Experiment 07 - Cloud Computing

January 18, 2023

Aim

To create and deploy lambda function to transfer csv data to DynamoDB along with adding triggers for S3 and destination as SNS topic for the lambda function.

Theory

- **Lambda** : AWS Lambda is an event-driven, serverless computing platform provided by Amazon as a part of Amazon Web Services. It is a computing service that runs code in response to events and automatically manages the computing resources required by that code.
- **Triggers** : A trigger is a resource you configure to allow another AWS service to invoke your function when certain events or conditions occur. Your function can have multiple triggers. Lambda Functions can be triggered in different ways: an HTTP request, a new document upload to S3, a scheduled Job, an AWS Kinesis data stream, or a notification from AWS Simple Notification Service (SNS).
- **SNS** : Amazon Simple Notification Service (Amazon SNS) is a managed service that provides message delivery from publishers to subscribers (also known as producers and consumers). Publishers communicate asynchronously with subscribers by sending messages to a topic, which is a logical access point and communication channel.

Results

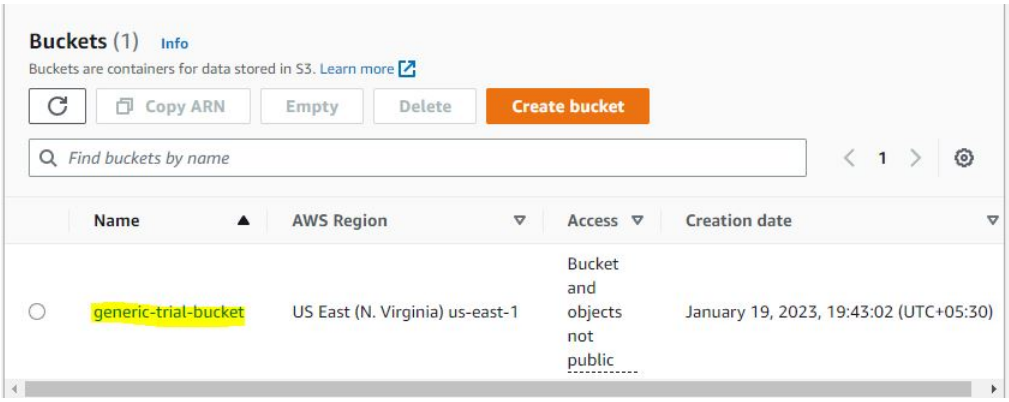

Figure 1: Start by creating S3 Bucket with name you prefer and default settings

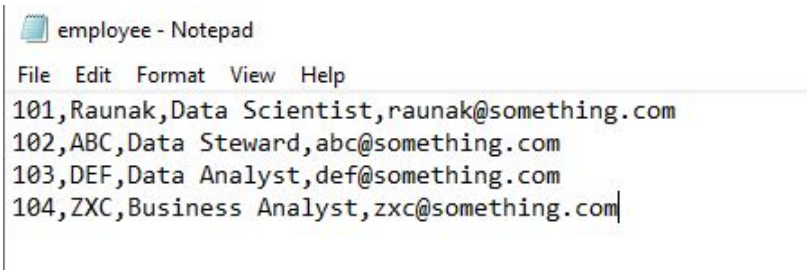

Figure 2: Create a random comma separated value file with arbitrary data

