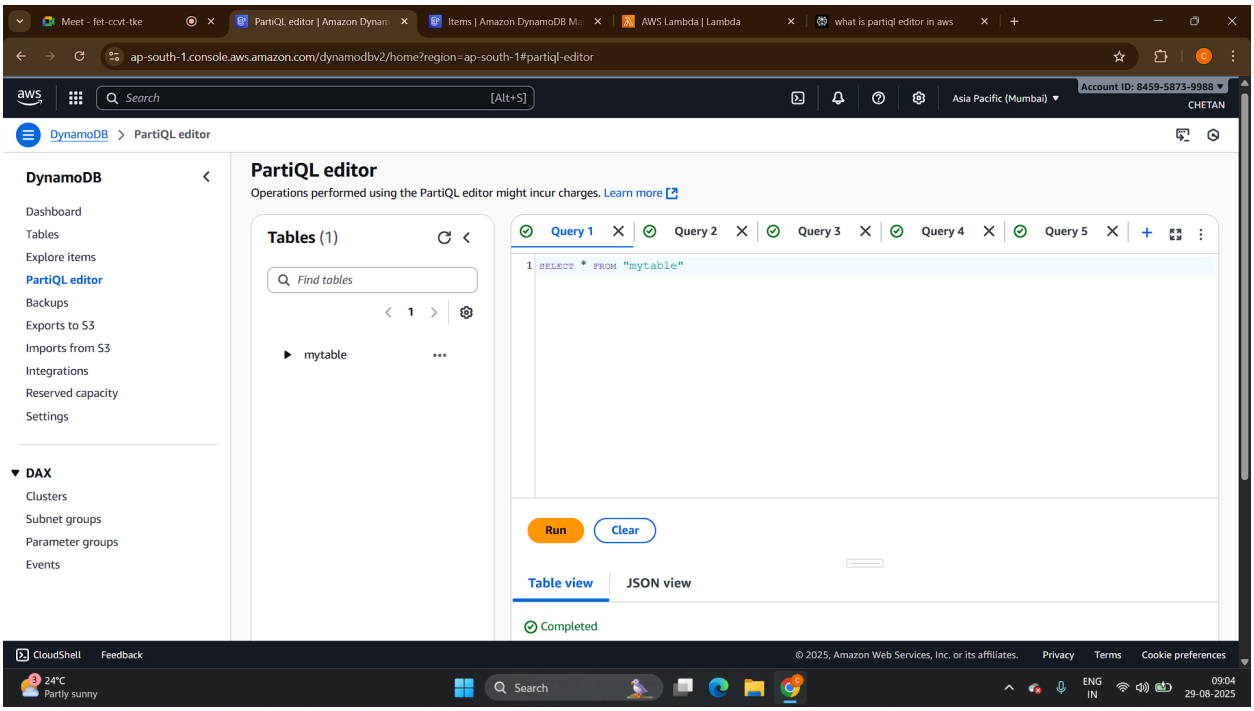
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Items | Amazon DynamoDB Ma
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Find tables
mytable
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Table view
JSON view
Completed
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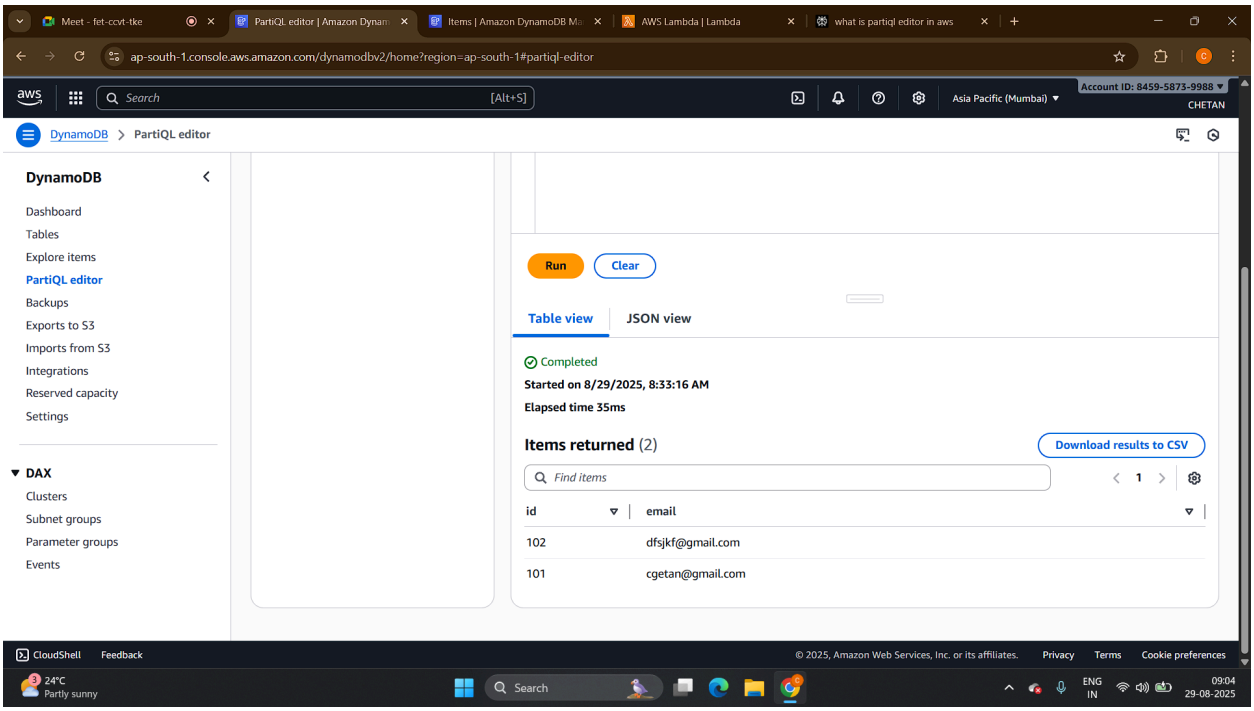
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Parameter groups
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Table view
JSON view
Completed
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Elapsed time 35ms
Items returned (2)
Download results to CSV
Find items
id
email
102
dfsjkf@gmail.com
101
cgetan@gmail.com
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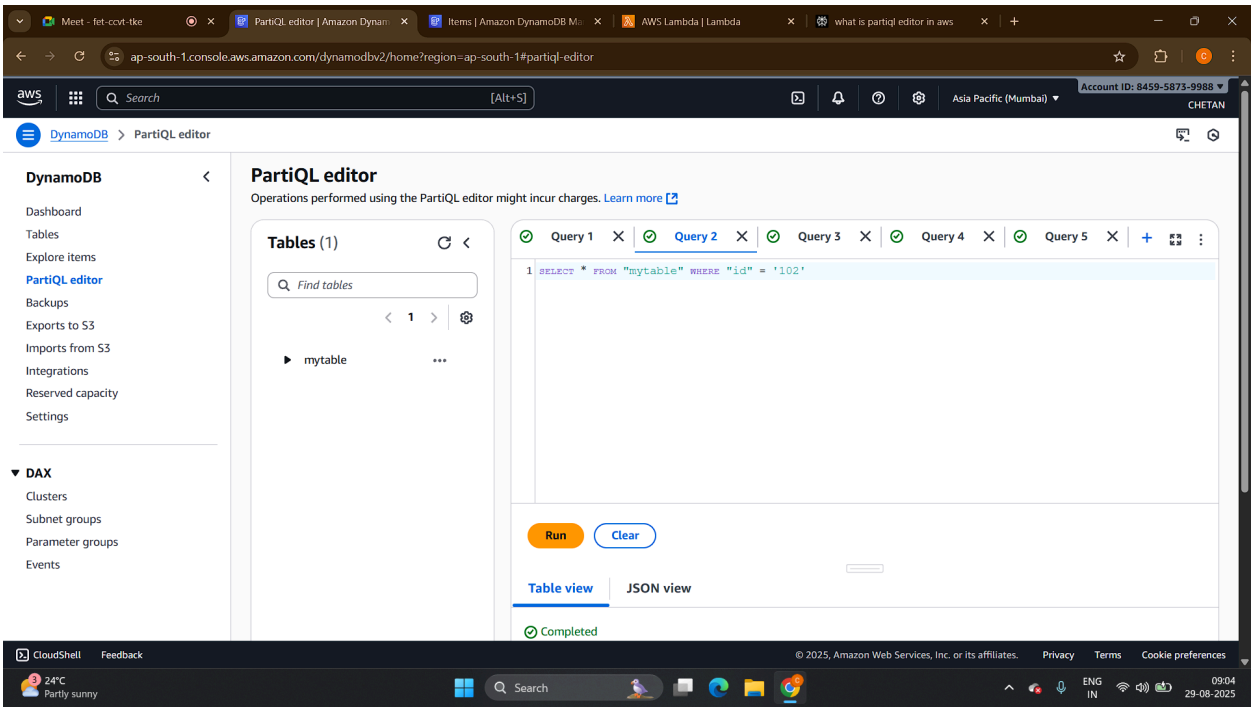
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Find tables
mytable
Query 1
Query 2
Query 3
Query 4
Query 5
SELECT * FROM "mytable" WHERE "id" = '102'
Run
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JSON view
Completed
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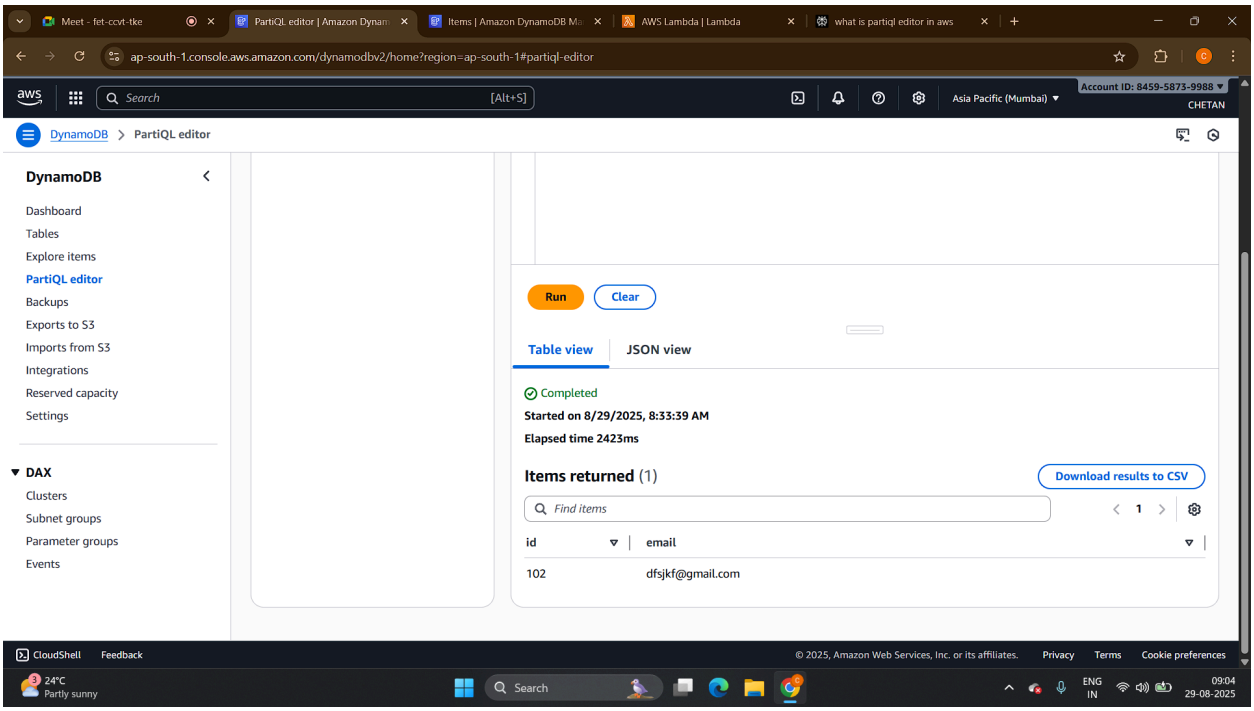
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Items | Amazon DynamoDB Ma
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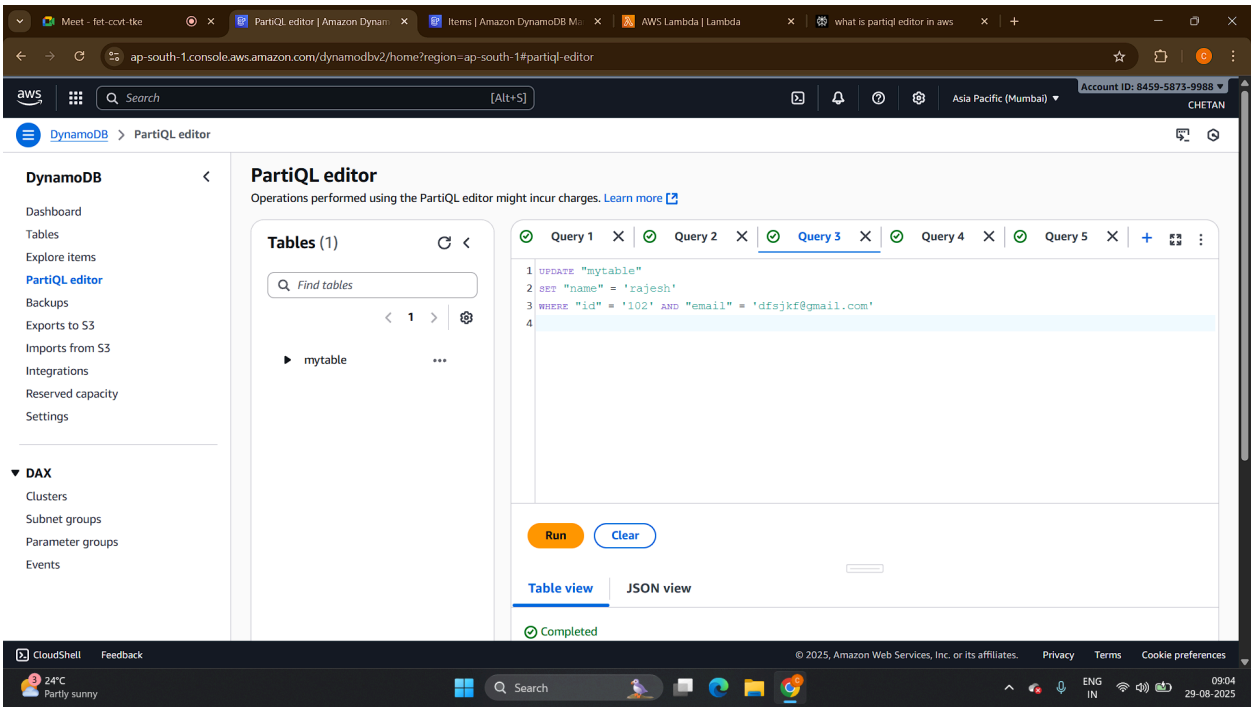
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Find tables
mytable
Query 1
Query 2
Query 3
Query 4
Query 5
UPDATE "mytable"
SET "name" = 'rajesh'
WHERE "id" = '102' AND "email" = 'dfsjkf@gmail.com'
Run
Clear
Table view
JSON view
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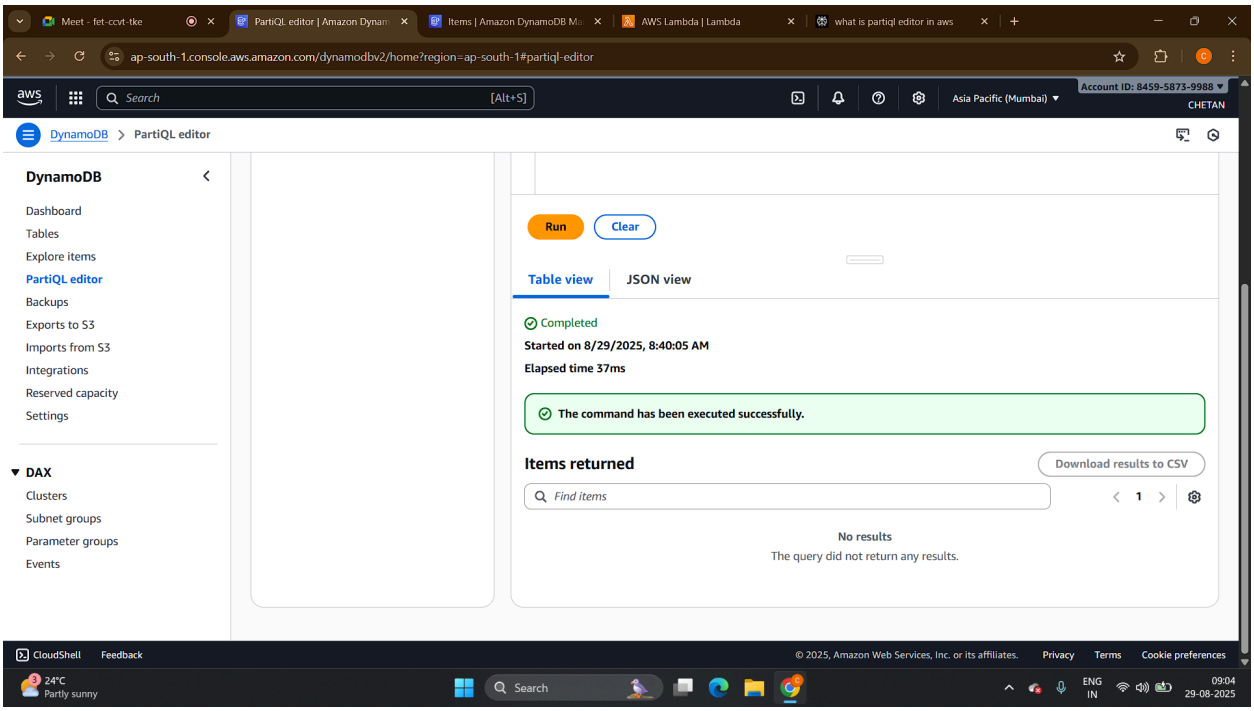
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Clear
Table view
JSON view
Completed
Started on 8/29/2025, 8:40:05 AM
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The command has been executed successfully.
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No results
The query did not return any results.
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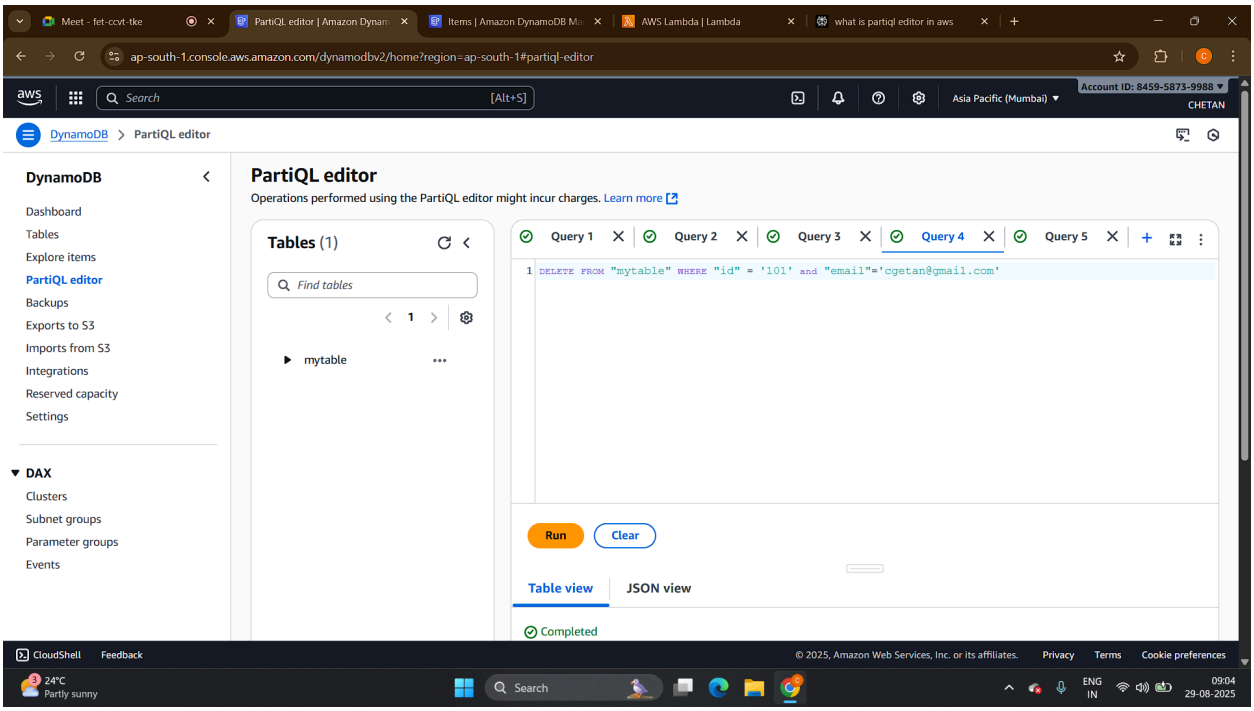
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Find tables
mytable
Query 1
Query 2
Query 3
Query 4
Query 5
1 DELETE FROM "mytable" WHERE "id" = '101' and "email"='cgetan@gmail.com'
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JSON view
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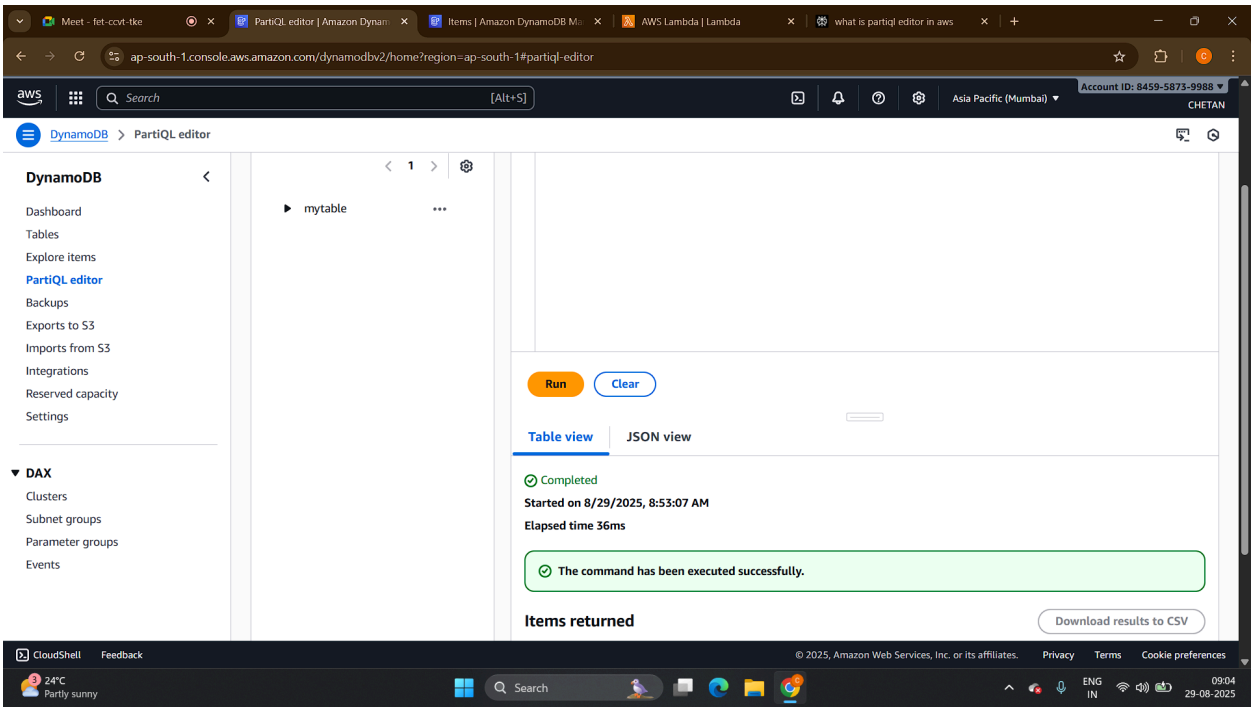
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mytable
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JSON view
Completed
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Elapsed time 36ms
The command has been executed successfully.
Items returned
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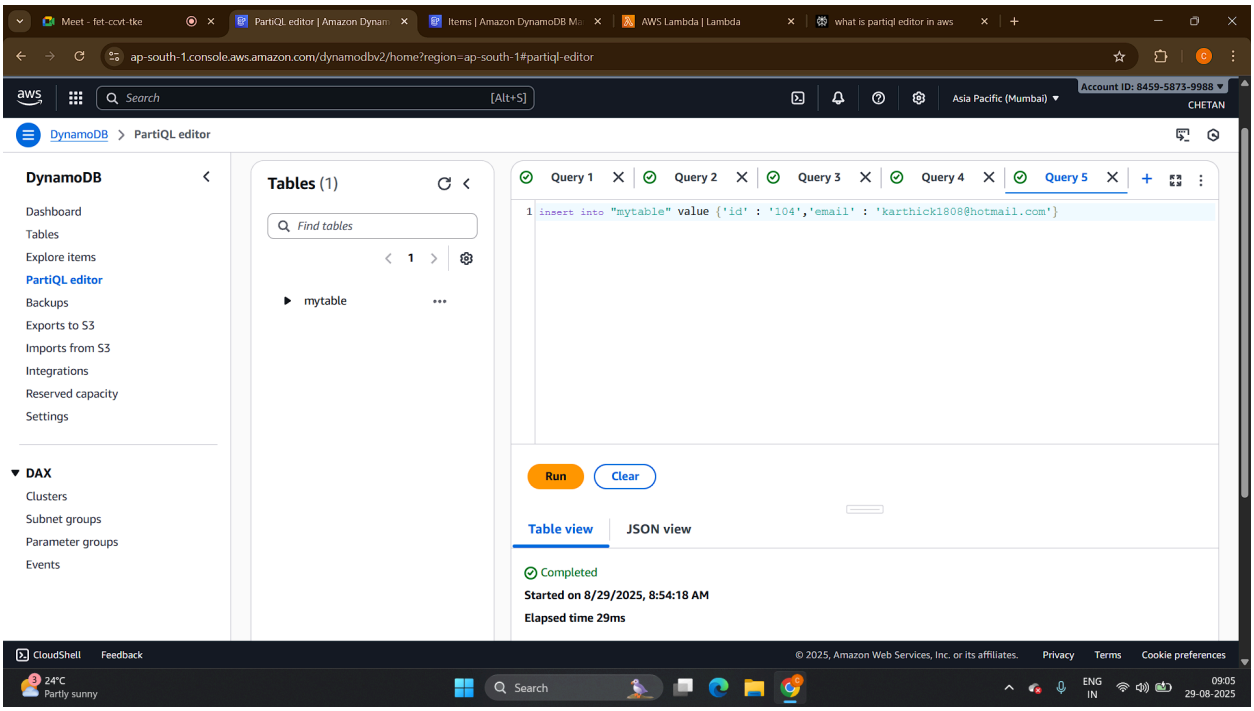
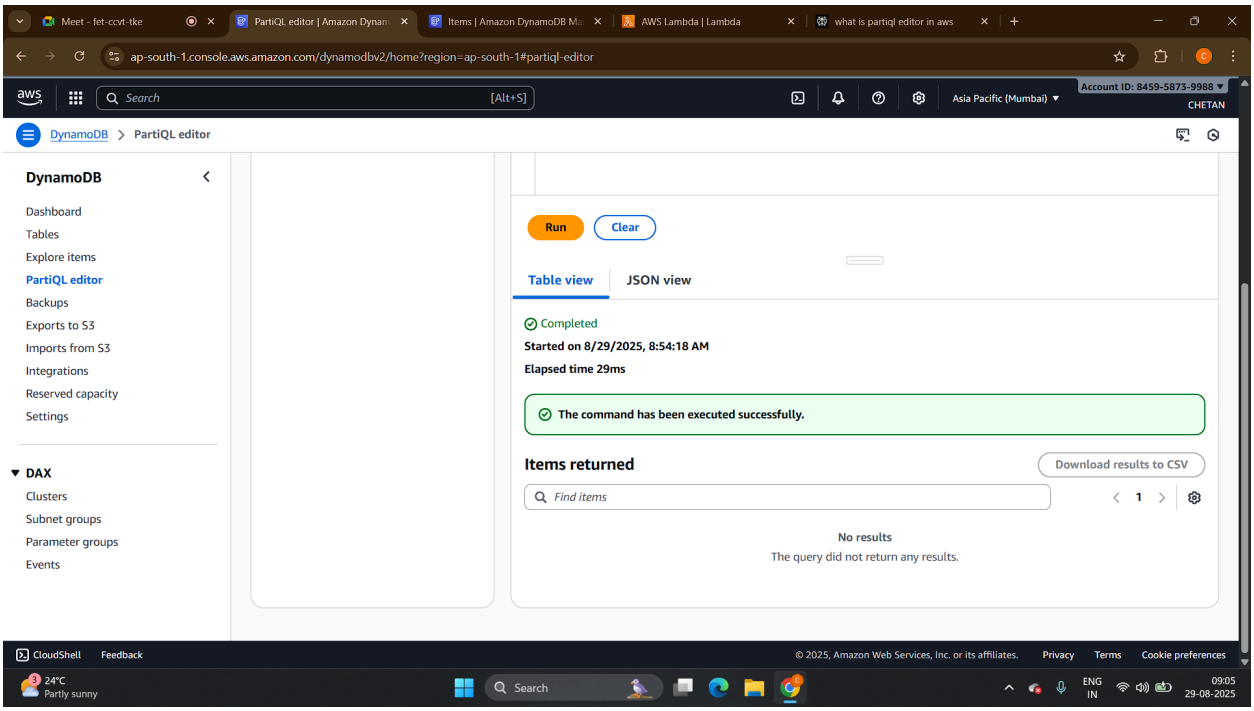


