AWS Lambda with S3 Trigger and DynamoDB Integratio

Introduction

AWS Lambda is a **serverless compute** service that lets you run code without provisioning or managing servers. It automatically scales and runs your code in response to triggers such as changes in data, system state, or user actions.

In this hands-on session, we will:

- Create an **S3 bucket**.
- Create a **Lambda function** triggered on file upload.
- Write a Lambda function in **Python 3.10**.
- Store metadata in a **DynamoDB table**.
- Clean up all AWS resources afterward.

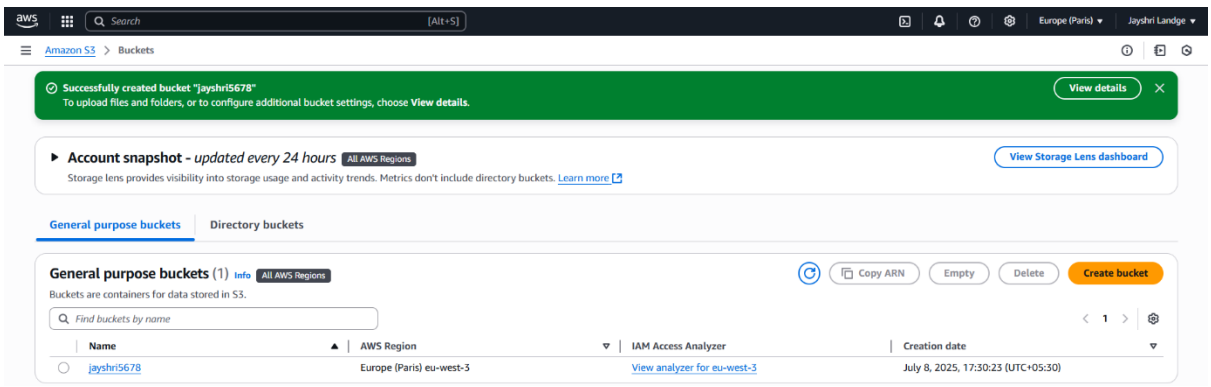
Technologies Used

- AWS Lambda
- Amazon S3
- Amazon DynamoDB
- AWS IAM (Identity & Access Management)
- Python 3.10
- Boto3 (AWS SDK for Python)

Step-by-Step Implementation

Step 1: Create an IAM Role

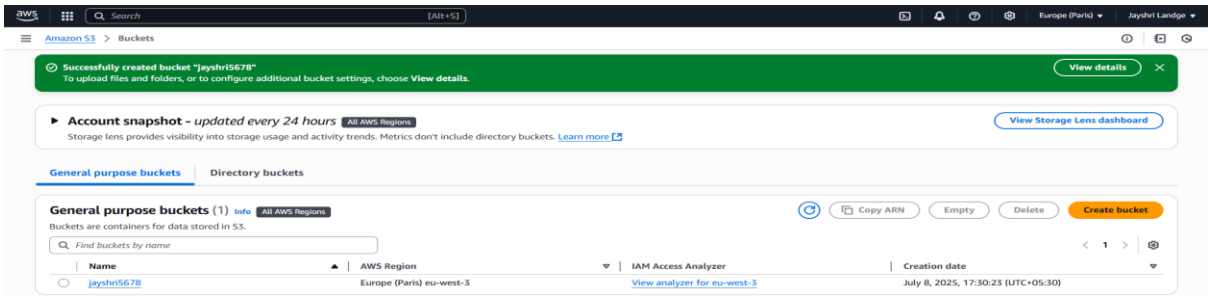
- Go to **IAM Console** → **Roles** → **Create Role**
  - **Trusted Entity:** AWS Service → Lambda
  - **Permissions:** Attach AmazonDynamoDBFullAccess and AmazonS3FullAccess
  - **Role Name:** lambda-dynamodb-s3-role