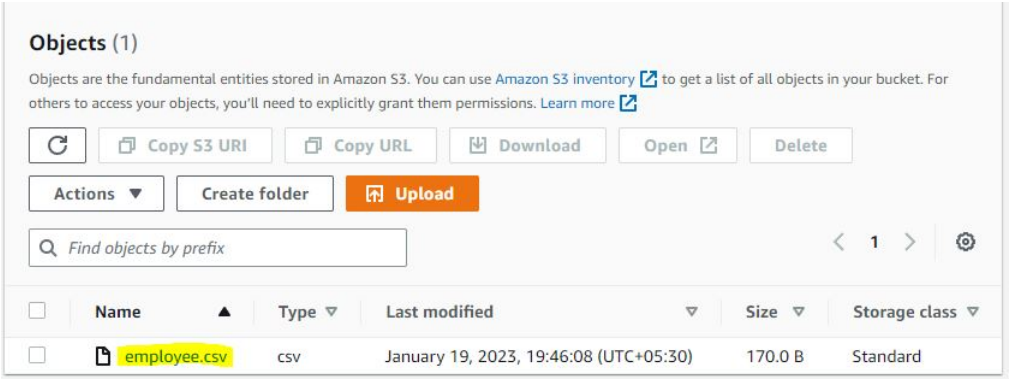

Figure 3: Upload the created CSV file in the bucket you had created

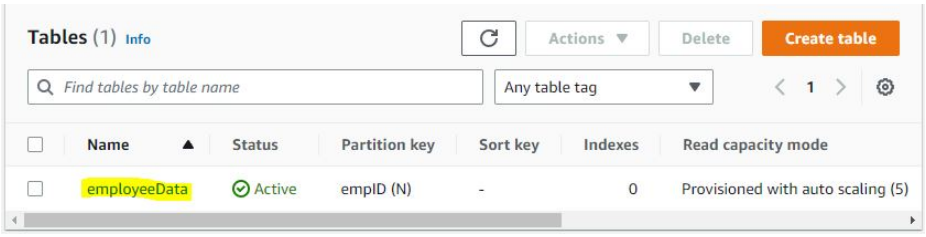

Figure 4: Create a table in DynamoDB with empId as its primary key

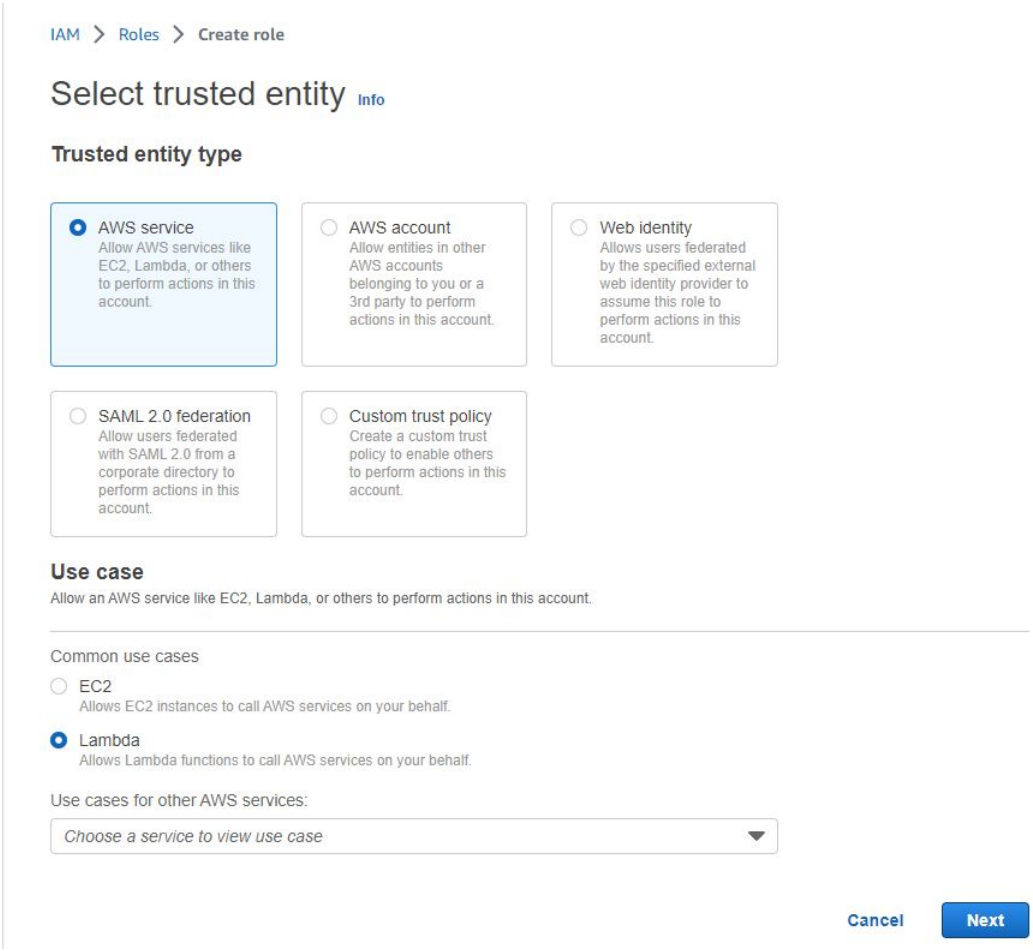

Figure 5: Create an IAM role that supports the Lambda service

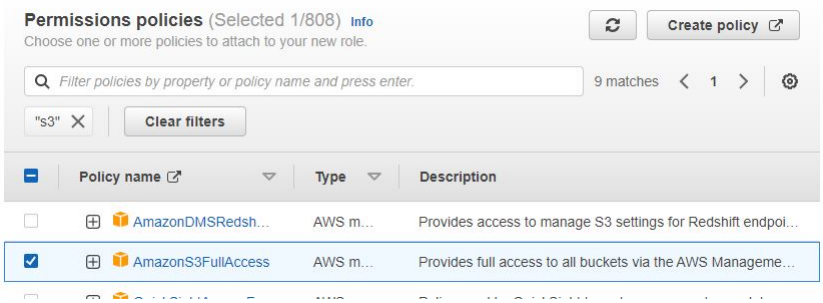

Figure 6: Enable the S3 Full Access Function

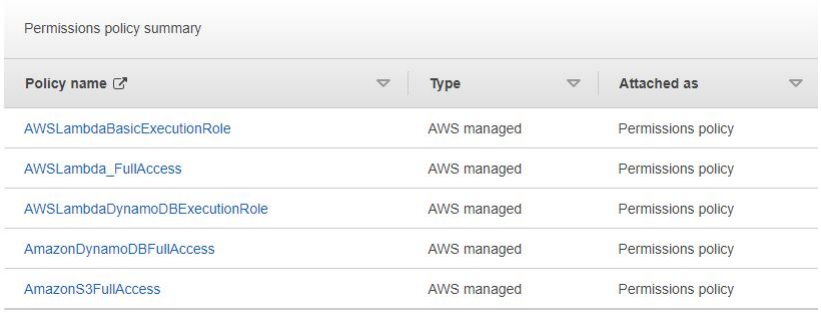

Figure 7: Similarly follow all the displayed services respectively

Figure 8: Create the name for role details and proceed creating the role

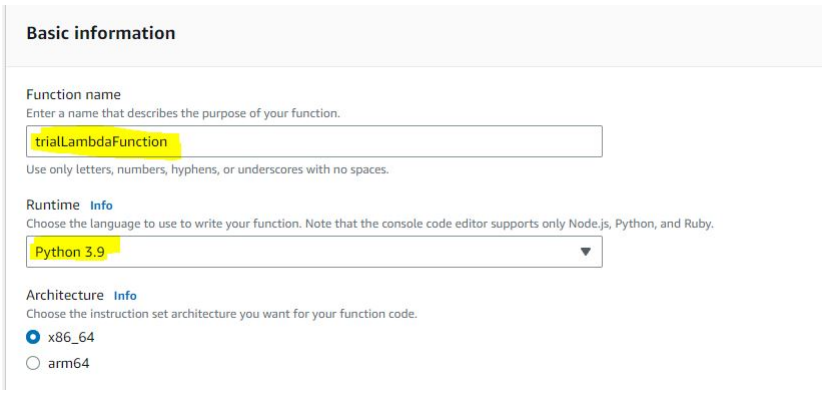

Figure 9: Create a Lambda Function and give name of your choice along with select runtime as Python