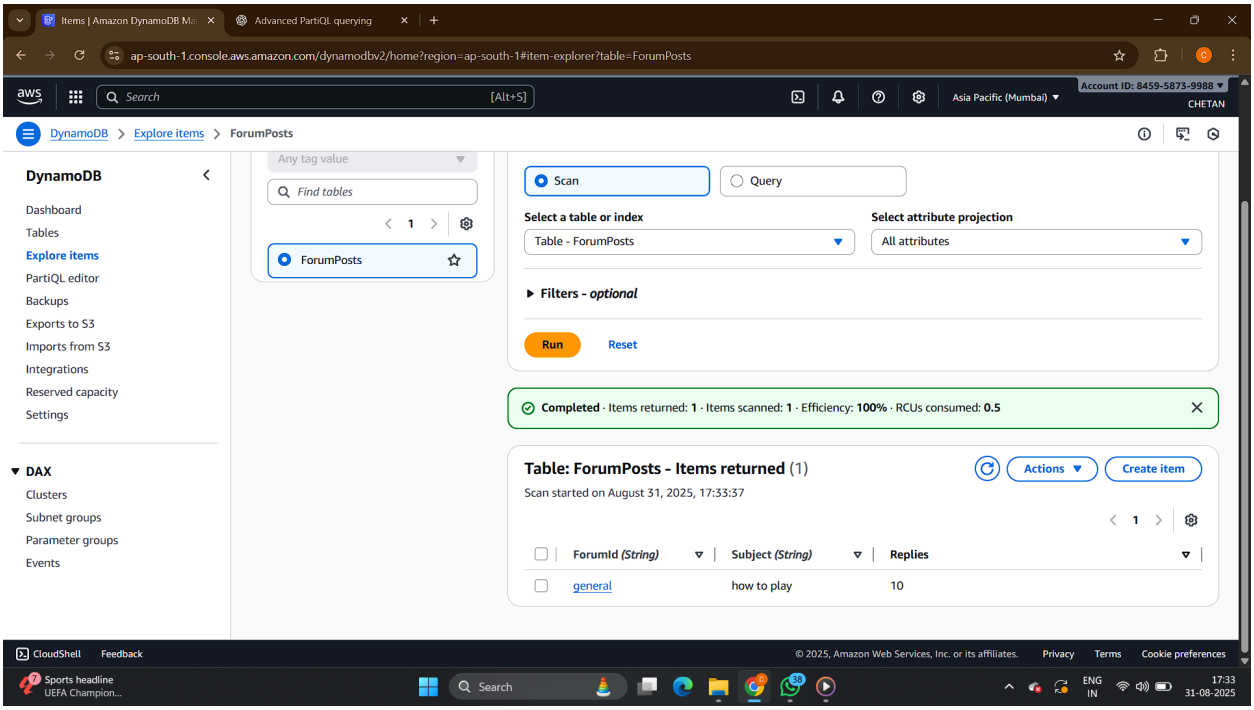


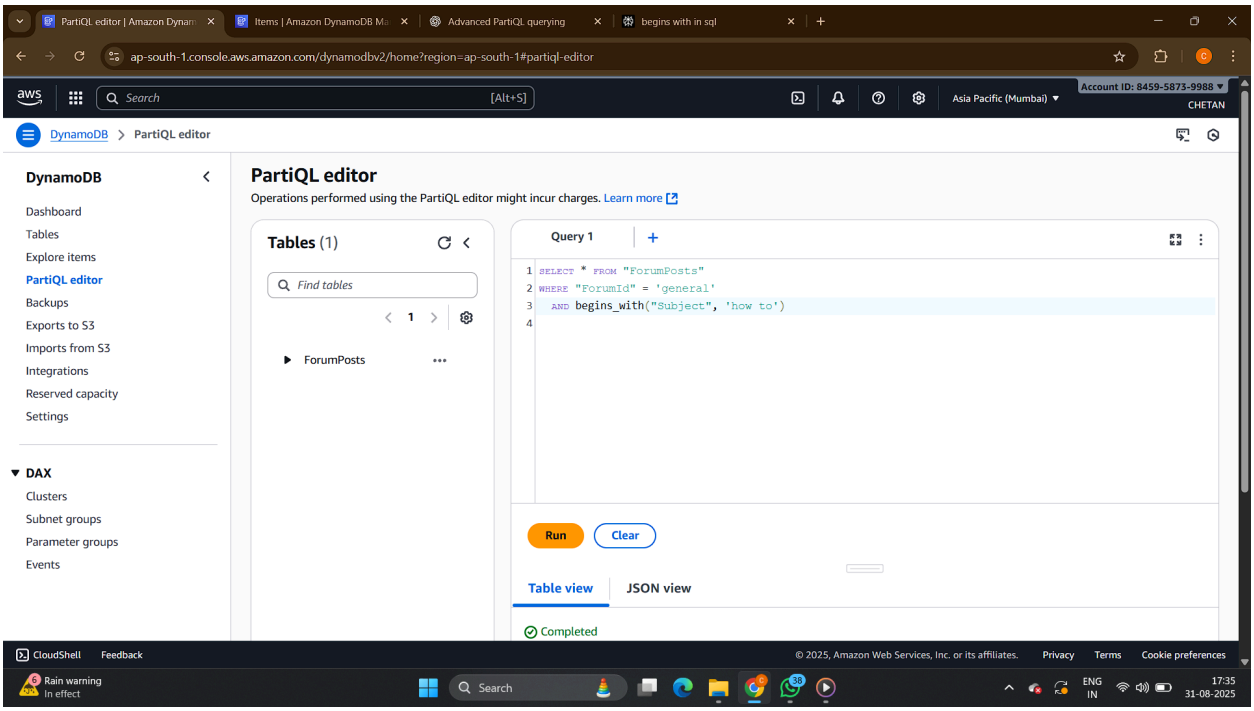
Task 2: Advanced PartiQL Querying

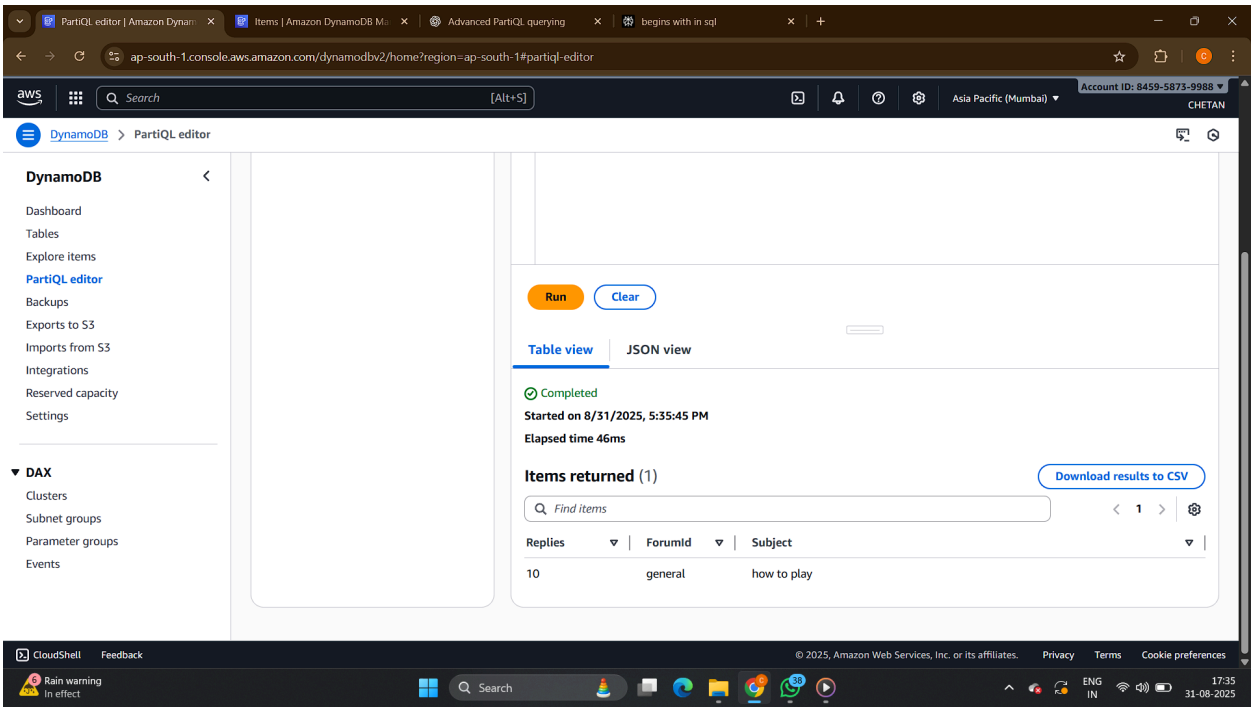
1. Use `begins_with` on Sort Key

```
SELECT * FROM "ForumPosts"
WHERE ForumName = 'DynamoDB Deep Dive' AND begins_with(Subject, 'Ho
w to');
```

This returns all items where the **Sort Key starts with "How to"**, within the same partition key (`ForumName`).



