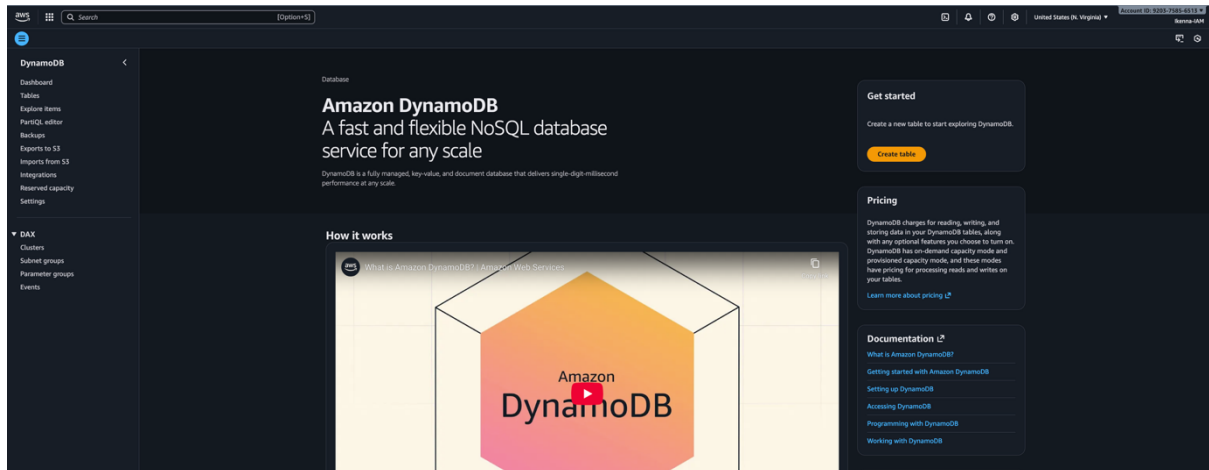


ANASIEZE IKENNA – CLOUD ENGINEER.

