

SQS

Problem statement:

1. Create a dynamodb table having primary key as 'date_time_epochtime' and insert 10+ records in the table. For eg. 01-01-2023_15:02:44_166778993
2. Create two lambda functions forming the producer-consumer architecture using SQS queue in between.
3. Producer function will scan records from the dynamodb table and send a batch of 4 records at a time to the SQS queue.
4. Consumer function will be invoked by the latest SQS messages and should perform these actions:
 1. It should split the record in date, time and epoch time.
 2. Update the record in dynamodb table having these columns: date, time and epoch_time. Add one more column 'last_updated' that will contain the date_time of updating the data.

Solution:

Created a DynamoDB table with the following items which contains the combination of date_time_epochtime

The screenshot shows the AWS DynamoDB console interface. On the left is a navigation menu with options like Dashboard, Tables, Update settings, Explore items, PartiQL editor, Backups, Exports to S3, Imports from S3, Reserved capacity, Settings, DAX, Clusters, Subnet groups, Parameter groups, and Events. The main area displays the 'date_time_epochtime_table'. A 'Scan or query items' operation has been completed, showing 'Completed. Read capacity units consumed: 0.5'. Below this, a list of 11 items is shown, each with a checkbox and a key-value pair where the key is 'date_time_epochtime' and the value is a timestamp and a unique ID.

date_time_epochtime
10-02-2023_12:27:58_382388712
01-01-2023_01:38:56_767857557
14-12-2022_23:54:37_875478324
21-12-2022_15:52:44_687585758
23-01-2023_19:15:53_297392737
11-01-2023_16:01:23_557657644
17-01-2023_11:34:21_982389292
24-01-2023_17:17:42_823828728
20-01-2023_17:14:56_762377227
25-01-2023_23:12:52_981298712
16-01-2023_23:48:20_576876892

Created one lambda function that will retrieve items from the DynamoDB data_time_epochtime table and send to SQS as batch of 4 items each time

Lambda > Functions > Lambda-f1

Lambda-f1

Throttle Copy ARN Actions

▼ Function overview Info

+ Add trigger

Lambda-f1

Layers (0)

+ Add destination

Description

-

Last modified

3 days ago

Function ARN

arn:aws:lambda:ap-south-1:818119396514:function:Lambda-f1

Function URL [Info](#)

-

Code source Info

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Go to Anything (Ctrl-P)

Environment

- Lambda-f1 - /
 - lambda_function.py

```

1 import json
2 import boto3
3
4 sqs = boto3.client('sqs')
5 dynamodb = boto3.client('dynamodb')
6
7 def send_batch(QueueUrl_Value, Entries_Value):
8     response = sqs.send_message_batch(QueueUrl = QueueUrl_Value, Entries=Entries_Value)
9     print(response)
10
11
12 def lambda_handler(event, context):
13     response = dynamodb.scan(Table_name='date_time_epochtime_table', AttributesToGet=['date_time_epochtime'])
14     values = []
15     for date_time_epochtime_values in response['Items']:
16         entry = {
17             'Id': str(len(values)),
18             'MessageBody': date_time_epochtime_values['date_time_epochtime']['S']
19         }
20         values.append(entry)
21         if(len(values) == 4):
22             print(values)
23             send_batch('https://sqs.ap-south-1.amazonaws.com/818119396514/my-queue', values)
24             values = []
25     else:
26         print(values)
27         send_batch('https://sqs.ap-south-1.amazonaws.com/818119396514/my-queue', values)
28

```

SQS:

Amazon SQS > Queues

Queues (1)

Search queues by prefix

1

Name	Type	Created	Messages available	Messages in flight
my-queue	Standard	Feb 22, 2023, 17:35:55 GMT+5:30	0	0

Added a trigger as lambda second function it will trigger when new msg is sent to the queue.

Details [info](#)

Name
my-queue

Encryption
Disabled

Type
Standard

URL
https://sqs.ap-south-1.amazonaws.com/818119396514/my-queue

ARN
arn:aws:sqs:ap-south-1:818119396514:my-queue

Dead-letter queue
-

► More

SNS subscriptions

Lambda triggers

Dead-letter queue

Monitoring

Tagging

Access policy

Encryption

Dead-letter queue redrive tasks

Lambda triggers (1) [info](#)

↺

View in Lambda

Delete

Configure Lambda function trigger

Q Search triggers

< 1 > ⚙

UUID	ARN	Status	Last modified
1bb912d3-0b81-43ec-8f1b-c9005f4930d0	arn:aws:lambda:ap-south-1:818119396514:function:Lambda-f2	Enabled	2/23/2023, 6:07:16 PM

Created another lambda function which will trigger when new msg is sent to the queue it will split the time, data and epoch time data and also add the current time as last modified and it will update as items in the dynamo db table.