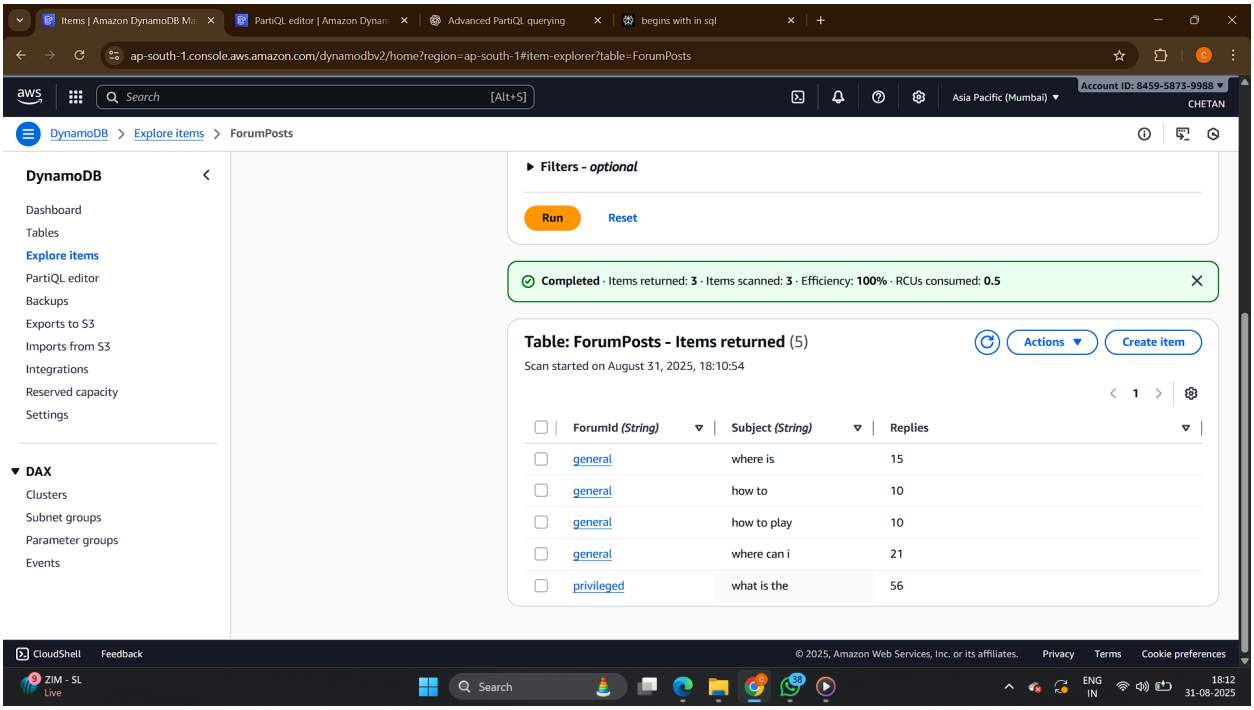


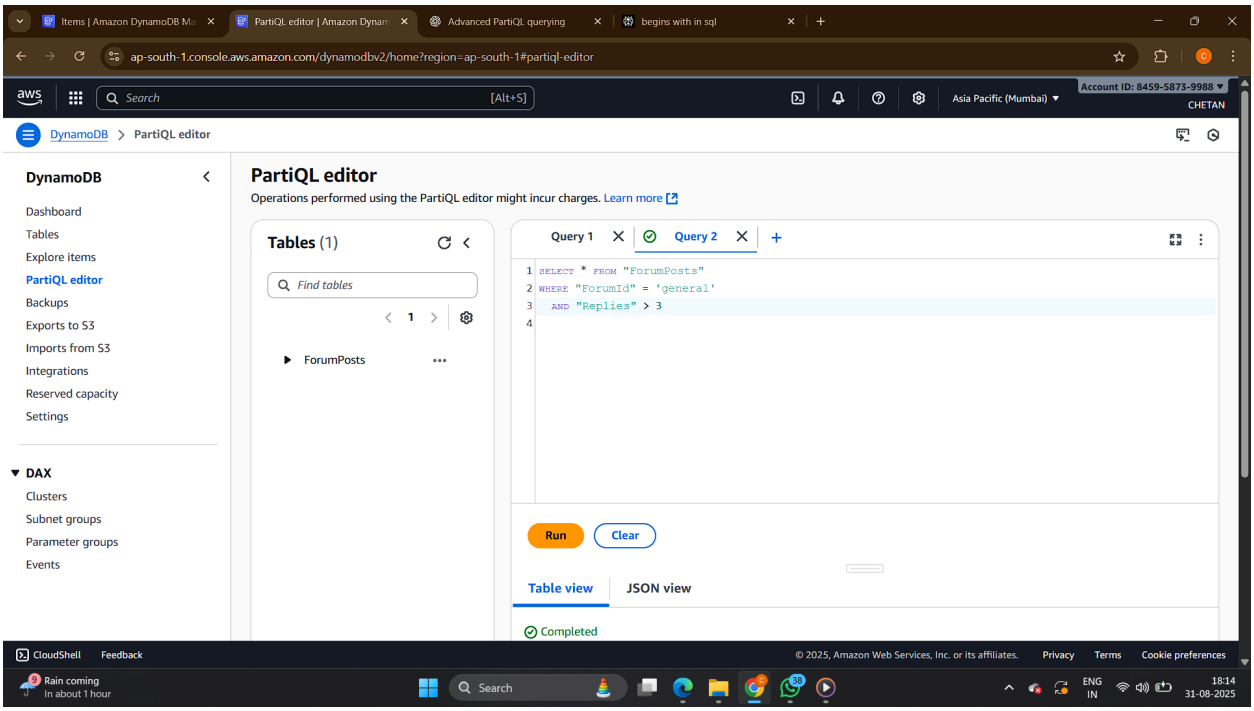


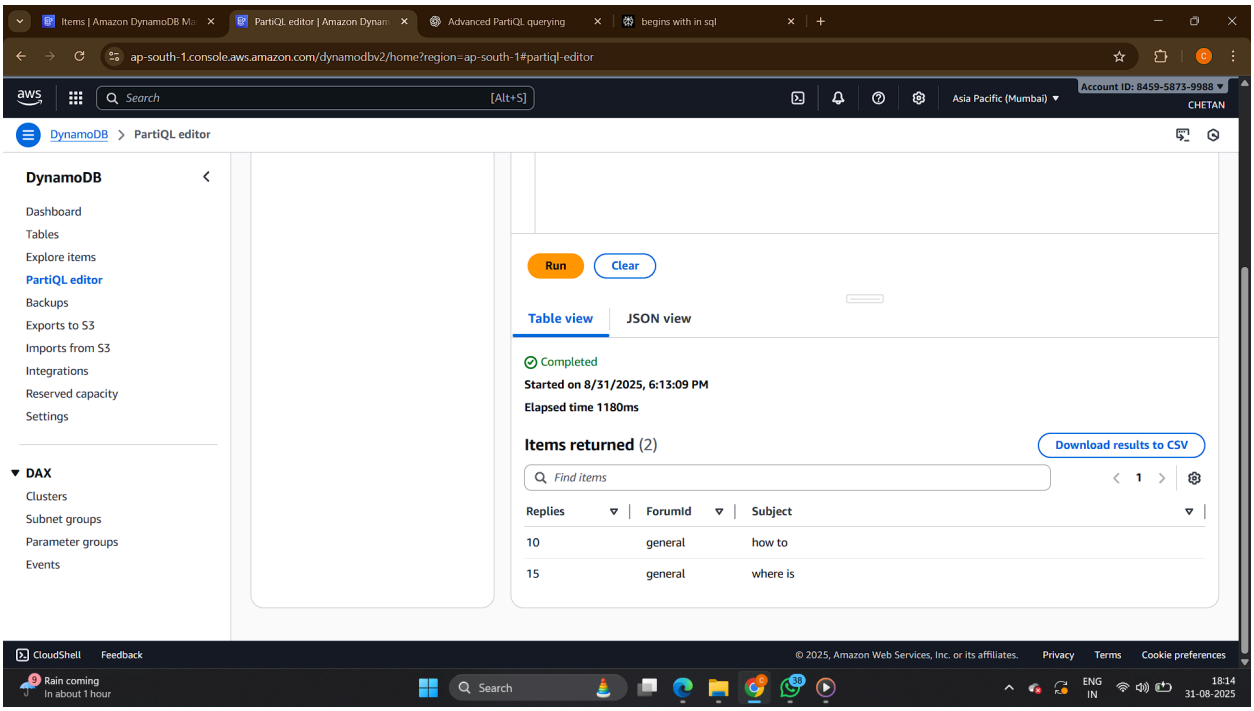
2. Filter on a non-key attribute (e.g., Replies > 3)

```
SELECT * FROM "ForumPosts" WHERE Replies > 3;
```

- This is a **scan with a filter**, not a query.
- Performance will be lower and it will consume more **read capacity units (RCUs)**.
- Only filters **after** scanning the full table.







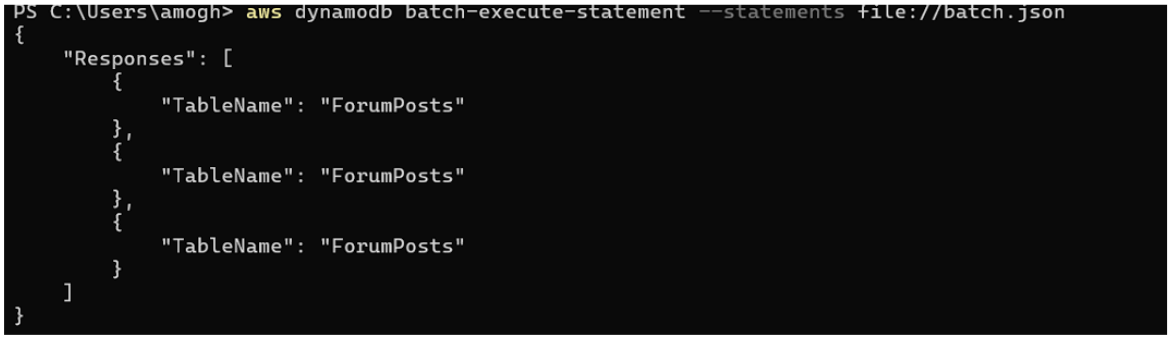
3. BatchExecuteStatement (Insert multiple items in one call)

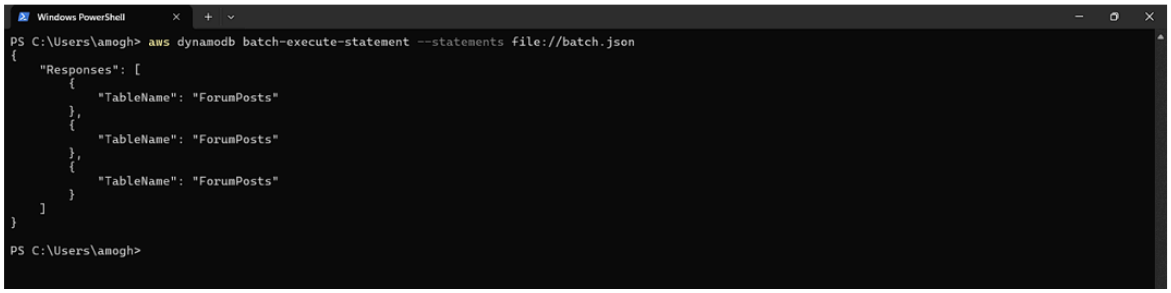
- PartiQL supports batch execution via **BatchExecuteStatement API** in SDKs or CLI.

- Example (CLI or SDK required):

```
{
  "Statements": [
    {
      "Statement": "INSERT INTO ForumPosts VALUE {'ForumName': 'DynamoD
B Advanced', 'Subject': 'Consistency Models', 'Author': 'Daniel'}"
    },
    {
      "Statement": "INSERT INTO ForumPosts VALUE {'ForumName': 'DynamoD
B Advanced', 'Subject': 'Auto Scaling', 'Author': 'Emily'}"
    }
  ]
}
```

This reduces network calls and is more efficient than separate inserts.





DynamoDB Streams

Task 1: Simple Stream Processing with Lambda

Objective: Set up a Lambda function to listen to table changes and log them.

Steps:

1. **Enable DynamoDB Streams**:
   - Go to your table > `Exports and streams` > Enable stream
   - Choose **New and old images**
2. **Create a Lambda function** (Python or Node.js)

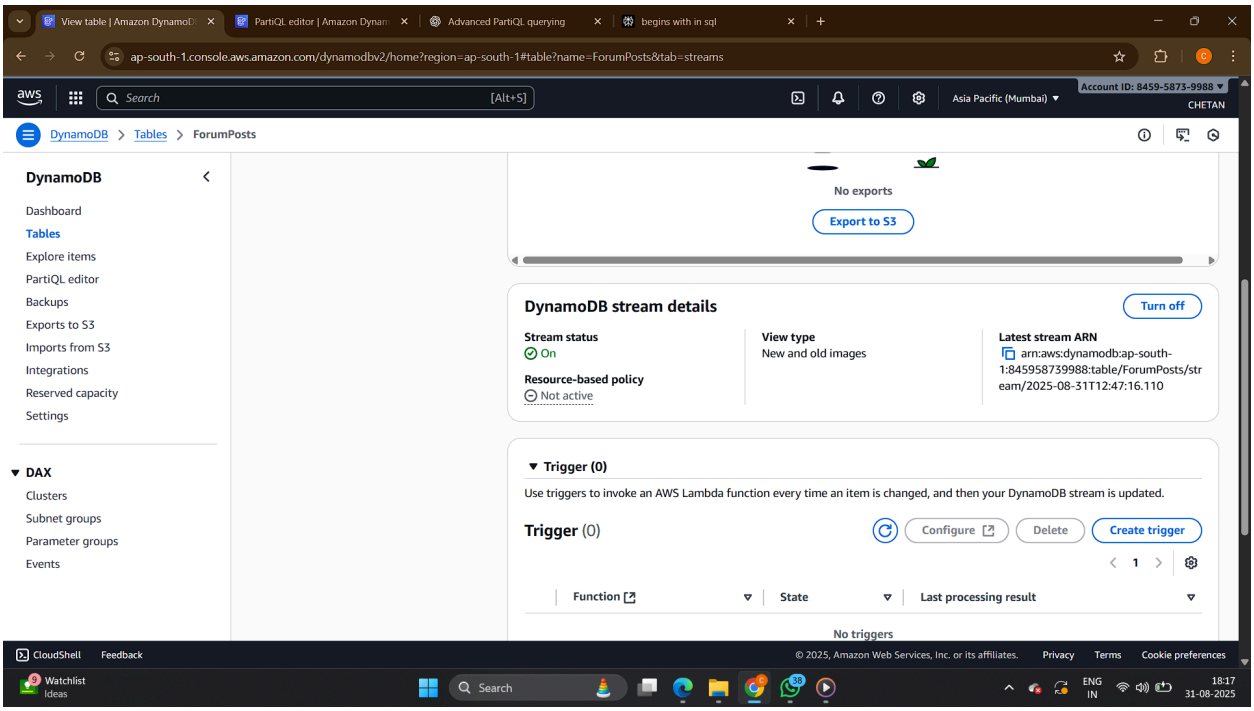
Example (Python):

```
import json

def lambda_handler(event, context):
    for record in event['Records']:
        event_name = record['eventName']
        keys = record['dynamodb']['Keys']
        new_image = record['dynamodb'].get('NewImage', {})

        print(f"Event: {event_name}")
        print(f"Primary Key: {keys}")
        print(f"New Image: {json.dumps(new_image)}")
```

1. **Add trigger**: In the Lambda console, add your DynamoDB stream as a trigger.
2. **Test**: Go back to your table and perform INSERT, UPDATE, DELETE.
3. **Check CloudWatch Logs**: Confirm that the function logged the stream events.