Screenshot 1: IAM Role creation screen

Step 2: Create an S3 Bucket

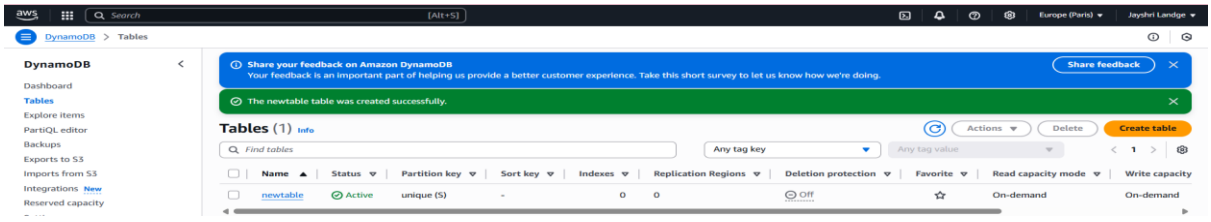
- Go to **S3 Console → Create bucket**
  - **Bucket Name:** my-upload-bucket-[your-unique-suffix]
  - Leave other settings as default
  - Disable public access



Screenshot 2: S3 bucket creation

Step 3: Create a DynamoDB Table

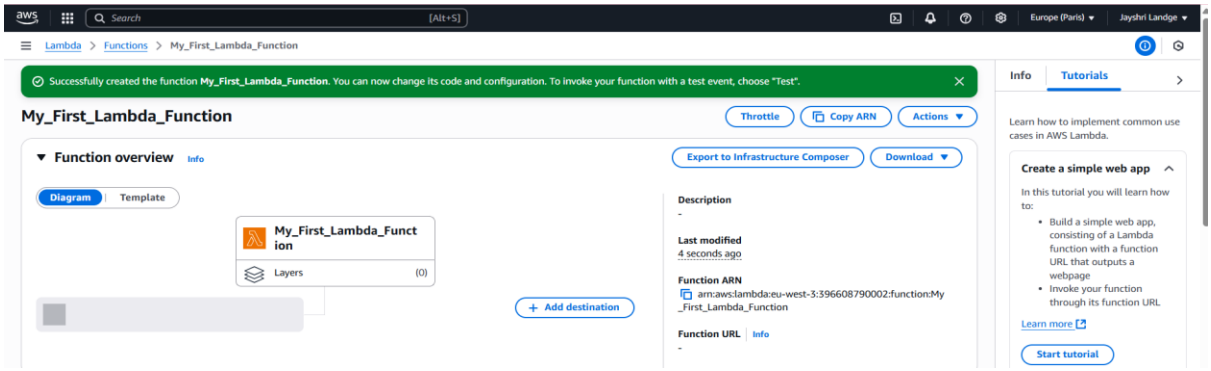
- Go to **DynamoDB Console → Create table**
  - **Table Name:** newtable
  - **Primary key:** unique (String)
  - Leave other settings default



Screenshot 3: DynamoDB table setup

Step 4: Create the Lambda Function

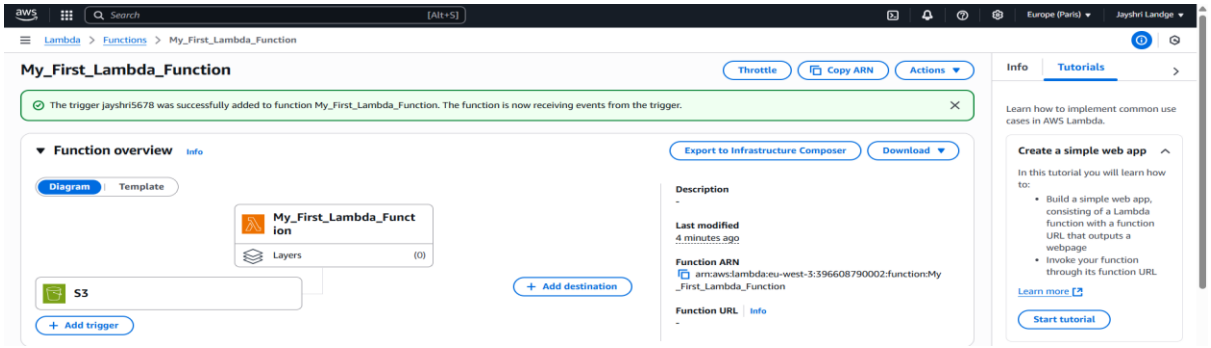
- Go to **AWS Lambda Console → Create Function**
  - **Author from scratch**
  - Function name: S3DynamoFunction
  - Runtime: Python 3.10
  - Execution role: Use existing role → lambda-dynamodb-s3-role