[Lambda](#) > [Functions](#) > [Lambda-f2](#)

Lambda-f2

ThrottleCopy ARNActions

▼ Function overview [info](#)

Lambda-f2

Layers (0)

SQS

+ Add trigger

+ Add destination

Description
-

Last modified
3 days ago

Function ARN
arn:aws:lambda:ap-south-1:818119396514:function:Lambda-f2

Function URL [info](#)
-

Code sourceInfo

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Go to Anything (Ctrl-P)

Environment

Lambda-f2 - /

lambda_function.py

2import boto3

3from datetime import datetime

4

5client = boto3.client('dynamodb')

6

7

8def lambda_handler(event, context):

9for details in event['Records']:

10data=details['body'].split("_")

11date=data[0]

12time=data[1]

13epochtime=data[2]

14now = datetime.now()

15current_time = now.strftime("%H:%M:%S")

16response = client.put_item(

17 TableName='date_time_epochtime_v2',

18 Item={

19 "date": {

20 "S": date

21 },

22 "time": {

23 "S": time

24 },

25 "epochtime": {

26 "S": epochtime

27 },

28 "last_updated": {

29 "S": current_time

30 }

31 }

32 })

33 print(response)

34 return {

35 'statusCode': 200,

36 'body': json.dumps('Hello from Lambda!')

37 }

You can see there are no items at all in the second DynamoDB table

DynamoDB > Items > date_time_epochtime_v2

Tables (5)

Any table tag

Find tables by table name

1

date_time_epochtime_table

date_time_epochtime_v2

Employee_Details

Employee_details

Test_DB

date_time_epochtime_v2

Autopreview

View table details

Scan or query items

Expand to query or scan items.

Completed. Read capacity units consumed: 0.5

Items returned (0)

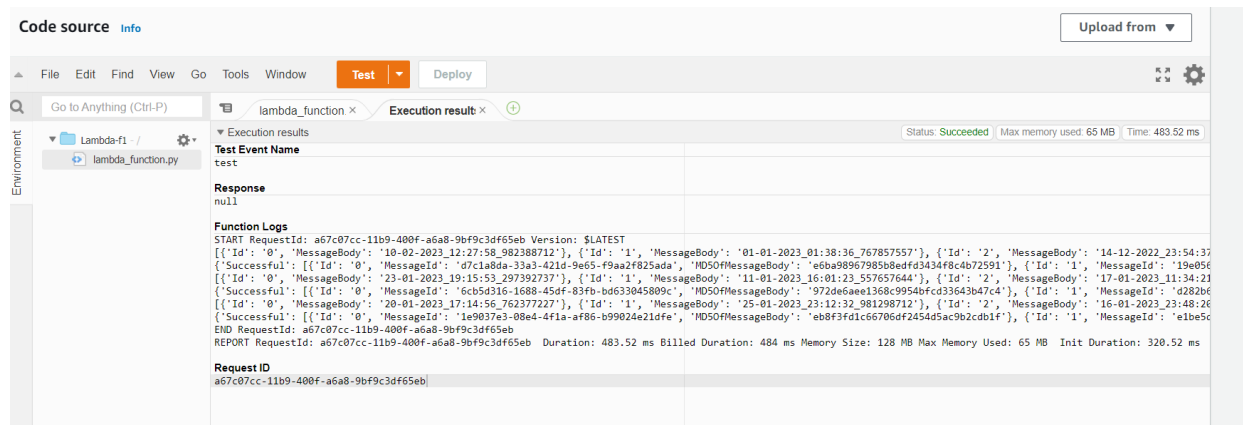
Actions

Create item

1

The query did not return any results.

Whenever the first lambda function was trigger then it will send the items as msg to the SQS .