View table | Amazon DynamoD
PartiQL editor | Amazon Dynam
Advanced PartiQL querying
begins with in sql
ap-south-1.console.aws.amazon.com/dynamodbv2/home?region=ap-south-1#table?name=ForumPosts&tab=streams
Search [Alt+S]
Asia Pacific (Mumbai)
Account ID: 8459-5873-9988
CHETAN
DynamoDB > Tables > ForumPosts
DynamoDB
Dashboard
Tables
Explore items
PartiQL editor
Backups
Exports to S3
Imports from S3
Integrations
Reserved capacity
Settings
DAX
Clusters
Subnet groups
Parameter groups
Events
No exports
Export to S3
DynamoDB stream details
Turn off
Stream status
On
View type
New and old images
Latest stream ARN
arn:aws:dynamodb:ap-south-1:845958739988:table/ForumPosts/stream/2025-08-31T12:47:16.110
Resource-based policy
Not active
Trigger (0)
Use triggers to invoke an AWS Lambda function every time an item is changed, and then your DynamoDB stream is updated.
Trigger (0)
Configure
Delete
Create trigger
Function
State
Last processing result
No triggers
CloudShell
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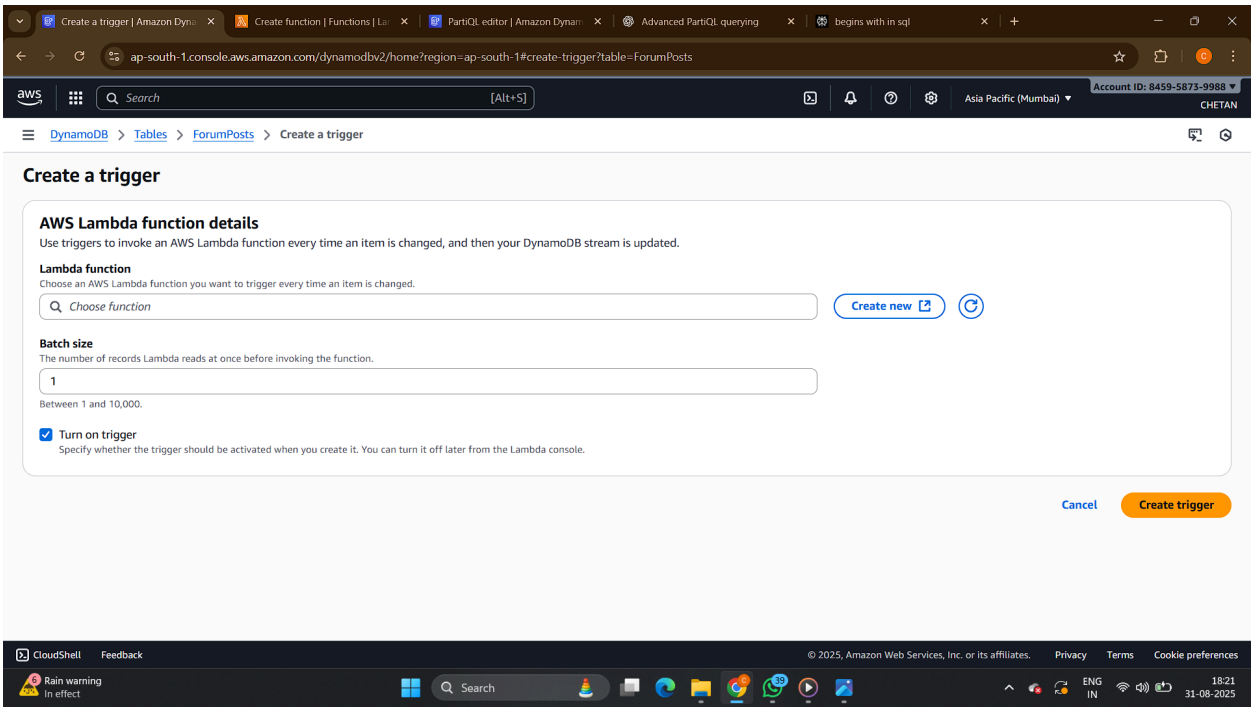
Create a trigger | Amazon Dyna
Create function | Functions | La
PartiQL editor | Amazon Dynam
Advanced PartiQL querying
begins with in sql
ap-south-1.console.aws.amazon.com/dynamodbv2/home?region=ap-south-1#create-trigger?table=ForumPosts
Search [Alt+S]
Asia Pacific (Mumbai)
Account ID: 8459-5873-9988
CHETAN
DynamoDB > Tables > ForumPosts > Create a trigger
Create a trigger
AWS Lambda function details
Use triggers to invoke an AWS Lambda function every time an item is changed, and then your DynamoDB stream is updated.
Lambda function
Choose an AWS Lambda function you want to trigger every time an item is changed.
Choose function
Create new
Batch size
The number of records Lambda reads at once before invoking the function.
1
Between 1 and 10,000.
Turn on trigger
Specify whether the trigger should be activated when you create it. You can turn it off later from the Lambda console.
Cancel
Create trigger
CloudShell
Feedback
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Privacy
Terms
Cookie preferences
Rain warning
In effect
Search
ENG
IN
18:21
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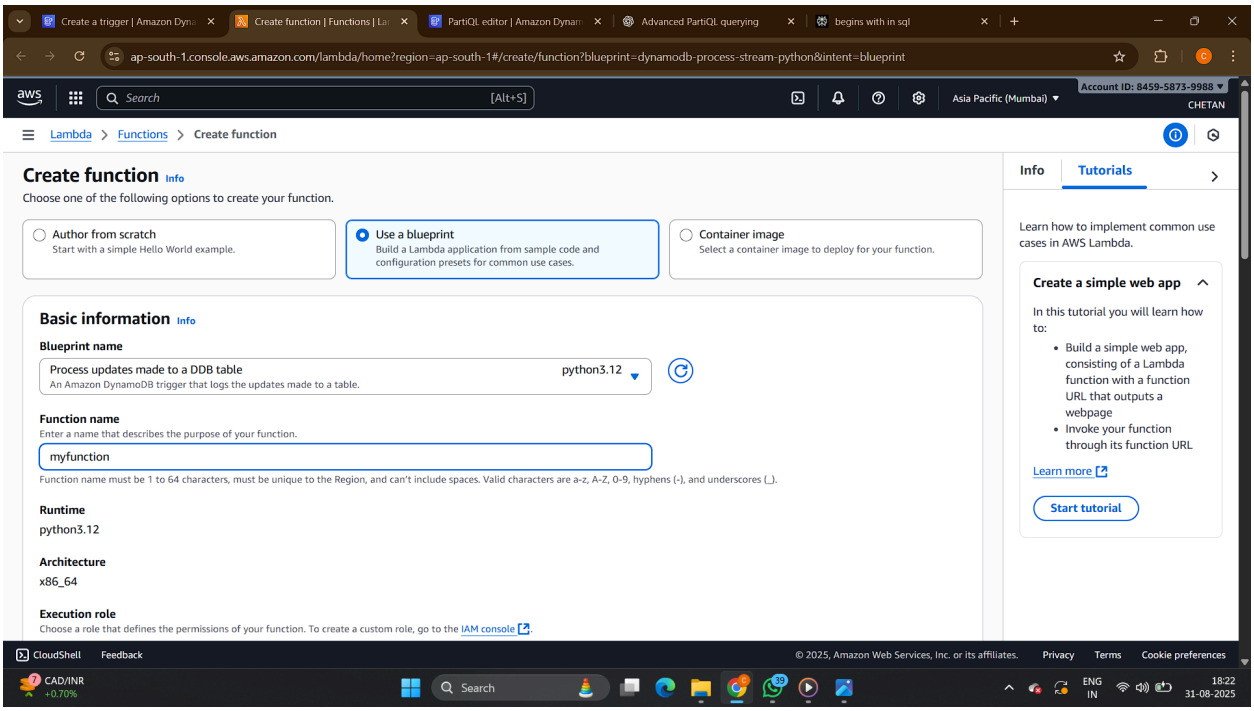
Create a trigger | Amazon Dyna
Create function | Functions | La
PartiQL editor | Amazon Dynam
Advanced PartiQL querying
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ap-south-1.console.aws.amazon.com/lambda/home?region=ap-south-1#/create/function?blueprint=dynamodb-process-stream-python&intent=blueprint
Search
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CHETAN
Lambda > Functions > Create function
Create function Info
Choose one of the following options to create your function.
Author from scratch
Start with a simple Hello World example.
Use a blueprint
Build a Lambda application from sample code and configuration presets for common use cases.
Container image
Select a container image to deploy for your function.
Basic information Info
Blueprint name
Process updates made to a DDB table
An Amazon DynamoDB trigger that logs the updates made to a table.
python3.12
Function name
Enter a name that describes the purpose of your function.
myfunction
Function name must be 1 to 64 characters, must be unique to the Region, and can't include spaces. Valid characters are a-z, A-Z, 0-9, hyphens (-), and underscores (_).
Runtime
python3.12
Architecture
x86_64
Execution role
Choose a role that defines the permissions of your function. To create a custom role, go to the IAM console.
Info
Tutorials
Learn how to implement common use cases in AWS Lambda.
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Invoke your function through its function URL
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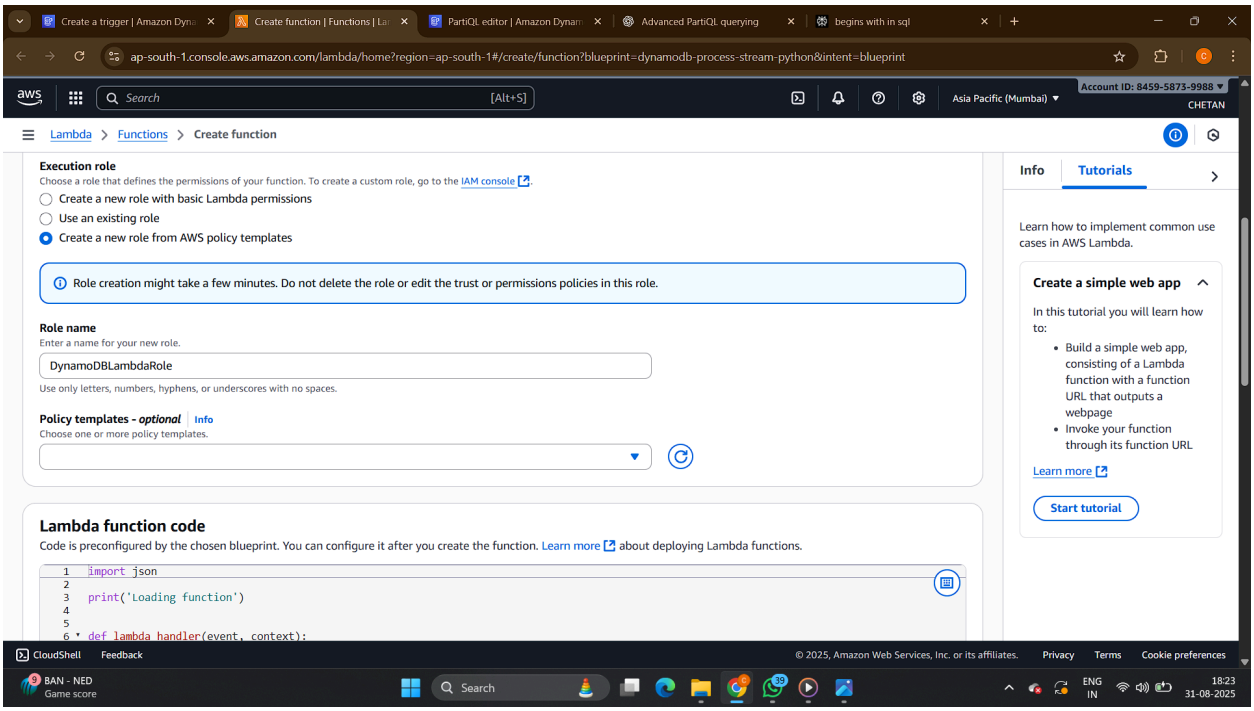
Create a trigger | Amazon Dyna
Create function | Functions | La
PartiQL editor | Amazon Dynam
Advanced PartiQL querying
begins with in sql
ap-south-1.console.aws.amazon.com/lambda/home?region=ap-south-1#/create/function?blueprint=dynamodb-process-stream-python&intent=blueprint
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CHETAN
Lambda > Functions > Create function
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
Role creation might take a few minutes. Do not delete the role or edit the trust or permissions policies in this role.
Role name
Enter a name for your new role.
DynamoDBLambdaRole
Use only letters, numbers, hyphens, or underscores with no spaces.
Policy templates - optional Info
Choose one or more policy templates.
Lambda function code
Code is preconfigured by the chosen blueprint. You can configure it after you create the function. Learn more about deploying Lambda functions.
1 import json
2
3 print('Loading function')
4
5
6 def lambda_handler(event, context):
Info
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Create a simple web app
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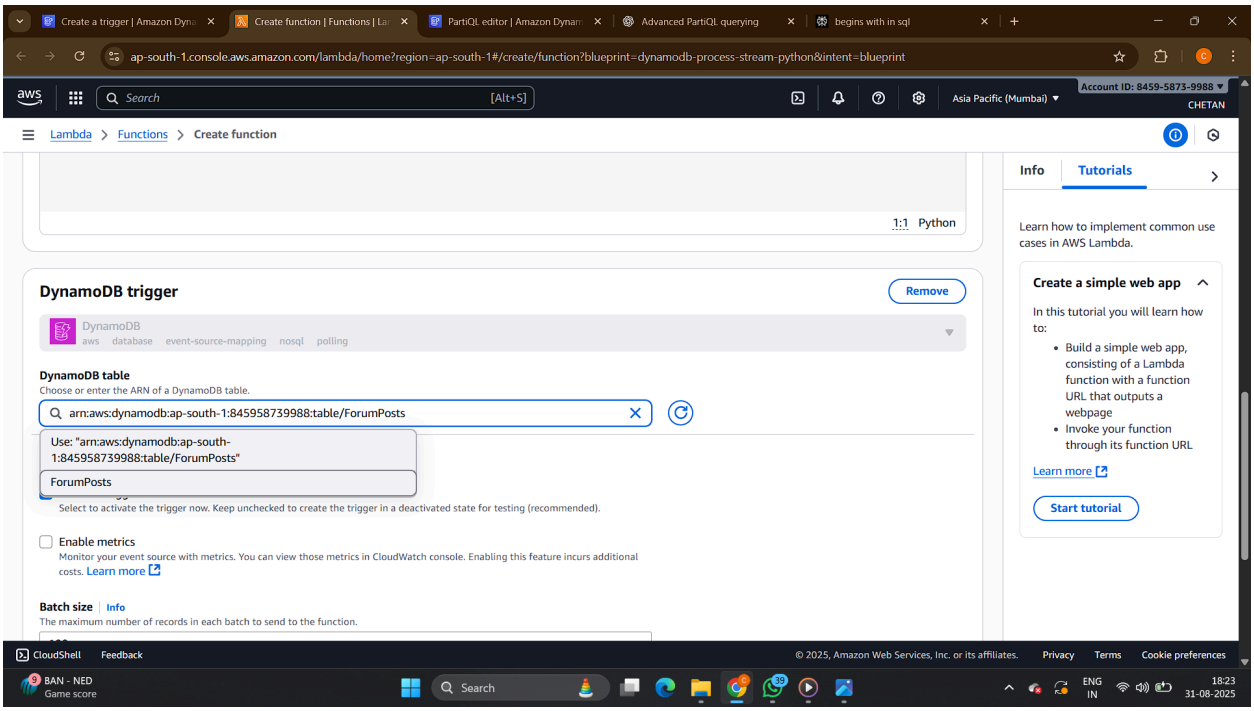
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Create function | Functions | Lar
PartiQL editor | Amazon Dynam
Advanced PartiQL querying
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ap-south-1.console.aws.amazon.com/lambda/home?region=ap-south-1#/create/function?blueprint=dynamodb-process-stream-python&intent=blueprint
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Account ID: 8459-5873-9988
CHETAN
Lambda > Functions > Create function
1:1 Python
DynamoDB trigger
Remove
DynamoDB
aws database event-source-mapping nosql polling
DynamoDB table
Choose or enter the ARN of a DynamoDB table.
arn:aws:dynamodb:ap-south-1:845958739988:table/ForumPosts
Use: "arn:aws:dynamodb:ap-south-1:845958739988:table/ForumPosts"
ForumPosts
Select to activate the trigger now. Keep unchecked to create the trigger in a deactivated state for testing (recommended).
Enable metrics
Monitor your event source with metrics. You can view those metrics in CloudWatch console. Enabling this feature incurs additional costs. Learn more
Batch size Info
The maximum number of records in each batch to send to the function.
Info
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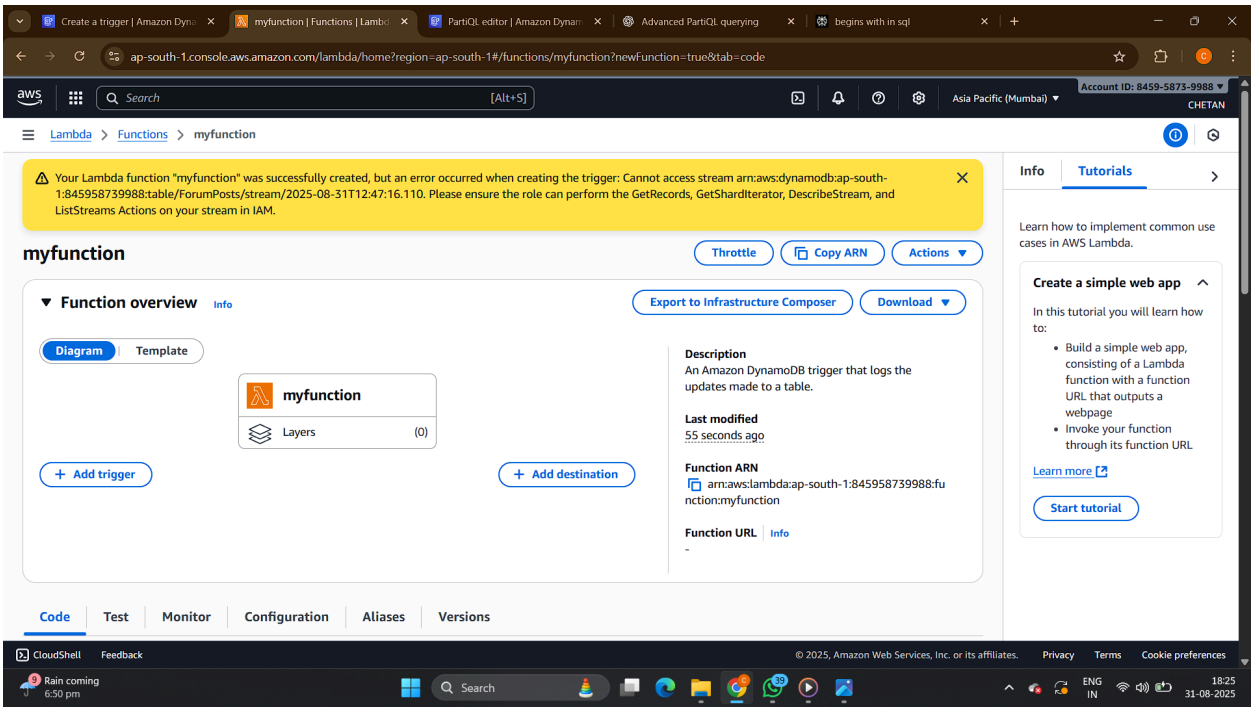
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myfunction | Functions | Lambd
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begins with in sql
ap-south-1.console.aws.amazon.com/lambda/home?region=ap-south-1#/functions/myfunction?newFunction=true&tab=code
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CHETAN
Lambda > Functions > myfunction
Your Lambda function "myfunction" was successfully created, but an error occurred when creating the trigger: Cannot access stream arn:aws:dynamodb:ap-south-1:845958739988:table/ForumPosts/stream/2025-08-31T12:47:16.110. Please ensure the role can perform the GetRecords, GetShardIterator, DescribeStream, and ListStreams Actions on your stream in IAM.