Screenshot 4: Lambda function configuration

Step 5: Add S3 Trigger to Lambda

- Inside Lambda → Triggers → Add Trigger:
  - **Select Trigger:** S3
  - **Bucket:** Choose the one created in Step 2
  - **Event Type:** PUT (Object Created)
  - **Enable trigger**



Screenshot 5: Adding S3 trigger to Lambda

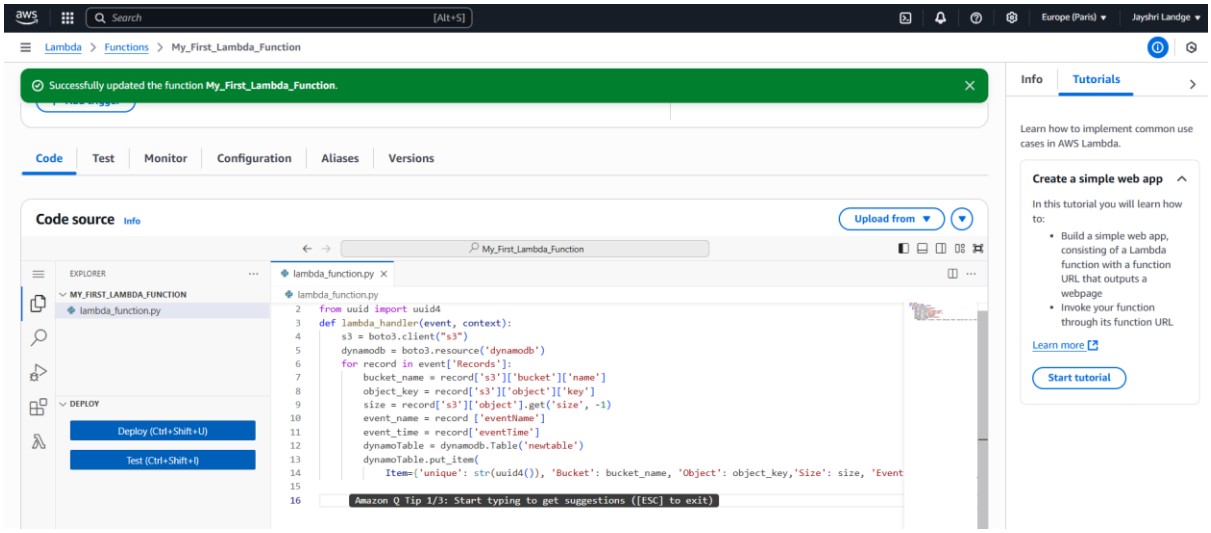
Step 6: Add Python Code to Lambda

Paste the following code in the Lambda function editor:

```
import boto3
from uuid import uuid4
def lambda_handler(event, context):
    s3 = boto3.client("s3")
    dynamodb = boto3.resource('dynamodb')

    for record in event['Records']:
        bucket_name = record['s3']['bucket']['name']
```