Code source [Info](#) Upload from ▾

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Environment

▼ Lambda-f1 / ⚙

▶ lambda_function.py

Execution results Status: Succeeded Max memory used: 65 MB Time: 483.52 ms

Test Event Name

test

Response

null

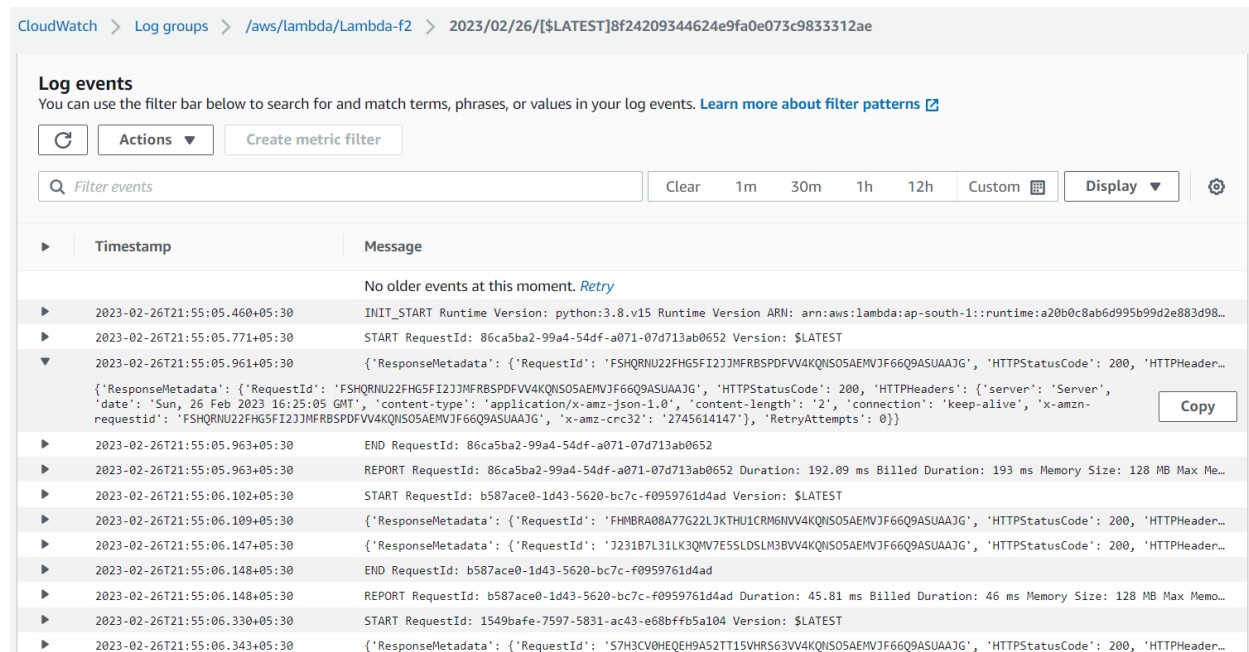
Function Logs

```
START RequestId: a67c07cc-11b9-400f-a6a8-9bf9c3df65eb Version: $LATEST
[{"Id": "0", "MessageBody": "10-02-2023_12:27:58_982388712"}, {"Id": "1", "MessageBody": "01-01-2023_01:38:36_767857557"}, {"Id": "2", "MessageBody": "14-12-2022_23:54:37"}]
{"Successful": [{"Id": "0", "MessageId": "d7c1a8da-33a3-421d-9e65-f9aa2f825ada", "ND50fMessageBody": "e6ba98967985b8edfd3434f8c4b72591"}, {"Id": "1", "MessageId": "19e056"}, {"Id": "2", "MessageBody": "23-01-2023_19:15:53_297392737"}, {"Id": "1", "MessageBody": "11-01-2023_16:01:23_557657644"}, {"Id": "2", "MessageBody": "17-01-2023_11:34:21"}]
{"Successful": [{"Id": "0", "MessageId": "6cb5d316-1688-45df-83fb-bd633045809c", "ND50fMessageBody": "972de6ae1368c9954bfc33643b47c4"}, {"Id": "1", "MessageId": "d282b6"}, {"Id": "2", "MessageBody": "20-01-2023_17:14:56_762377227"}, {"Id": "1", "MessageBody": "25-01-2023_23:12:32_981298712"}, {"Id": "2", "MessageBody": "16-01-2023_23:48:26"}]
{"Successful": [{"Id": "0", "MessageId": "1e9037e3-08e4-4f1a-af86-b99024e21dfe", "ND50fMessageBody": "eb8f3fd1c66786df2454d5ac9b2c0b1f"}, {"Id": "1", "MessageId": "e1be5c"}]
END RequestId: a67c07cc-11b9-400f-a6a8-9bf9c3df65eb
REPORT RequestId: a67c07cc-11b9-400f-a6a8-9bf9c3df65eb Duration: 483.52 ms Billed Duration: 484 ms Memory Size: 128 MB Max Memory Used: 65 MB Init Duration: 320.52 ms
```

Request ID

a67c07cc-11b9-400f-a6a8-9bf9c3df65eb

After sending the msg to the SQS then the second lambda function will be triggered it will split the time, data and epoch time data and also add the current time as last modified. it will update as items in the second DynamoDB table.