myfunction
Throttle
Copy ARN
Actions
Function overview Info
Export to Infrastructure Composer
Download
Diagram
Template
myfunction
Layers (0)
+ Add trigger
+ Add destination
Description
An Amazon DynamoDB trigger that logs the updates made to a table.
Last modified
55 seconds ago
Function ARN
arn:aws:lambda:ap-south-1:845958739988:function:myfunction
Function URL Info
-
Code
Test
Monitor
Configuration
Aliases
Versions
Info
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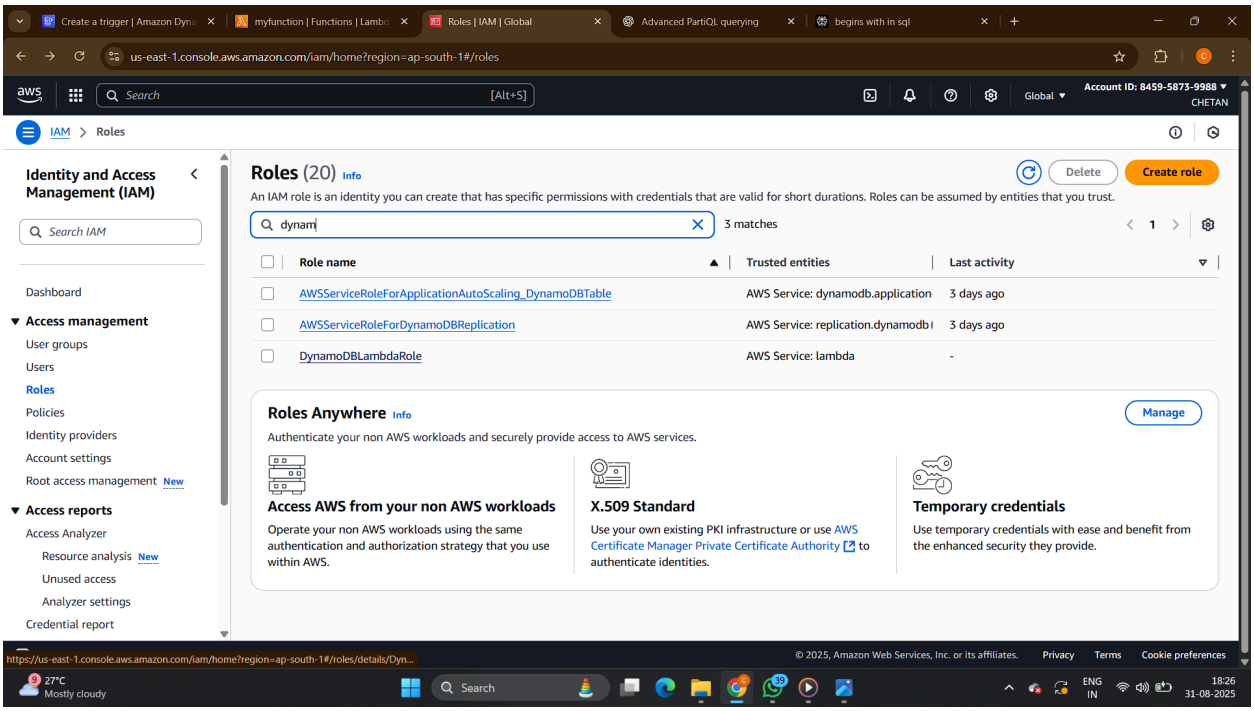
Create a trigger | Amazon Dyna
myfunction | Functions | Lambd
Roles | IAM | Global
Advanced PartiQL querying
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us-east-1.console.aws.amazon.com/iam/home?region=ap-south-1#/roles
Search [Alt+S]
Global
Account ID: 8459-5873-9988
CHETAN
IAM > Roles
Identity and Access Management (IAM)
Search IAM
Dashboard
Access management
User groups
Users
Roles
Policies
Identity providers
Account settings
Root access management New
Access reports
Access Analyzer
Resource analysis New
Unused access
Analyzer settings
Credential report
Roles (20) 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.
Delete
Create role
dynam
3 matches
Role name
Trusted entities
Last activity
AWSServiceRoleForApplicationAutoScaling_DynamoDBTable
AWS Service: dynamodb.application
3 days ago
AWSServiceRoleForDynamoDBReplication
AWS Service: replication.dynamodb
3 days ago
DynamoDBLambdaRole
AWS Service: lambda
-
Roles Anywhere Info
Manage
Authenticate your non AWS workloads and securely provide access to AWS services.
Access AWS from your non AWS workloads
Operate your non AWS workloads using the same authentication and authorization strategy that you use within AWS.
X.509 Standard
Use your own existing PKI infrastructure or use AWS Certificate Manager Private Certificate Authority to authenticate identities.
Temporary credentials
Use temporary credentials with ease and benefit from the enhanced security they provide.
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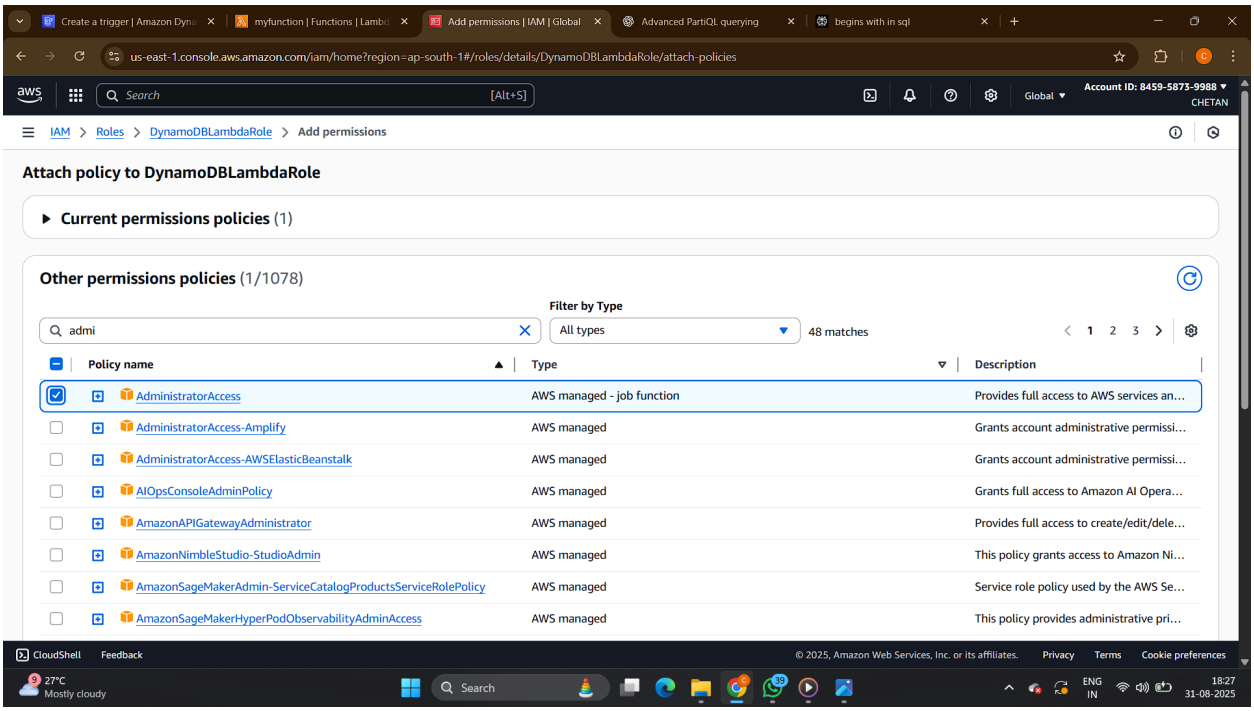
Add permissions | IAM | Global
us-east-1.console.aws.amazon.com/iam/home?region=ap-south-1#/roles/details/DynamoDBLambdaRole/attach-policies
IAM > Roles > DynamoDBLambdaRole > Add permissions
Attach policy to DynamoDBLambdaRole
Current permissions policies (1)
Other permissions policies (1/1078)
Filter by Type
admi
All types
48 matches
Policy name
Type
Description
AdministratorAccess
AWS managed - job function
Provides full access to AWS services an...
AdministratorAccess-Amplify
AWS managed
Grants account administrative permissi...
AdministratorAccess-AWSElasticBeanstalk
AWS managed
Grants account administrative permissi...
AIOpsConsoleAdminPolicy
AWS managed
Grants full access to Amazon AI Opera...
AmazonAPIGatewayAdministrator
AWS managed
Provides full access to create/edit/dele...
AmazonNimbleStudio-StudioAdmin
AWS managed
This policy grants access to Amazon Ni...
AmazonSageMakerAdmin-ServiceCatalogProductsServiceRolePolicy
AWS managed
Service role policy used by the AWS Se...
AmazonSageMakerHyperPodObservabilityAdminAccess
AWS managed
This policy provides administrative pri...
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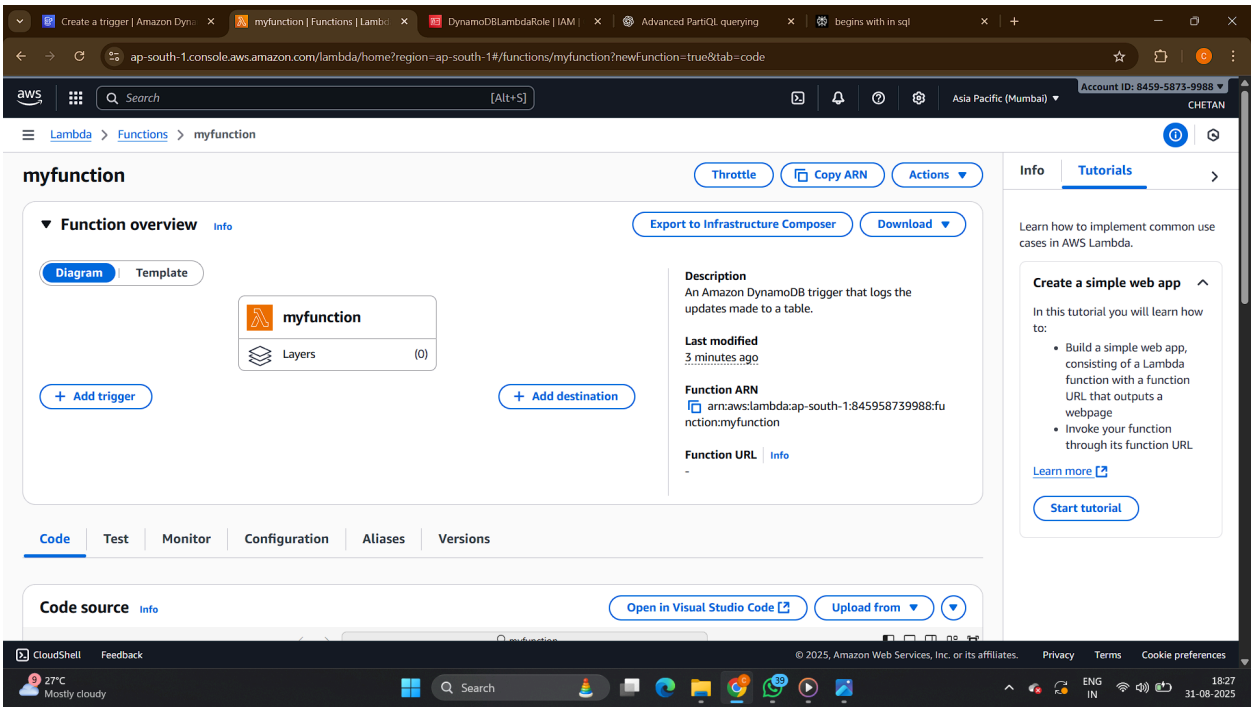
Create a trigger | Amazon Dyna
myfunction | Functions | Lambd
DynamoDBLambdaRole | IAM |
Advanced PartiQL querying
begins with in sql
ap-south-1.console.aws.amazon.com/lambda/home?region=ap-south-1#/functions/myfunction?newFunction=true&tab=code
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Account ID: 8459-5873-9988
CHETAN
Lambda > Functions > myfunction
myfunction
Throttle
Copy ARN
Actions
Function overview Info
Export to Infrastructure Composer
Download
Diagram
Template
myfunction
Layers (0)
+ Add trigger
+ Add destination
Description
An Amazon DynamoDB trigger that logs the updates made to a table.
Last modified
3 minutes ago
Function ARN
arn:aws:lambda:ap-south-1:845958739988:function:myfunction
Function URL Info
-
Info
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Invoke your function through its function URL
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Versions
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Open in Visual Studio Code
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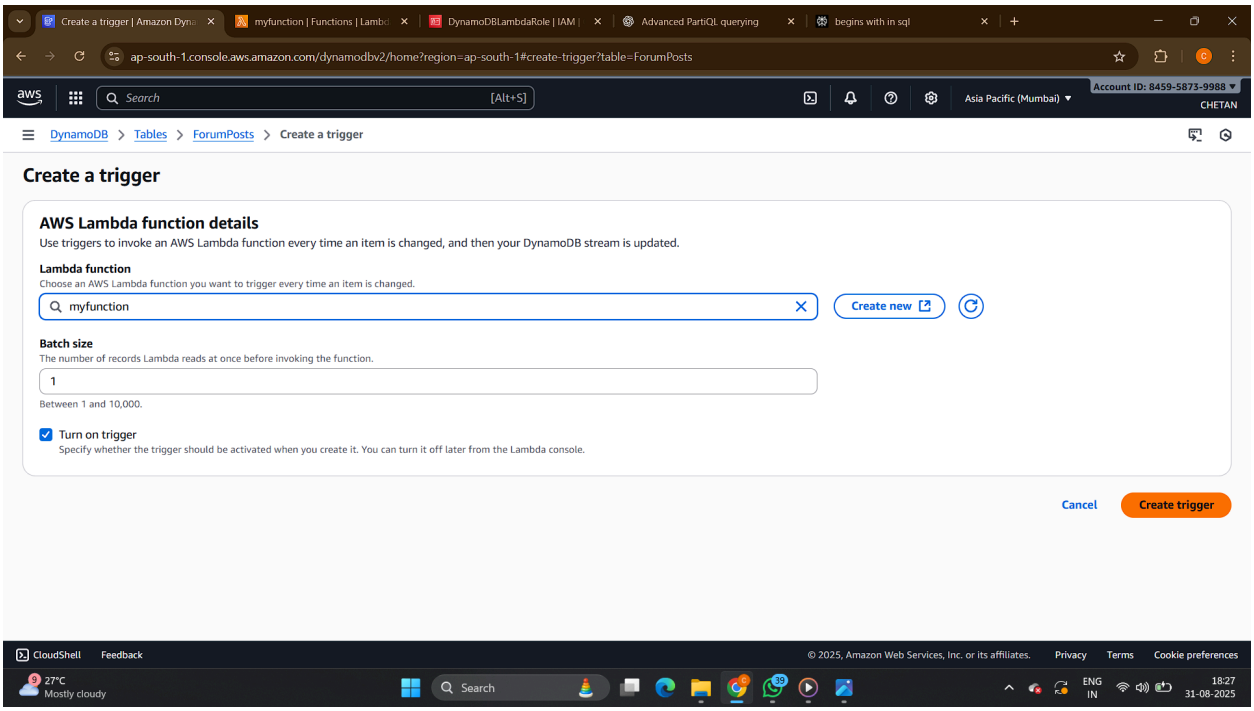
Create a trigger | Amazon Dyna
myfunction | Functions | Lambd
DynamoDBLambdaRole | IAM |
Advanced PartiQL querying
begins with in sql
ap-south-1.console.aws.amazon.com/dynamodbv2/home?region=ap-south-1#create-trigger?table=ForumPosts
Search
[Alt+S]
Asia Pacific (Mumbai)
Account ID: 8459-5873-9988
CHETAN
DynamoDB > Tables > ForumPosts > Create a trigger
Create a trigger
AWS Lambda function details
Use triggers to invoke an AWS Lambda function every time an item is changed, and then your DynamoDB stream is updated.
Lambda function
Choose an AWS Lambda function you want to trigger every time an item is changed.
myfunction
Create new
Batch size
The number of records Lambda reads at once before invoking the function.
1
Between 1 and 10,000.
Turn on trigger
Specify whether the trigger should be activated when you create it. You can turn it off later from the Lambda console.
Cancel
Create trigger
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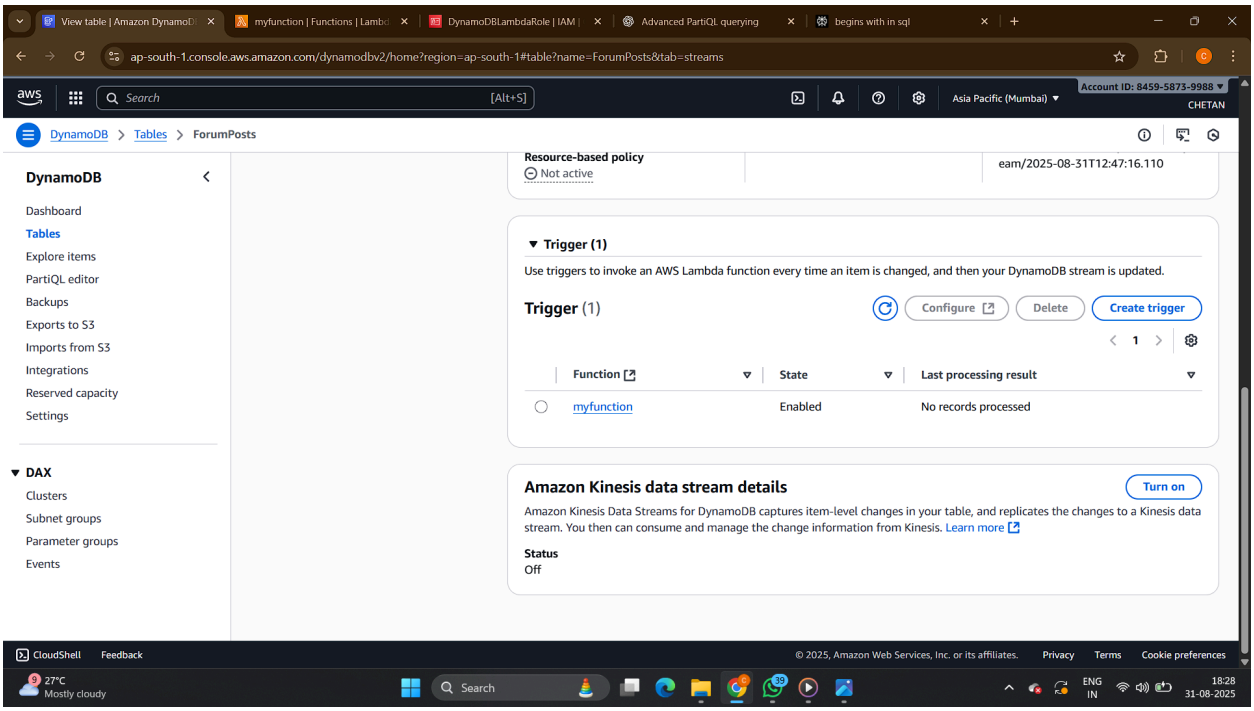
ap-south-1.console.aws.amazon.com/dynamodbv2/home?region=ap-south-1#table?name=ForumPosts&tab=streams
DynamoDB > Tables > ForumPosts
DynamoDB
Dashboard
Tables
Explore items
PartiQL editor
Backups
Exports to S3
Imports from S3
Integrations
Reserved capacity
Settings
DAX
Clusters
Subnet groups
Parameter groups
Events
Resource-based policy
Not active
Trigger (1)
Use triggers to invoke an AWS Lambda function every time an item is changed, and then your DynamoDB stream is updated.
Trigger (1)
Configure
Delete
Create trigger
Function
State
Last processing result
myfunction
Enabled
No records processed
Amazon Kinesis data stream details
Turn on
Amazon Kinesis Data Streams for DynamoDB captures item-level changes in your table, and replicates the changes to a Kinesis data stream. You then can consume and manage the change information from Kinesis. Learn more
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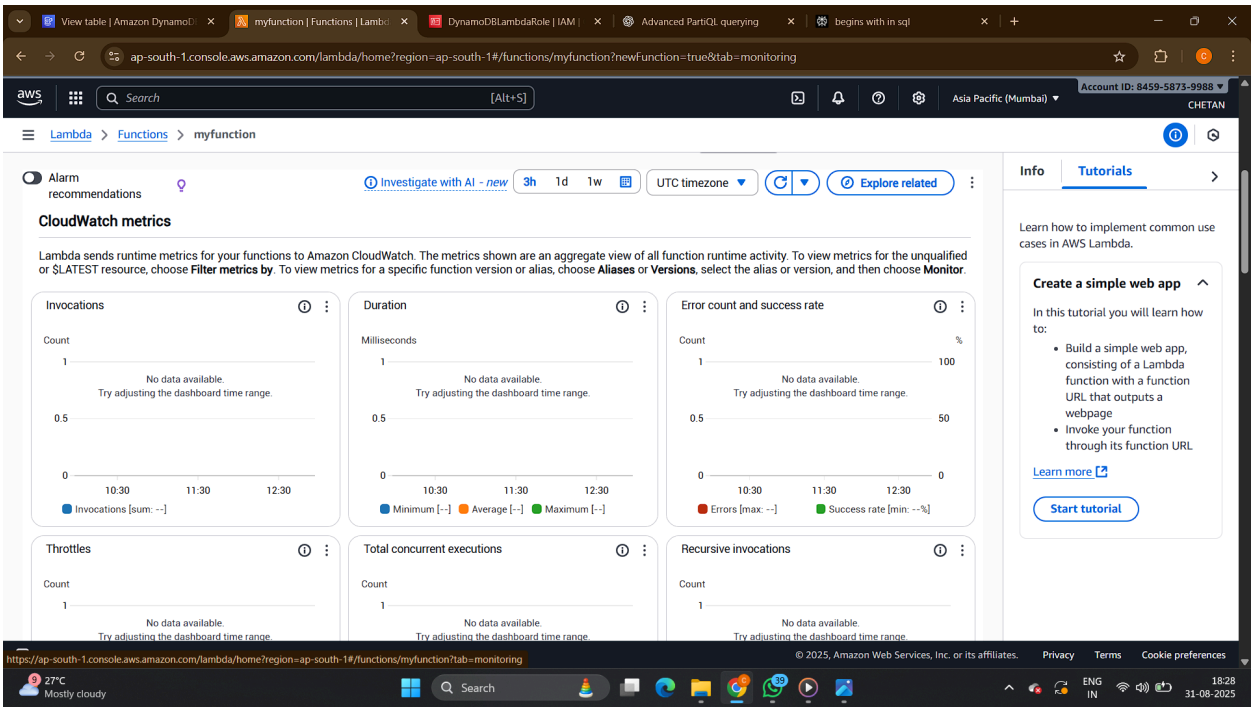
ap-south-1.console.aws.amazon.com/lambda/home?region=ap-south-1#/functions/myfunction?newFunction=true&tab=monitoring
Lambda > Functions > myfunction
Alarm recommendations
Investigate with AI - new
3h
1d
1w
UTC timezone
Explore related
CloudWatch metrics
Lambda sends runtime metrics for your functions to Amazon CloudWatch. The metrics shown are an aggregate view of all function runtime activity. To view metrics for the unqualified or $LATEST resource, choose Filter metrics by. To view metrics for a specific function version or alias, choose Aliases or Versions, select the alias or version, and then choose Monitor.