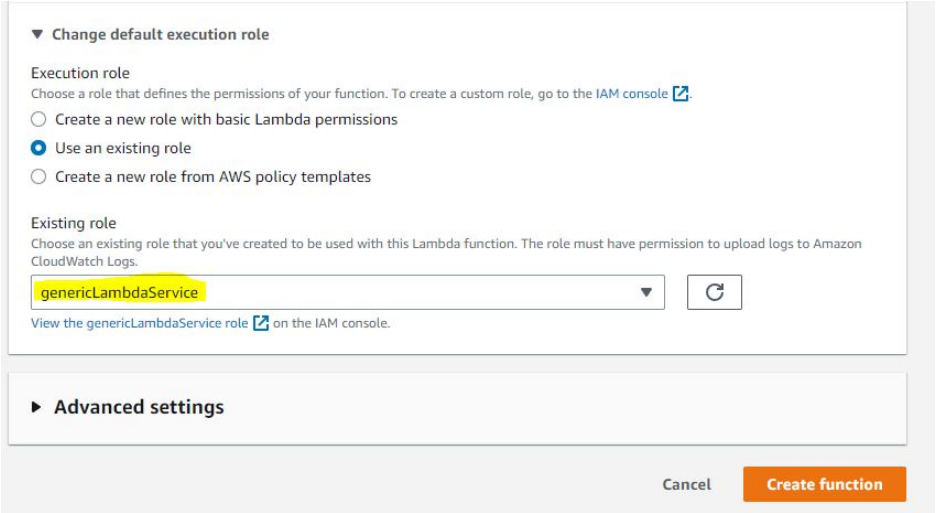

Figure 10: Change the default execution role by choosing an existing service and selecting the IAM role you created initially from the dropdown menu and create the function

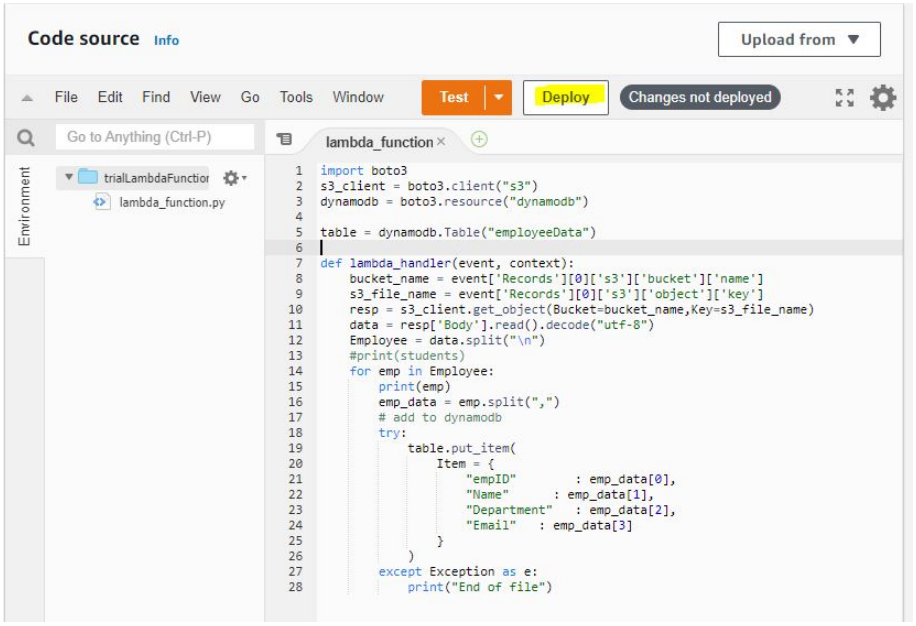

Figure 11: In code source type the following script that takes the data from bucket and puts in the dynamo DB table. Do not forget to deploy once completed to proceed with execution