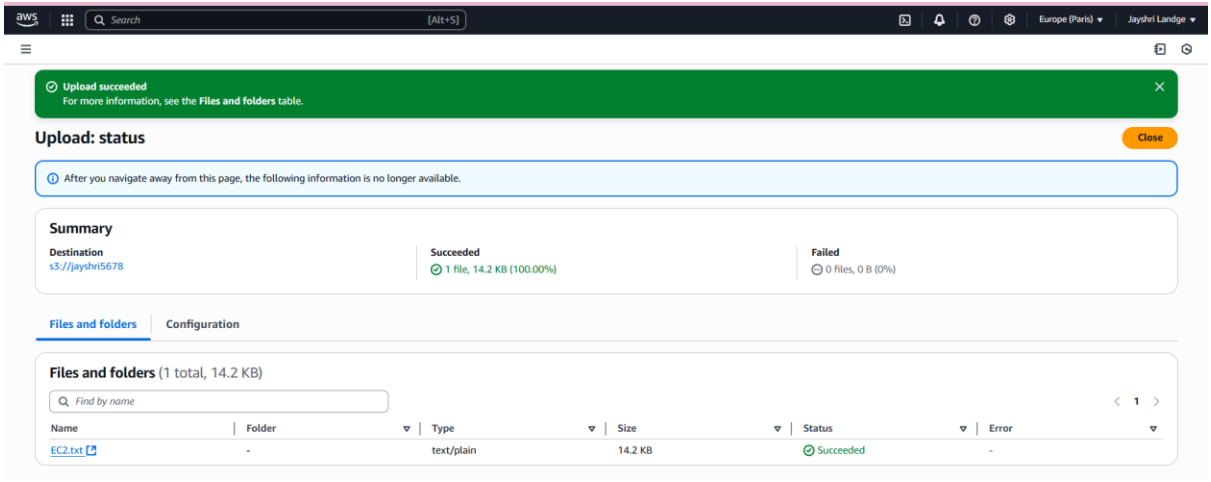
```
object_key = record['s3']['object']['key']
size = record['s3']['object'].get('size', -1)
event_name = record['eventName']
event_time = record['eventTime']
dynamoTable = dynamodb.Table('newtable')
dynamoTable.put_item(
  Item={
    'unique': str(uuid4()),
    'Bucket': bucket_name,
    'Object': object_key,
    'Size': size,
    'Event': event_name,
    'EventTime': event_time
  }
)
```



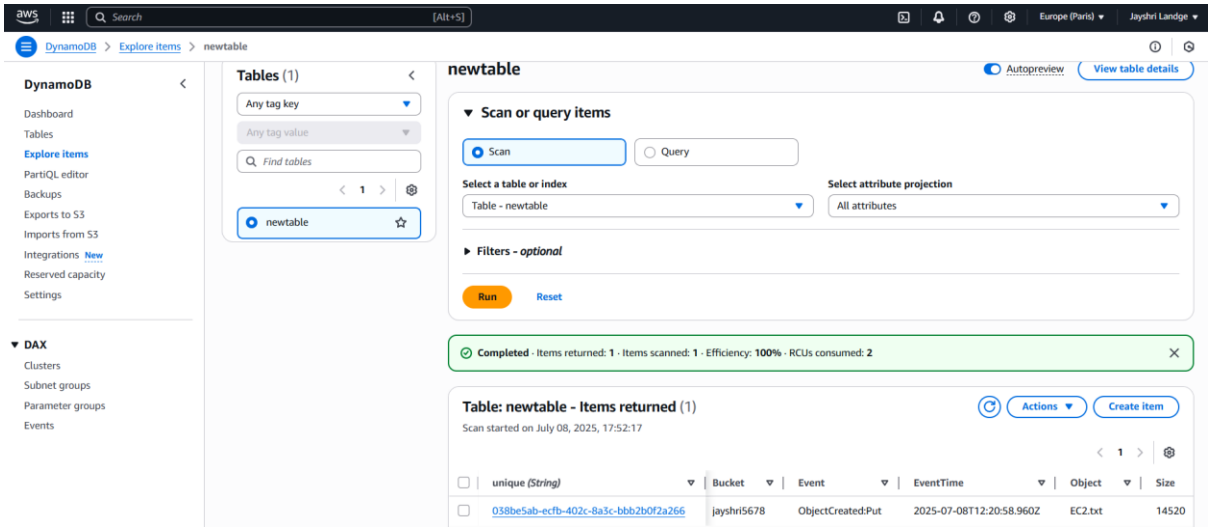
Screenshot 6: Lambda code editor Deploy code

Step 7: Test the Setup

- Go to **S3 bucket** → Upload any sample file (e.g., .txt, .jpg)
- After uploading:
  - Go to **DynamoDB Console**
  - Open the newtable
  - Click on **Explore Table Items**
  - You should see a new item inserted with metadata



Screenshot 7: Uploaded file in S3



Screenshot 8: Record entry in DynamoDB table

Conclusion

In this hands-on session, I successfully:

- Created a **serverless workflow** using AWS Lambda
- Triggered a Lambda function on **S3 file upload**
- Stored file metadata into **DynamoDB** using **Python + Boto3**

This practical illustrates how AWS services can be combined for **event-driven applications** using **minimal infrastructure setup**, ideal for scalable and cost-effective architectures.