Invocations
Duration
Error count and success rate
Throttles
Total concurrent executions
Recursive invocations
No data available.
Try adjusting the dashboard time range.
Info
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Learn how to implement common use cases in AWS Lambda.
Create a simple web app
In this tutorial you will learn how to:
Build a simple web app, consisting of a Lambda function with a function URL that outputs a webpage
Invoke your function through its function URL
Learn more
Start tutorial
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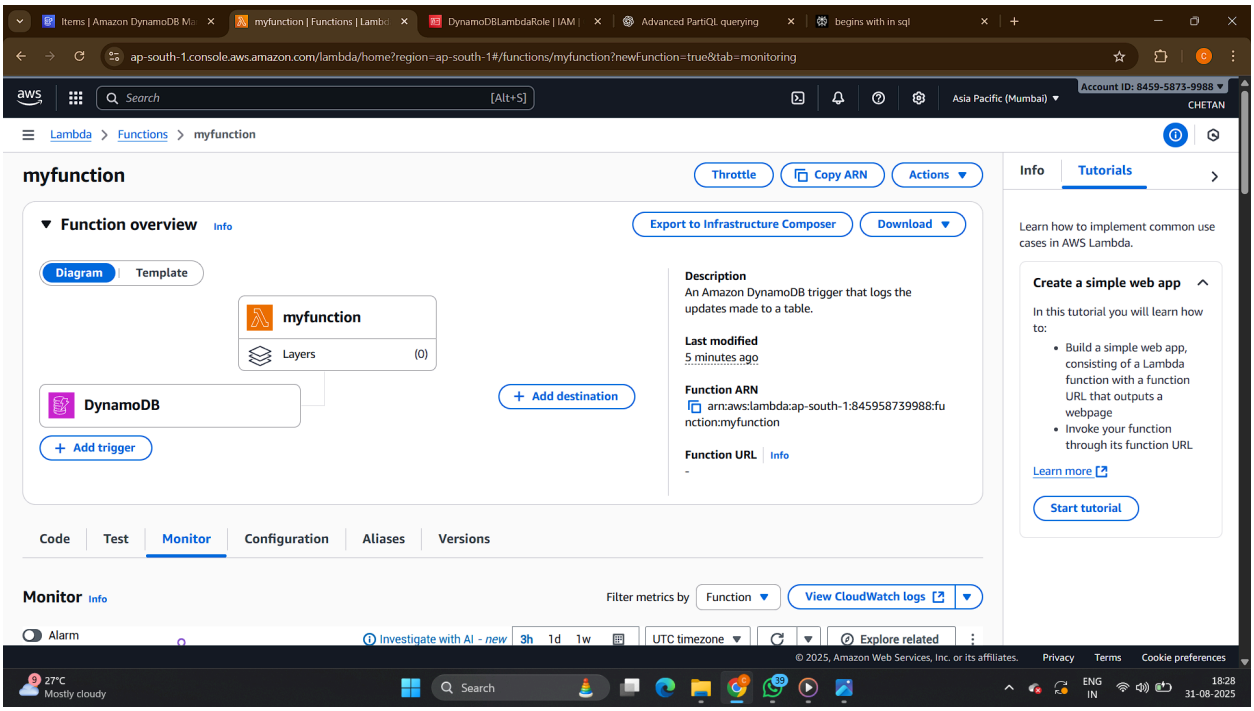
ap-south-1.console.aws.amazon.com/lambda/home?region=ap-south-1#/functions/myfunction?newFunction=true&tab=monitoring
Lambda > Functions > myfunction
myfunction
Throttle
Copy ARN
Actions
Function overview
Info
Export to Infrastructure Composer
Download
Diagram
Template
myfunction
Layers
(0)
DynamoDB
Add destination
Add trigger
Description
An Amazon DynamoDB trigger that logs the updates made to a table.
Last modified
5 minutes ago
Function ARN
arn:aws:lambda:ap-south-1:845958739988:function:myfunction
Function URL
Info
Info
Tutorials
Learn how to implement common use cases in AWS Lambda.
Create a simple web app
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Code
Test
Monitor
Configuration
Aliases
Versions
Monitor
Info
Filter metrics by
Function
View CloudWatch logs
Alarm
Investigate with AI - new
3h
1d
1w
UTC timezone
Explore related
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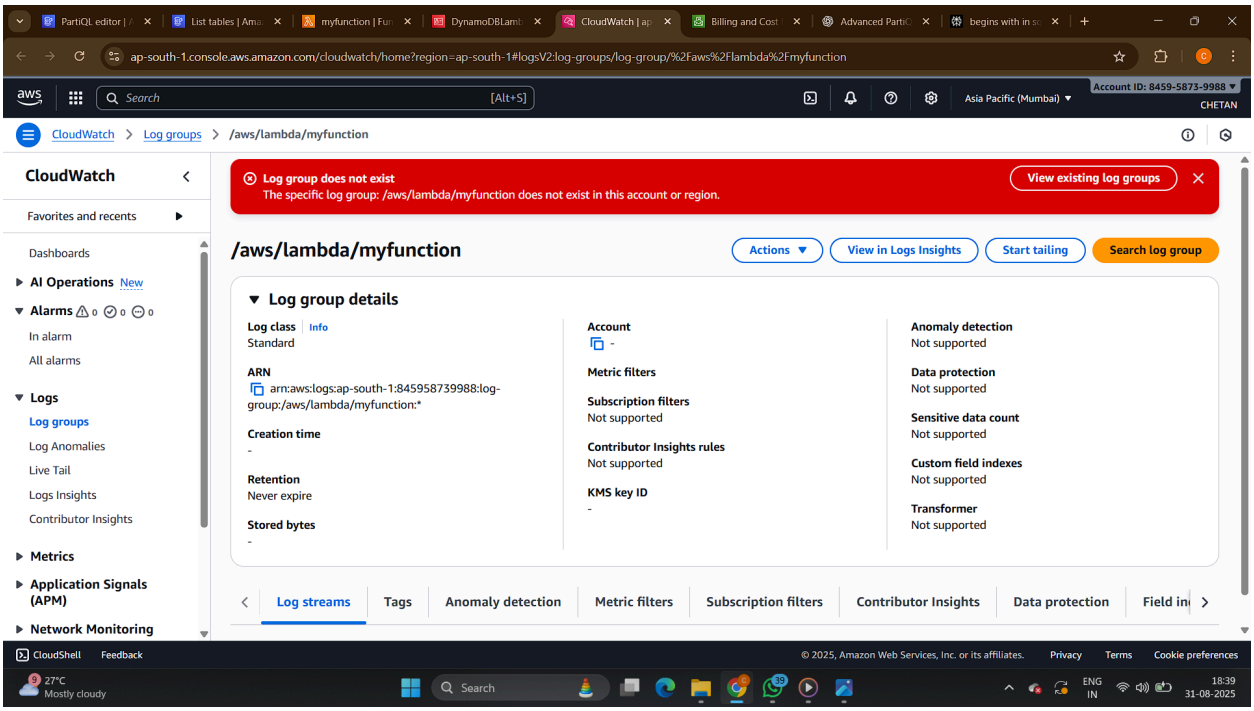
ap-south-1.console.aws.amazon.com/cloudwatch/home?region=ap-south-1#logsV2:log-groups/log-group/%2Faws%2Flambda%2Fmyfunction
CloudWatch > Log groups > /aws/lambda/myfunction
CloudWatch
Favorites and recents
Dashboards
AI Operations
New
Alarms
In alarm
All alarms
Logs
Log groups
Log Anomalies
Live Tail
Logs Insights
Contributor Insights
Metrics
Application Signals (APM)
Network Monitoring
Log group does not exist
The specific log group: /aws/lambda/myfunction does not exist in this account or region.
View existing log groups
/aws/lambda/myfunction
Actions
View in Logs Insights
Start tailing
Search log group
Log group details
Log class
Info
Standard
ARN
arn:aws:logs:ap-south-1:845958739988:log-group:/aws/lambda/myfunction:*
Creation time
-
Retention
Never expire
Stored bytes
-
Account
-
Metric filters
Subscription filters
Not supported
Contributor Insights rules
Not supported
KMS key ID
-
Anomaly detection
Not supported
Data protection
Not supported
Sensitive data count
Not supported
Custom field indexes
Not supported
Transformer
Not supported
Log streams
Tags
Anomaly detection
Metric filters
Subscription filters
Contributor Insights
Data protection
CloudShell
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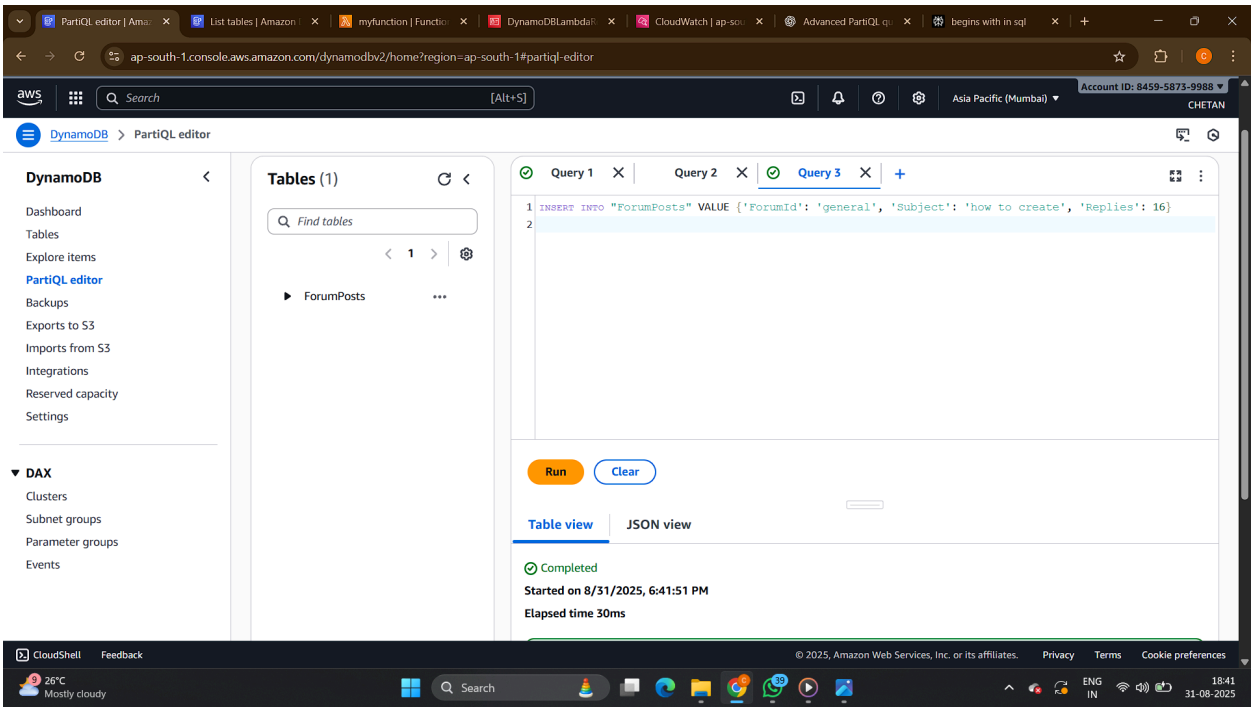
ap-south-1.console.aws.amazon.com/dynamodbv2/home?region=ap-south-1#partiql-editor
DynamoDB > PartiQL editor
DynamoDB
Dashboard
Tables
Explore items
PartiQL editor
Backups
Exports to S3
Imports from S3
Integrations
Reserved capacity
Settings
DAX
Clusters
Subnet groups
Parameter groups
Events
Tables (1)
Find tables
ForumPosts
Query 1
Query 2
Query 3
INSERT INTO "ForumPosts" VALUE {'ForumId': 'general', 'Subject': 'how to create', 'Replies': 16}
Run
Clear
Table view
JSON view
Completed
Started on 8/31/2025, 6:41:51 PM
Elapsed time 30ms
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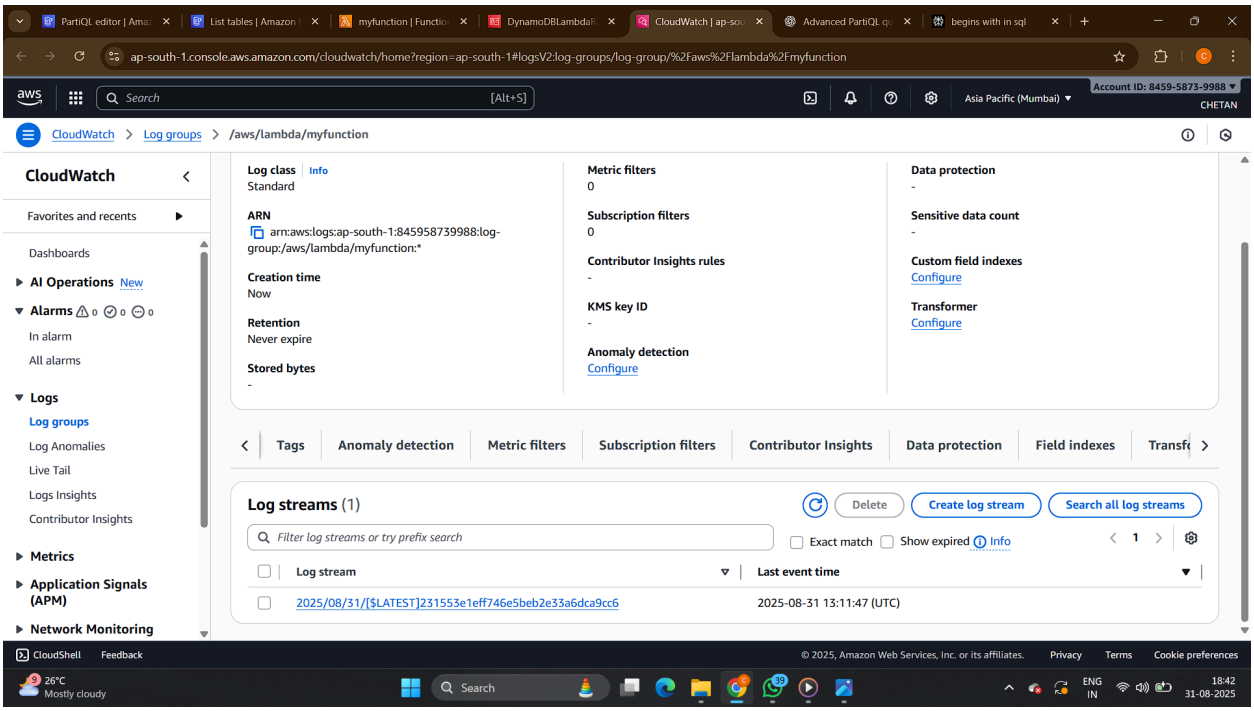
ap-south-1.console.aws.amazon.com/cloudwatch/home?region=ap-south-1#logsV2:log-groups/log-group/%2Faws%2Flambda%2Fmyfunction
CloudWatch > Log groups > /aws/lambda/myfunction
CloudWatch
Favorites and recents
Dashboards
AI Operations New
Alarms
In alarm
All alarms
Logs
Log groups
Log Anomalies
Live Tail
Logs Insights
Contributor Insights
Metrics
Application Signals (APM)
Network Monitoring
Log class Info
Standard
ARN
arn:aws:logs:ap-south-1:845958739988:log-group:/aws/lambda/myfunction:*
Creation time
Now
Retention
Never expire
Stored bytes
-
Metric filters
0
Subscription filters
0
Contributor Insights rules
-
KMS key ID
-
Anomaly detection
Configure
Data protection
-
Sensitive data count
-
Custom field indexes
Configure
Transformer
Configure
Tags
Anomaly detection
Metric filters
Subscription filters
Contributor Insights
Data protection
Field indexes
Log streams (1)
Delete
Create log stream
Search all log streams
Filter log streams or try prefix search
Exact match
Show expired Info
Log stream
Last event time
2025/08/31/[$LATEST]231553e1eff746e5beb2e33a6dca9cc6
2025-08-31 13:11:47 (UTC)
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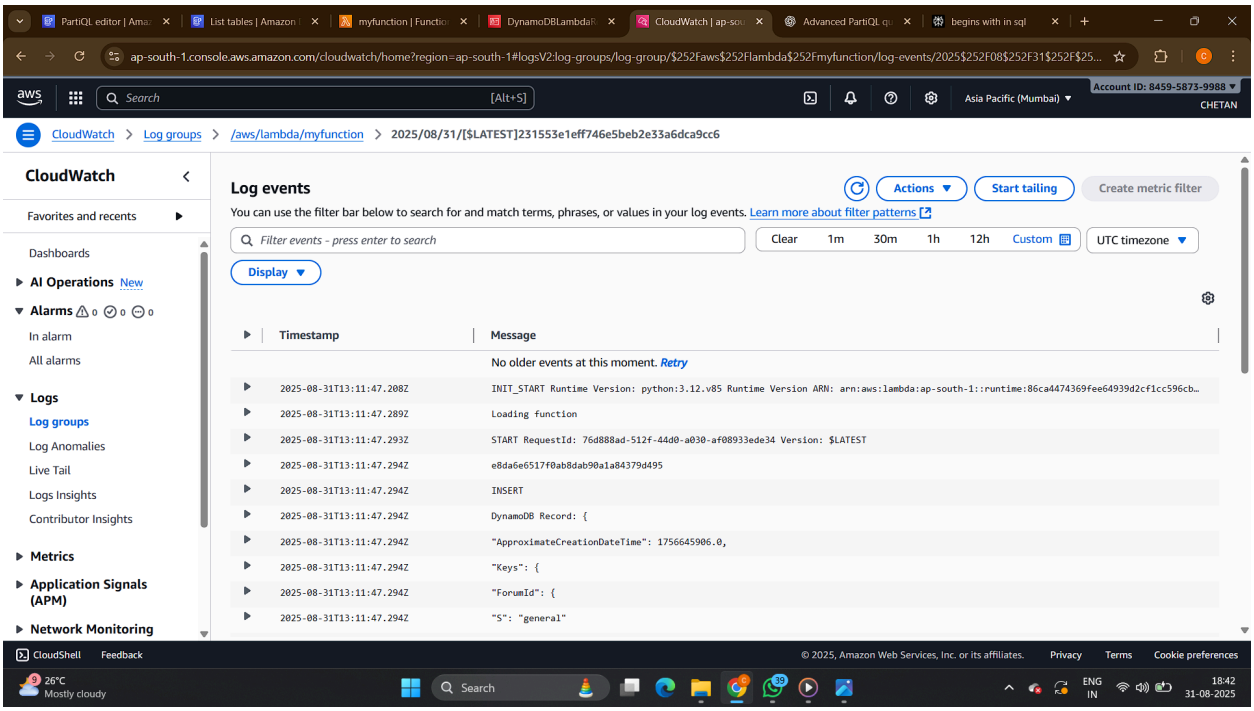
CloudWatch > Log groups > /aws/lambda/myfunction > 2025/08/31/[$LATEST]231553e1eff746e5beb2e33a6dca9cc6
Log events
Actions
Start tailing
Create metric filter
You can use the filter bar below to search for and match terms, phrases, or values in your log events. Learn more about filter patterns
Filter events - press enter to search
Clear 1m 30m 1h 12h Custom UTC timezone
Display
Timestamp
Message
No older events at this moment. Retry
2025-08-31T13:11:47.208Z INIT_START Runtime Version: python:3.12.v85 Runtime Version ARN: arn:aws:lambda:ap-south-1::runtime:86ca4474369fee64939d2cf1cc596cb…
2025-08-31T13:11:47.289Z Loading function
2025-08-31T13:11:47.293Z START RequestId: 76d888ad-512f-44d0-a030-af08933ede34 Version: $LATEST
2025-08-31T13:11:47.294Z e8da6e6517f0ab8dab90a1a84379d495
2025-08-31T13:11:47.294Z INSERT
2025-08-31T13:11:47.294Z DynamoDB Record: {
2025-08-31T13:11:47.294Z "ApproximateCreationDateTime": 1756645906.0,
2025-08-31T13:11:47.294Z "Keys": {
2025-08-31T13:11:47.294Z "ForumId": {
2025-08-31T13:11:47.294Z "S": "general"
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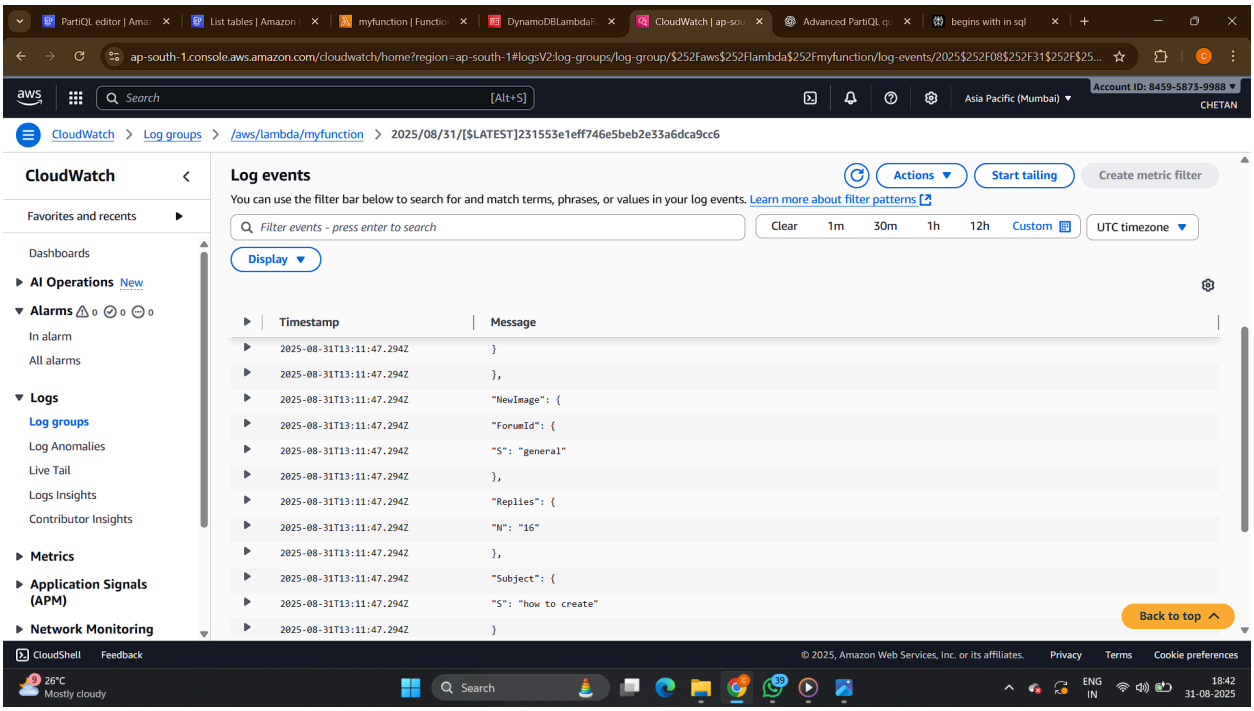
CloudWatch > Log groups > /aws/lambda/myfunction > 2025/08/31/[$LATEST]231553e1eff746e5beb2e33a6dca9cc6
Log events
Actions
Start tailing
Create metric filter
You can use the filter bar below to search for and match terms, phrases, or values in your log events. Learn more about filter patterns
Filter events - press enter to search
Clear 1m 30m 1h 12h Custom UTC timezone
Display
Timestamp
Message
2025-08-31T13:11:47.294Z }
2025-08-31T13:11:47.294Z },
2025-08-31T13:11:47.294Z "NewImage": {
2025-08-31T13:11:47.294Z "ForumId": {
2025-08-31T13:11:47.294Z "S": "general"
2025-08-31T13:11:47.294Z },
2025-08-31T13:11:47.294Z "Replies": {
2025-08-31T13:11:47.294Z "N": "16"
2025-08-31T13:11:47.294Z },
2025-08-31T13:11:47.294Z "Subject": {
2025-08-31T13:11:47.294Z "S": "how to create"
2025-08-31T13:11:47.294Z }
Back to top
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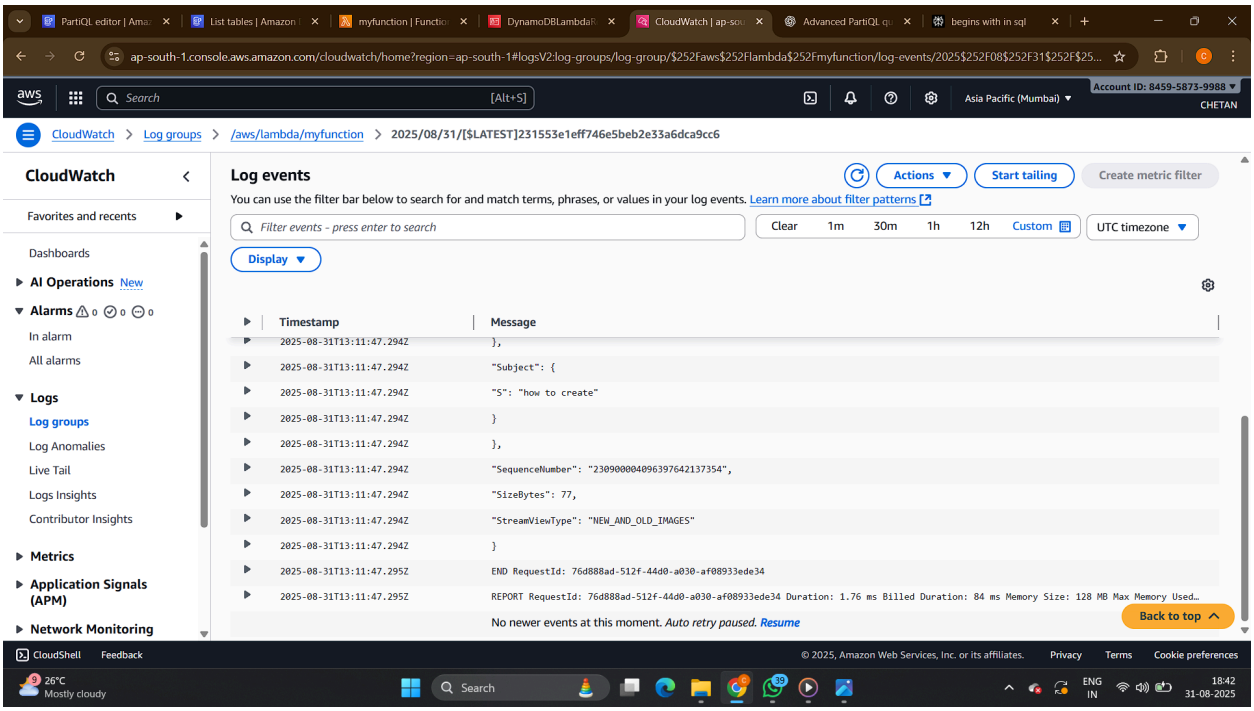