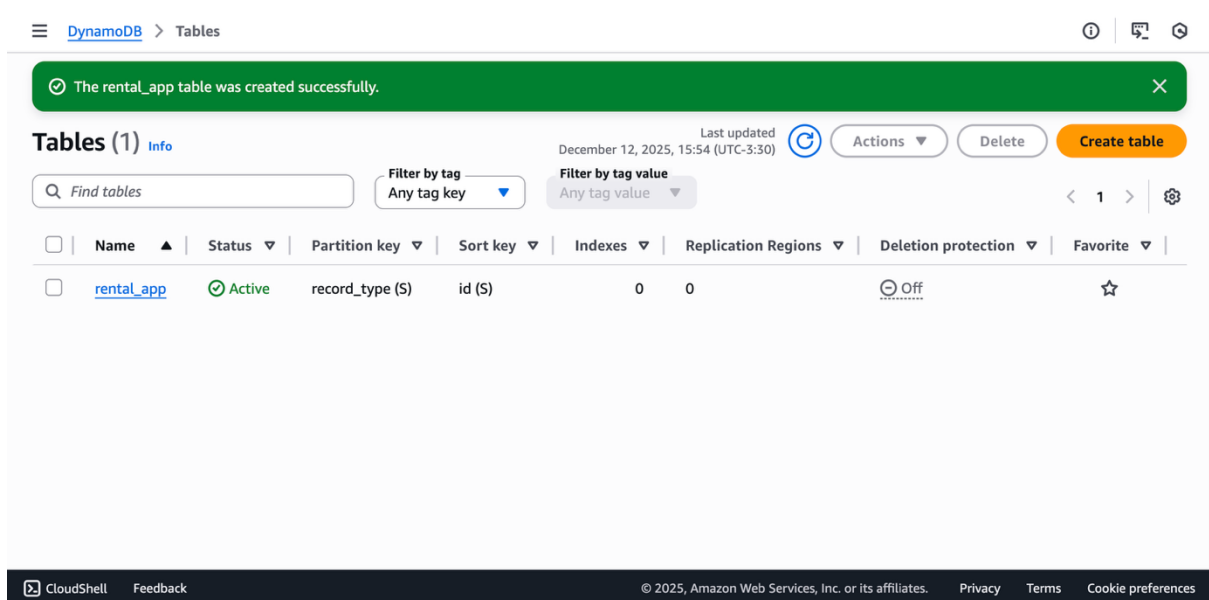
SERVERLESS: SOLVING PERFORMANCE ISSUES WITH API GATEWAY, LAMBDA AND DYNAMODB

TASK 1 - CREATE THE DYNAMODB TABLE



TASK 2 - CONFIGURE THE TABLE

- ⇒ **TABLE NAME: RENTAL_APP**
- ⇒ **PARTITION KEY: RECORD_TYPE**
- ⇒ **SORT KEY: ID**



TASK 3 - CREATE THE LAMBDA FUNCTION (PYTHON), CONFIGURE FUNCTION

BASICS

- ⇒ **AUTHOR FROM SCRATCH**

- ⇒ **FUNCTION NAME: LAMBDAFUNCTION**
- ⇒ **RUNTIME: PYTHON 3.14**
- ⇒ **ARCHI: x86 64**
- ⇒ **PERMISSIONS**

The screenshot displays the AWS Lambda console for a function named 'lambdafunction'. The console shows the function overview, including its description, last modified time (28 seconds ago), and its ARN. Below the overview, there are tabs for Code, Test, Monitor, Configuration, Aliases, and Versions. The 'Code source' tab is active, showing the code for 'lambda_function.py'.

The code in 'lambda_function.py' is as follows:

```
1 # AWS SDK for Python
2
3 import json
4 import os
5 import boto3
6 import uuid
7 from datetime import datetime
8
9 # Initialize DynamoDB client
10 dynamodb = boto3.resource('dynamodb')
11 table = dynamodb.Table(os.environ['TABLE_NAME'])
12
13 def lambda_handler(event, context):
14     """
15     Lambda handler for processing API Gateway requests
16     """
17     http_method = event['httpMethod']
18     path = event['path']
19
20     # Route the request based on path and method
21     if path == '/vehicles':
22         if http_method == 'GET':
23             return list_vehicles()
24         elif http_method == 'POST':
25             return create_vehicle(json.loads(event['body']) if 'body' in event else {})
26         elif http_method == 'PUT':
27             return update_vehicle(json.loads(event['body']) if 'body' in event else {})
28     elif path == '/locations':
29         if http_method == 'GET':
30             return list_locations()
31         elif http_method == 'POST':
32             return create_location(json.loads(event['body']) if 'body' in event else {})
33         elif http_method == 'PUT':
```

The CloudShell interface shows the code editor with the 'lambda_function.py' file. The left sidebar contains the Explorer, Deploy, and Test Events sections. The bottom status bar indicates the function is deployed and the editor is using Python 3.14.

TASK 4 – TEST LAMBDA LOGIC

The screenshot shows the AWS Lambda console interface. On the left, the 'EXPLORER' pane shows the 'LAMBDAFUNCTION' section with 'lambda_function.py' selected. Below it, the 'DEPLOY' section has 'Deploy' and 'Test' buttons. The 'TEST EVENTS' section shows 'CREATE_LOCATION' selected. The main pane displays the 'Create new test event' dialog with 'Event Name' set to 'create_location' and 'Invocation type' set to 'Synchronous'. The 'Execution Results' tab shows the status 'Succeeded' and the test event name 'create_location'. The response is a JSON object:

```
{  "statusCode": 201,  "body": "{\\\"id\\\": \\\"c589a878-f\\\", \\\"record_type\\\": \\\"location\\\", \\\"createdAt\\\": \\\"2025-12-12T19:32:31.645284\\\", \\\"name\\\": \\\"Ikenna\\\", \\\"vehicles_available\\\": \\\"4\\\"}"}
```

. The function logs show the request ID, version (\$LATEST), and duration (299.65 ms).

The screenshot shows the AWS DynamoDB console interface. The left sidebar shows the 'DynamoDB' section with 'Explore items' selected. The main pane shows the 'rental_app' table. The 'Scan or query items' section has 'Scan' selected. The 'Run' button is highlighted. The results show 'Completed' with 1 item returned. The table 'rental_app' has 1 item returned. The scan started on December 12, 2025, at 16:05:26. The item details are:

record_type (String)	id (String)	createdAt	name	vehicles_available
location	c589a878-f	2025-12-1...	Ikenna	4

TASK 5 – CREATE AND CONFIGURE API GATEWAY (HTTP API)

API Gateway > APIs > Resources - rental_app (afwoskczf3)

Create resource

/

/locations

GET

/locations - GET method test results

Request	Latency ms	Status
/locations	276	200

Response body

```
[{"createdAt": "2025-12-12T19:45:13.730582", "vehicles_available": "4", "name": "Ikenna", "record_type": "location", "id": "40fb3bb7-2"}]
```

Response headers

```
{  "X-Amzn-Trace-Id": "Root=1-693c7136-f438fdce83133f0a57da27ad;Parent=2e5e89034890ab26;Sampled=0;Lineage=1:50c46fc5:0"}
```

Logs

Execution log for request cd95fd8f-cc08-4418-a02d-edfe321416a8

Fri Dec 12 19:47:02 UTC 2025 : Starting execution for request: cd95fd8f-cc08-4418-a02d-edfe321416a8