CloudWatch > Log groups > /aws/lambda/Lambda-f2 > 2023/02/26/[\$LATEST]8f24209344624e9fa0e073c9833312ae

Log events

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](#)

🔄 Actions ▾ Create metric filter

Clear 1m 30m 1h 12h Custom Display ▾ ⚙

▶	Timestamp	Message
		No older events at this moment. Retry
▶	2023-02-26T21:55:05.460+05:30	INIT_START Runtime Version: python:3.8.v15 Runtime Version ARN: arn:aws:lambda:ap-south-1::runtime:a20b0c8ab6d995b99d2e883d98..
▶	2023-02-26T21:55:05.771+05:30	START RequestId: 86ca5ba2-99a4-54df-a071-07d713ab0652 Version: \$LATEST
▼	2023-02-26T21:55:05.961+05:30	{ "ResponseMetadata": { "RequestId": "FSHQNRU22FHG5FI2JJMFRBSPDFV4KQNS05AEMVJF66Q9ASUAAJG", "HTTPStatusCode": 200, "HTTPHeader.. { "ResponseMetadata": { "RequestId": "FSHQNRU22FHG5FI2JJMFRBSPDFV4KQNS05AEMVJF66Q9ASUAAJG", "HTTPStatusCode": 200, "HTTPHeaders": { "server": "Server", 'date': 'Sun, 26 Feb 2023 16:25:05 GMT', 'content-type': 'application/x-amz-json-1.0', 'content-length': '2', 'connection': 'keep-alive', 'x-amzn- requestid': 'FSHQNRU22FHG5FI2JJMFRBSPDFV4KQNS05AEMVJF66Q9ASUAAJG', 'x-amz-crc32': '2745614147' }, 'RetryAttempts': 0 }}
▶	2023-02-26T21:55:05.963+05:30	END RequestId: 86ca5ba2-99a4-54df-a071-07d713ab0652
▶	2023-02-26T21:55:05.963+05:30	REPORT RequestId: 86ca5ba2-99a4-54df-a071-07d713ab0652 Duration: 192.09 ms Billed Duration: 193 ms Memory Size: 128 MB Max Me..
▶	2023-02-26T21:55:06.102+05:30	START RequestId: b587ace0-1d43-5620-bc7c-f0959761d4ad Version: \$LATEST
▶	2023-02-26T21:55:06.109+05:30	{ "ResponseMetadata": { "RequestId": "FHM8RA08A7G22LJKTHU1CRM6NVV4KQNS05AEMVJF66Q9ASUAAJG", "HTTPStatusCode": 200, "HTTPHeader..
▶	2023-02-26T21:55:06.147+05:30	{ "ResponseMetadata": { "RequestId": "J231B7L31LK3QW7E55LDSL3B3BV4KQNS05AEMVJF66Q9ASUAAJG", "HTTPStatusCode": 200, "HTTPHeader..
▶	2023-02-26T21:55:06.148+05:30	END RequestId: b587ace0-1d43-5620-bc7c-f0959761d4ad
▶	2023-02-26T21:55:06.148+05:30	REPORT RequestId: b587ace0-1d43-5620-bc7c-f0959761d4ad Duration: 45.81 ms Billed Duration: 46 ms Memory Size: 128 MB Max Memo..
▶	2023-02-26T21:55:06.330+05:30	START RequestId: 1549baf6-7597-5831-ac43-e68bfb5a104 Version: \$LATEST
▶	2023-02-26T21:55:06.343+05:30	{ "ResponseMetadata": { "RequestId": "S7H3CV0HEQE9A52TT15VHR563VV4KQNS05AEMVJF66Q9ASUAAJG", "HTTPStatusCode": 200, "HTTPHeader..

Finally items are updated in the second dynamo db table.

date_time_epochtime_table

date_time_epochtime_v2

Employee_Details

Employee_details

Test_DB

Completed. Read capacity units consumed: 0.5

Items returned (11)

Actions

Create item

<

1

>

	date	time	epochtime	last_updated
<input type="checkbox"/>	10-02-2023	12:27:58	982388712	16:25:05
<input type="checkbox"/>	14-12-2022	23:54:37	873478324	16:25:06
<input type="checkbox"/>	17-01-2023	11:34:21	982389292	16:25:06
<input type="checkbox"/>	01-01-2023	01:38:36	767857557	16:25:05
<input type="checkbox"/>	11-01-2023	16:01:23	557657644	16:25:06
<input type="checkbox"/>	21-12-2022	13:52:44	687585758	16:25:06
<input type="checkbox"/>	23-01-2023	19:15:53	297392737	16:25:06