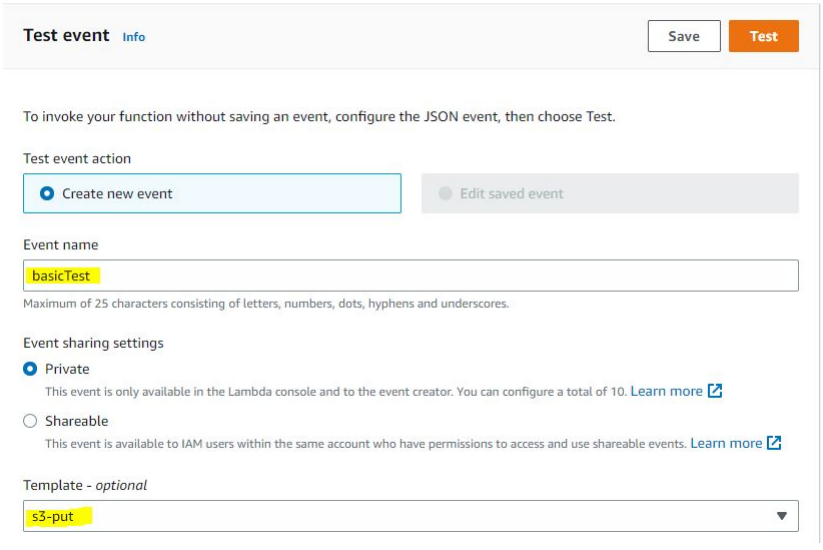

Figure 12: Create a test event to test if the function is working effectively

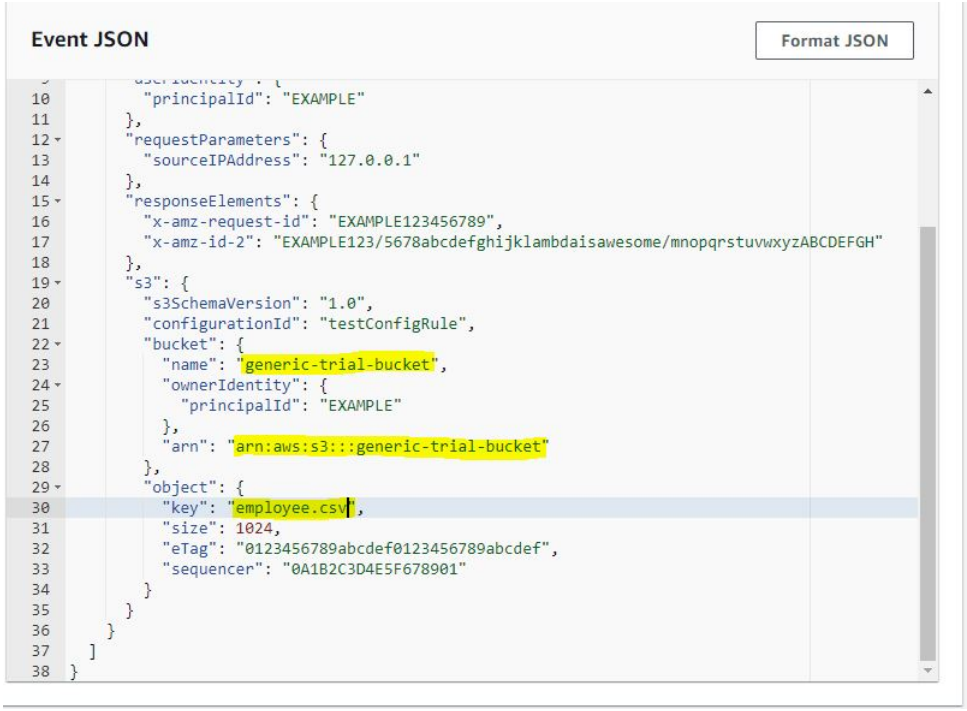

Figure 13: Select the S3-Put option and make required changes in the Event JSON file in the place by selecting name of your bucket with its respective ARN and employee file that was uploaded in the bucket