Task 2: Advanced Stream Use-Case

1. Create an SNS topic and subscribe email

- Go to **SNS Console** > Topics > Create topic
- Type: Standard
- Add a subscription to your email (confirm via email)

2. Modify Lambda to publish to SNS

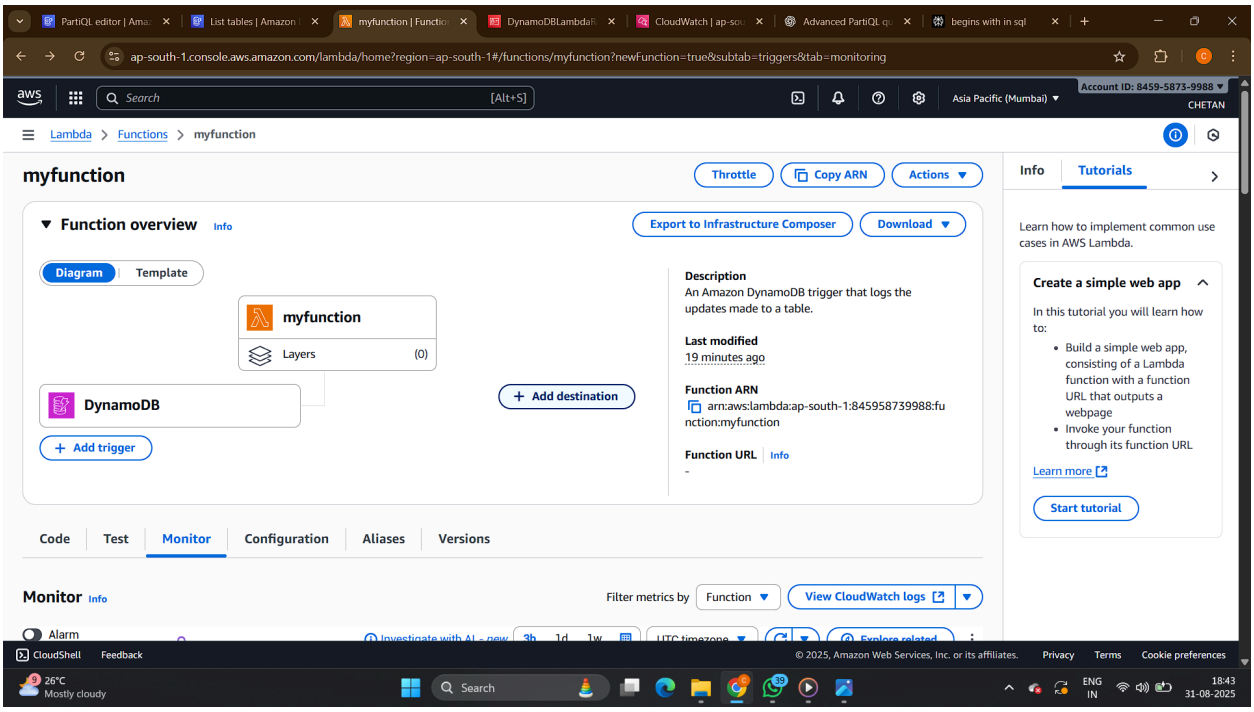
Update Lambda function:

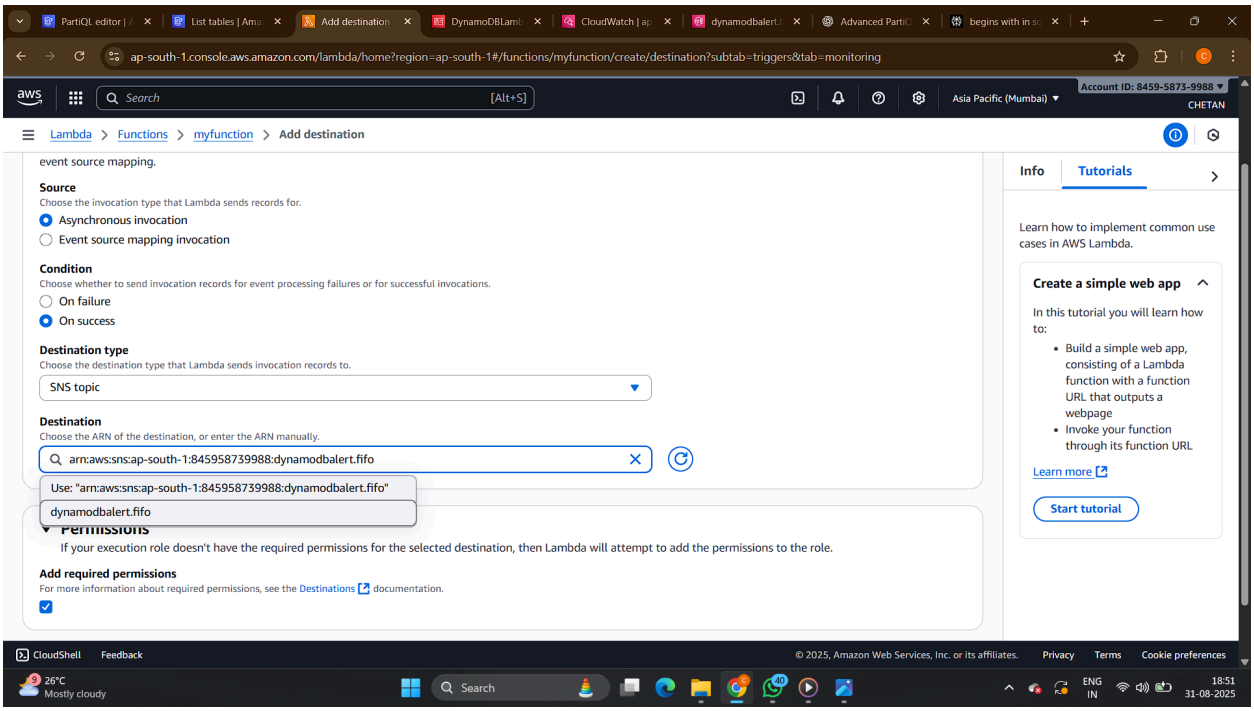
```
import boto3
import json
sns = boto3.client('sns')

SNS_TOPIC_ARN = 'arn:aws:sns:your-region:your-account-id:YourTopicName'
```

```
def lambda_handler(event, context):
    for record in event['Records']:
        if record['eventName'] == 'INSERT':
            new_item = record['dynamodb'].get('NewImage', {})
            subject = new_item.get('Subject', {}).get('S', '')
            forum = new_item.get('ForumName', {}).get('S', '')
            message = f"New post: {subject} in forum: {forum}"

            sns.publish(
                TopicArn=SNS_TOPIC_ARN,
                Message=message,
                Subject='New DynamoDB Post'
            )
```