Fri Dec 12 19:47:02 UTC 2025 : HTTP Method: GET, Resource Path: /locations

Fri Dec 12 19:47:02 UTC 2025 : Method request path: {}

Fri Dec 12 19:47:02 UTC 2025 : Method request query string: {}

Fri Dec 12 19:47:02 UTC 2025 : Method request headers: {=, Content-Type=application/json}

Fri Dec 12 19:47:02 UTC 2025 : Method request body before transformations:

Fri Dec 12 19:47:02 UTC 2025 : Endpoint request URI: https://lambda.us-east-1.amazonaws.com/2015-03-31/functions/arn:aws:lambda:us-east-1:154280210964:function:lambdafunction/invocations

Fri Dec 12 19:47:02 UTC 2025 : Endpoint request headers: {X-Amz-Date=20251212T194702Z, x-amzn-apigateway-api-id=afwoskczf3, Accept=application/json, User-Agent=AmazonAPIGateway_afwoskczf3, Host=lambda.us-east-1.amazonaws.com, X-Amz-Content-Sha256=ecf8c05f821f654d331b25cf5a747f6cca7b44a10836136cd9058048332022da, X-Amzn-

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API Gateway > APIs > Resources - rental_app (afwoskczf3)

Create resource

/

/locations

GET

POST

/locations - POST method test results

Request	Latency ms	Status
/locations	1255	201

Response body

```
{"id": "ab4f3069-4", "record_type": "location", "createdAt": "2025-12-12T19:53:11.552171", "name": "Mercedes Benz", "vehicles_available": "6"}
```

Response headers

```
{  "X-Amzn-Trace-Id": "Root=1-693c72a6-8981ca3af5499441c136da55;Parent=52560ed98c9ecb1b;Sampled=0;Lineage=1:50c46fc5:0"}
```

Logs

Execution log for request 9f4d33d4-d742-4f52-85ee-b346451e1a99

Fri Dec 12 19:53:10 UTC 2025 : Starting execution for request: 9f4d33d4-d742-4f52-85ee-b346451e1a99

Fri Dec 12 19:53:10 UTC 2025 : HTTP Method: POST, Resource Path: /locations

Fri Dec 12 19:53:10 UTC 2025 : Method request path: {}

Fri Dec 12 19:53:10 UTC 2025 : Method request query string: {}

Fri Dec 12 19:53:10 UTC 2025 : Method request headers: {Content-Type=application/json}

Fri Dec 12 19:53:10 UTC 2025 : Method request body before transformations: {

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API Gateway

APIs

Custom domain names

Domain name access associations

VPC links

AgentCore targets [New](#)

▼ API: rental_app

Resources

Stages

Authorizers

Gateway responses

Models

Resource policy

Documentation

Dashboard

API settings

Usage plans

API keys

Client certificates

Test

/locations - POST method test results

Request	Latency ms	Status
/locations	1255	201

Response body

```
{"id": "ab4f3069-4", "record_type": "location", "createdAt": "2025-12-12T19:53:11.552171", "name": "Mercedes Benz", "vehicles_available": "6"}
```

Response headers

```
{  "X-Amzn-Trace-Id": "Root=1-693c72a6-8981ca3af5499441c136da55;Parent=52560ed98c9ecb1b;Sampled=0;Lineage=1:50c46fc5:0"}
```

Logs

Execution log for request 9f4d33d4-d742-4f52-85ee-b346451e1a99

Fri Dec 12 19:53:10 UTC 2025 : Starting execution for request: 9f4d33d4-d742-4f52-85ee-b346451e1a99

Fri Dec 12 19:53:10 UTC 2025 : HTTP Method: POST, Resource Path: /locations

Fri Dec 12 19:53:10 UTC 2025 : Method request path: {}

Fri Dec 12 19:53:10 UTC 2025 : Method request query string: {}

Fri Dec 12 19:53:10 UTC 2025 : Method request headers: {Content-Type=application/json}

Fri Dec 12 19:53:10 UTC 2025 : Method request body before transformations: {

TASK 6 - VERIFY DYNAMODB DATA

DynamoDB

Explore items

rental_app

Filter by tag value

Any tag value

Find tables

< 1 >

rental_app

Scan

Query

Select a table or index

Table - rental_app

Select attribute projection

All attributes

Filters - optional

Run

Reset

Completed · Items returned: 2 · Items scanned: 2 · Efficiency: 100% · RCUs consumed: 2

Table: rental_app - Items returned (2)

Actions

Create item

Scan started on December 12, 2025, 16:23:44

< 1 >

	record_type (String)	id (String)	createdAt	name	vehicles_available
<input type="checkbox"/>	location	40fb3bb7-2	2025-12-12T19:45:13.730...	Ikenna	4
<input type="checkbox"/>	location	ab4f3069-4	2025-12-12T19:53:11.552...	Mercedes Benz	6

CloudShell

Feedback

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TASK 7 - MONITOR LOGS AND METRICS