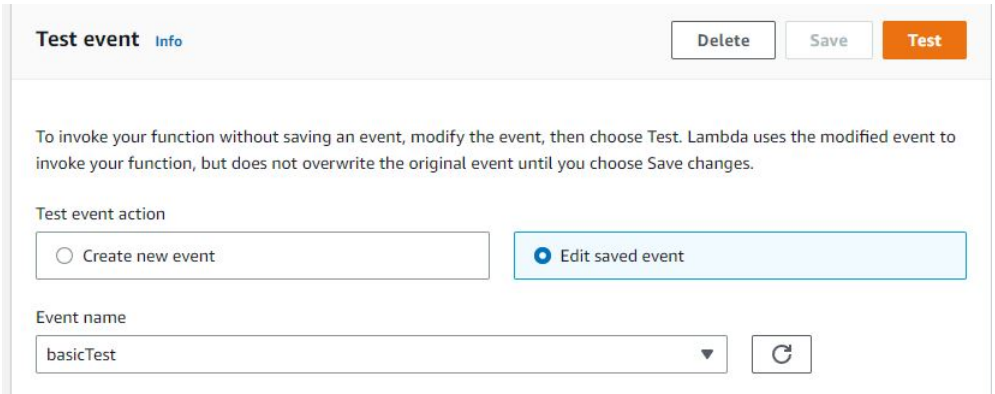

Figure 14: After saving the JSON proceed by testing

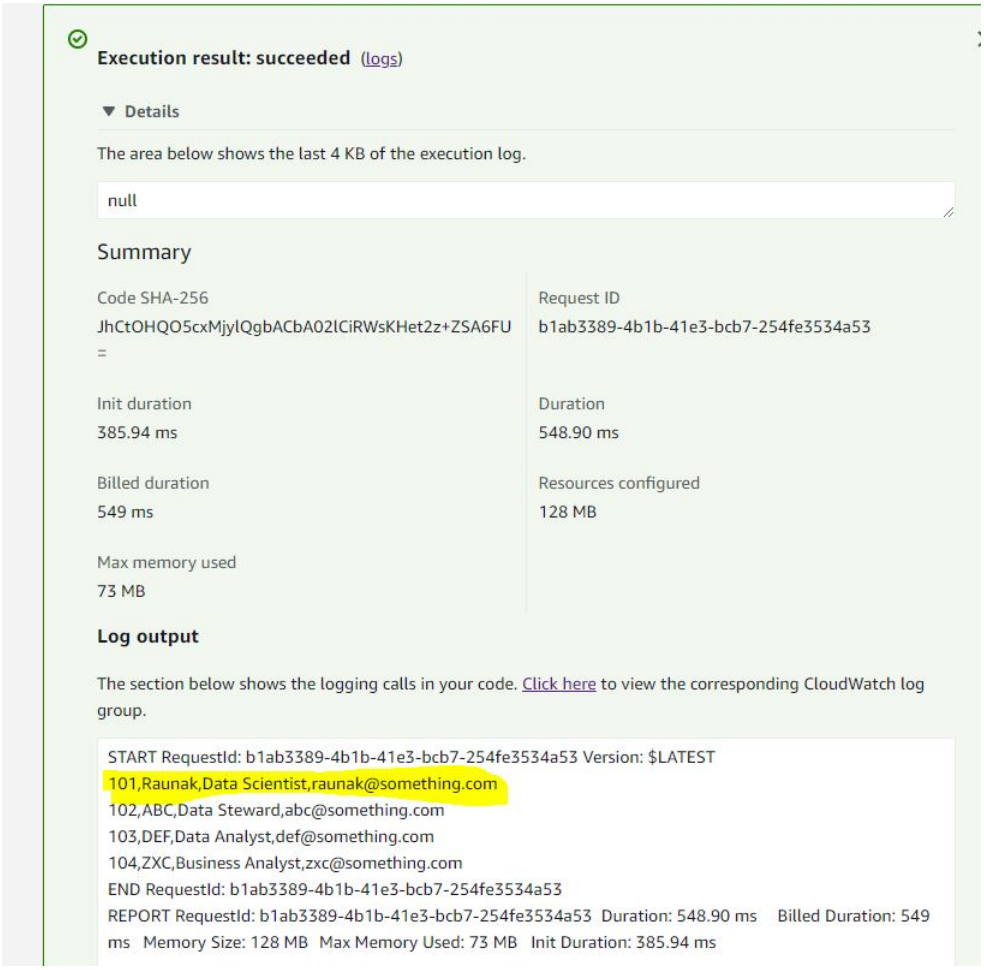

Figure 15: Successful execution of the test that was created