3. Test

- Insert a new item into the table via PartiQL or Console.
- You should receive an email notification within seconds.




ap-south-1.console.aws.amazon.com/lambda/home?region=ap-south-1#/functions/myfunction/create/destination?subtab=triggers&tab=monitoring
Lambda > Functions > myfunction > Add destination
event source mapping.
Source
Choose the invocation type that Lambda sends records for.
Asynchronous invocation
Event source mapping invocation
Condition
Choose whether to send invocation records for event processing failures or for successful invocations.
On failure
On success
Destination type
Choose the destination type that Lambda sends invocation records to.
SNS topic
Destination
Choose the ARN of the destination, or enter the ARN manually.
arn:aws:sns:ap-south-1:845958739988:dynamodbalert.fifo
Use: "arn:aws:sns:ap-south-1:845958739988:dynamodbalert.fifo"
dynamodbalert.fifo
Permissions
If your execution role doesn't have the required permissions for the selected destination, then Lambda will attempt to add the permissions to the role.
Add required permissions
For more information about required permissions, see the Destinations documentation.
Info
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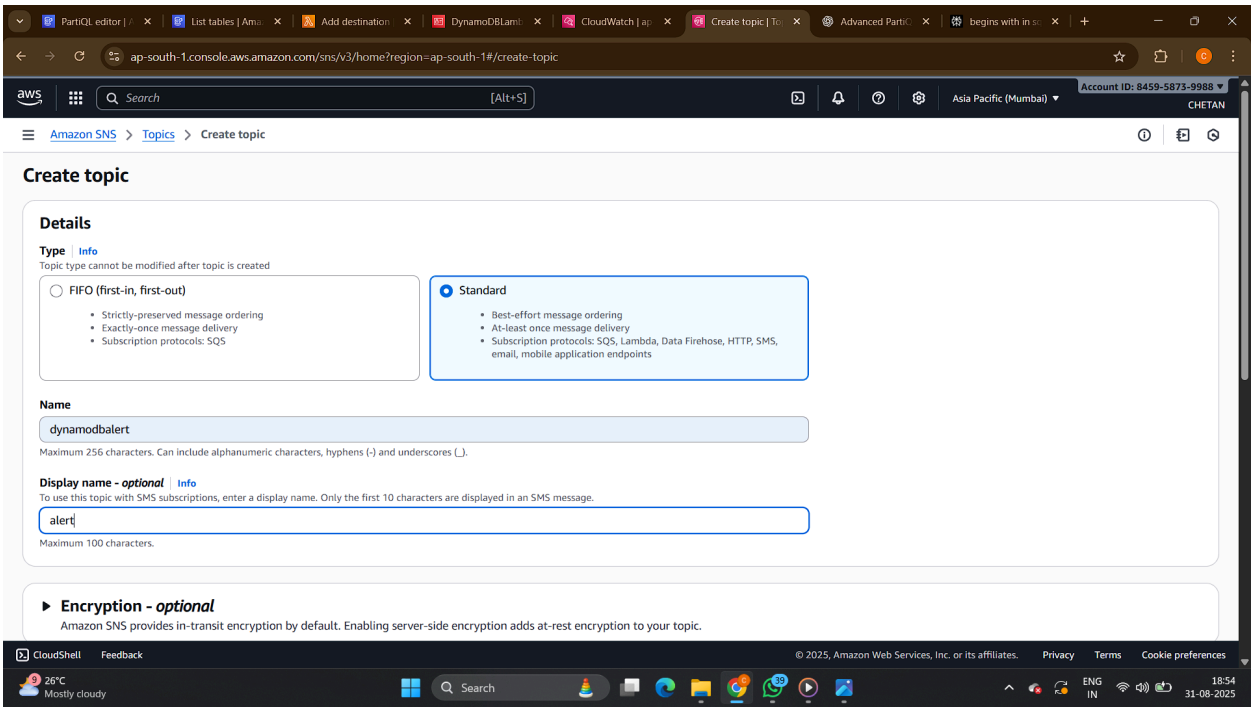
ap-south-1.console.aws.amazon.com/sns/v3/home?region=ap-south-1#/create-topic
Amazon SNS > Topics > Create topic
Create topic
Details
Type | Info
Topic type cannot be modified after topic is created
FIFO (first-in, first-out)
Strictly-preserved message ordering
Exactly-once message delivery
Subscription protocols: SQS
Standard
Best-effort message ordering
At-least once message delivery
Subscription protocols: SQS, Lambda, Data Firehose, HTTP, SMS, email, mobile application endpoints
Name
dynamodbalert
Maximum 256 characters. Can include alphanumeric characters, hyphens (-) and underscores (_).
Display name - optional | Info
To use this topic with SMS subscriptions, enter a display name. Only the first 10 characters are displayed in an SMS message.
alert
Maximum 100 characters.
Encryption - optional
Amazon SNS provides in-transit encryption by default. Enabling server-side encryption adds at-rest encryption to your topic.
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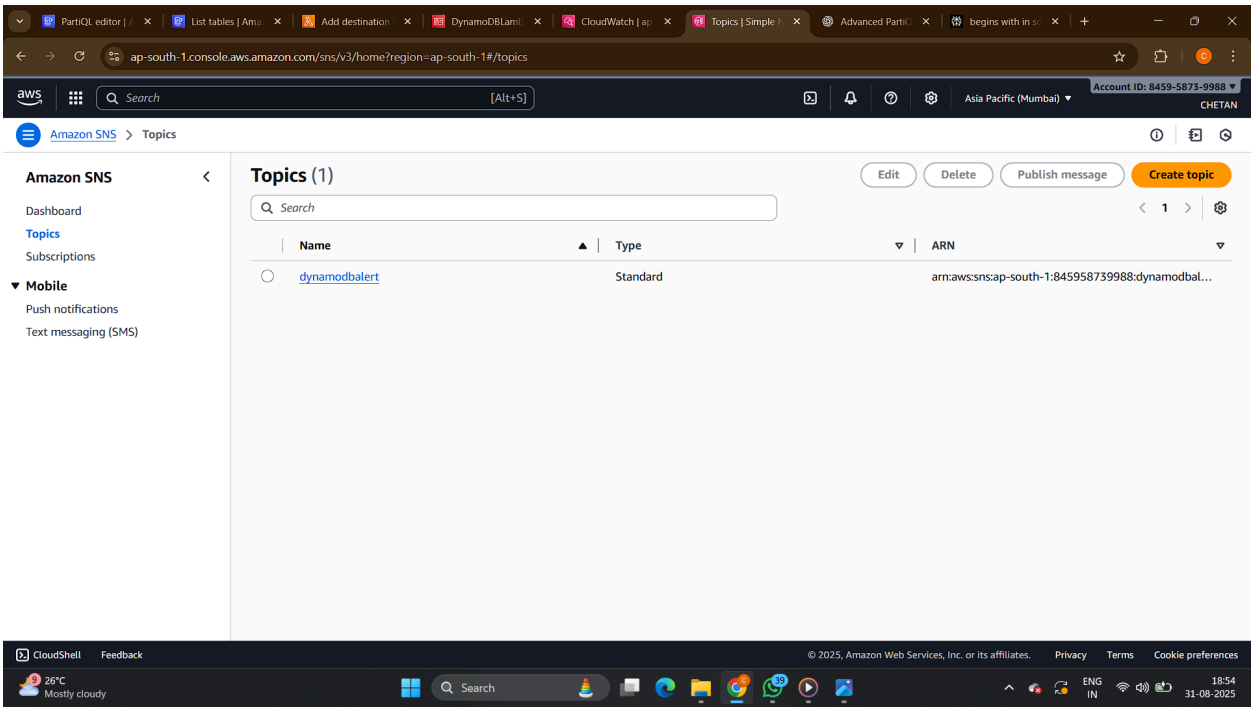
ap-south-1.console.aws.amazon.com/sns/v3/home?region=ap-south-1#/topics
Amazon SNS
Topics
Dashboard
Topics
Subscriptions
Mobile
Push notifications
Text messaging (SMS)
Topics (1)
Edit
Delete
Publish message
Create topic
Name
Type
ARN
dynamodbalert
Standard
arn:aws:sns:ap-south-1:845958739988:dynamodbal...
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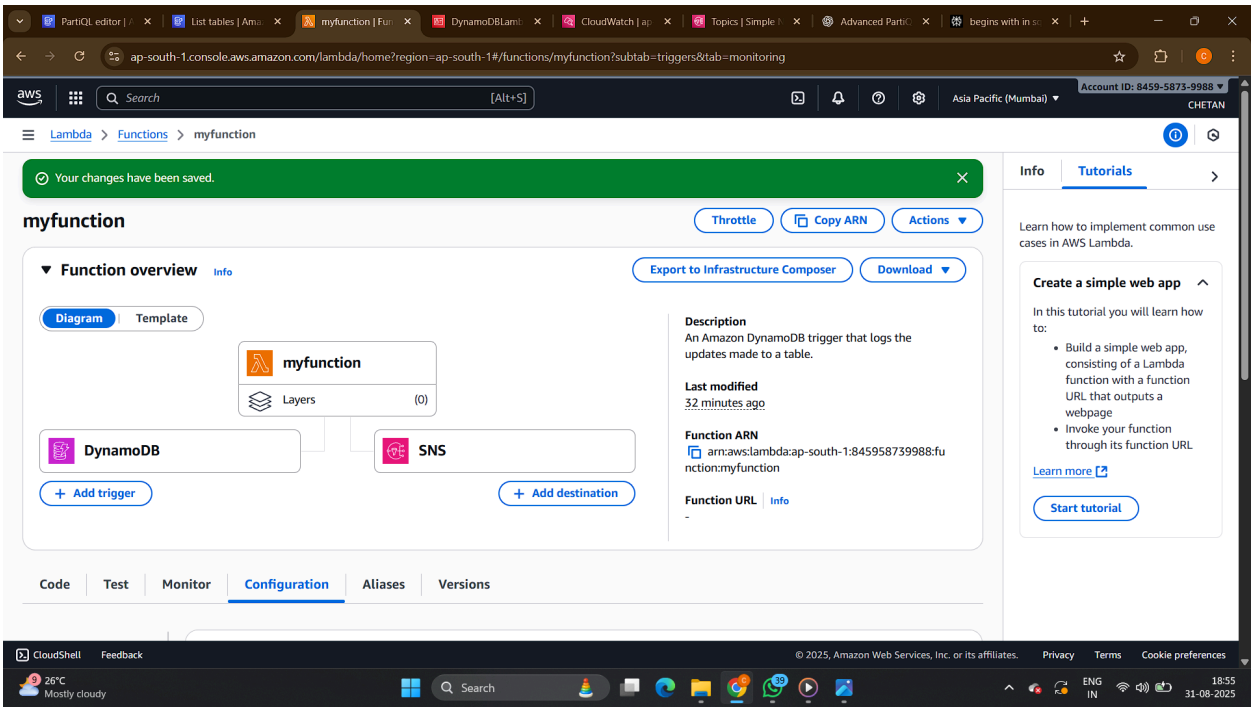
ap-south-1.console.aws.amazon.com/lambda/home?region=ap-south-1#/functions/myfunction?subtab=triggers&tab=monitoring
Lambda
Functions
myfunction
Your changes have been saved.
myfunction
Throttle
Copy ARN
Actions
Function overview
Info
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myfunction
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(0)
DynamoDB
SNS
Add trigger
Add destination
Description
An Amazon DynamoDB trigger that logs the updates made to a table.
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arn:aws:lambda:ap-south-1:845958739988:function:myfunction
Function URL
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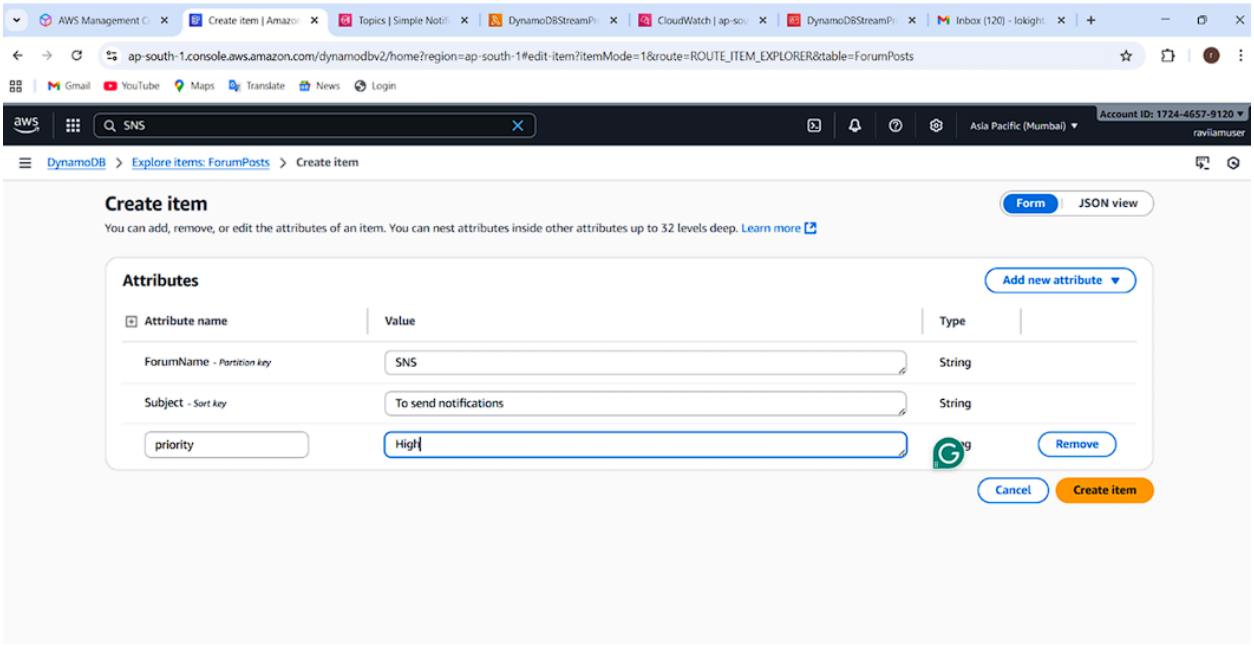

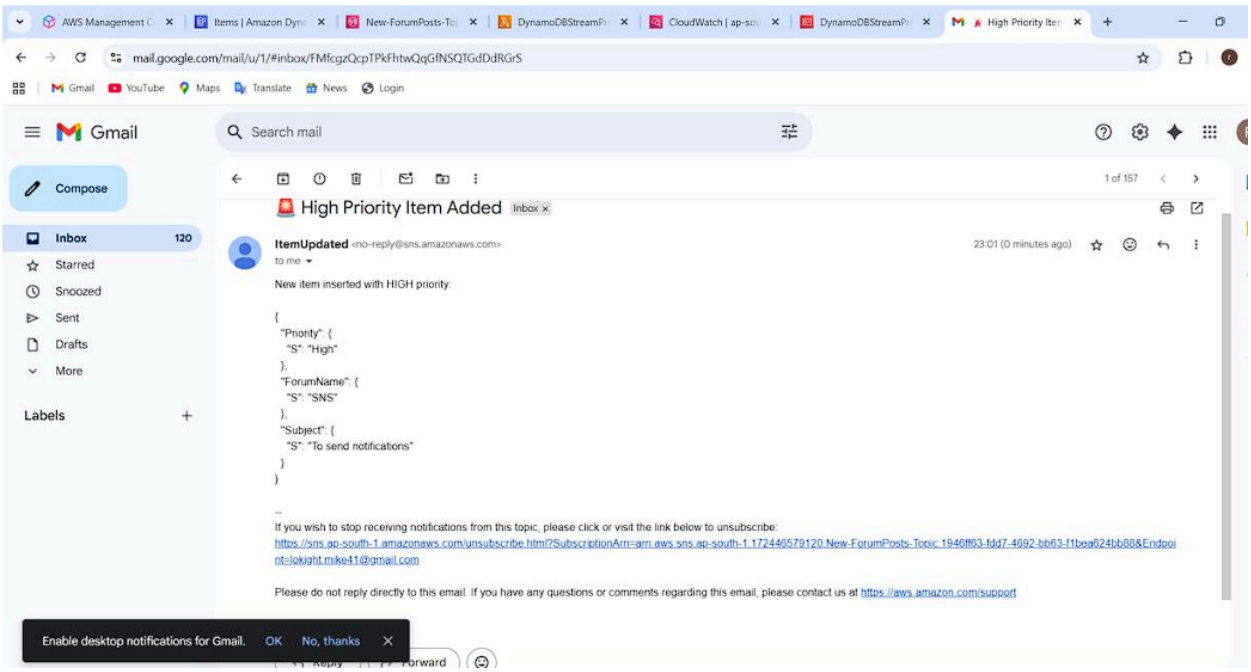

4. Bonus: Only notify if Priority = 'High'

Add condition in Lambda:

```
priority = new_item.get('Priority', {}).get('S', '')
if priority == 'High':
```

```
    # publish to SNS
```

This ensures only important posts trigger notifications.

End of Day (EOD) Status Report Template

Activities Completed:

- Created DynamoDB table with composite key
- Inserted and queried items using PartiQL
- Used PartiQL for filtering and batch operations
- Enabled DynamoDB Streams and integrated with Lambda
- Processed stream records and sent SNS notifications

Learnings & Takeaways:

- PartiQL makes DynamoDB querying more SQL-like
- Queries using keys are faster and cheaper than scans
- Streams allow real-time processing of changes
- Lambda + SNS enables serverless notifications
- BatchExecuteStatement can improve write efficiency

Challenges Faced:

- Filter operations on non-key attributes are less efficient
- Stream event structure can be verbose and requires parsing
- SNS email delivery requires email confirmation before it works