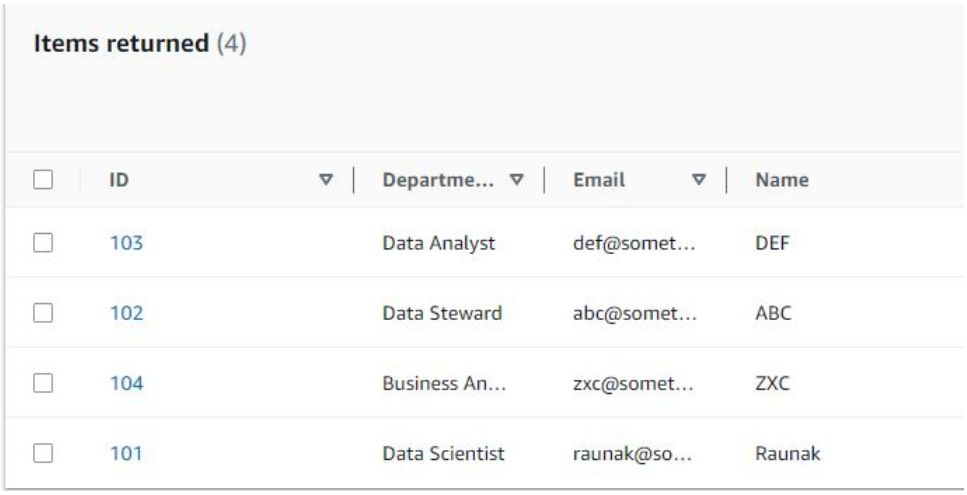

Figure 16: Successful addition of the records

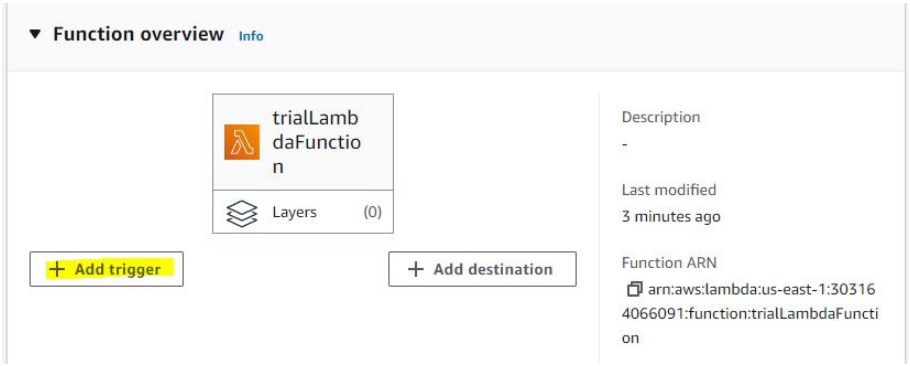

Figure 17: Adding the triggers for function

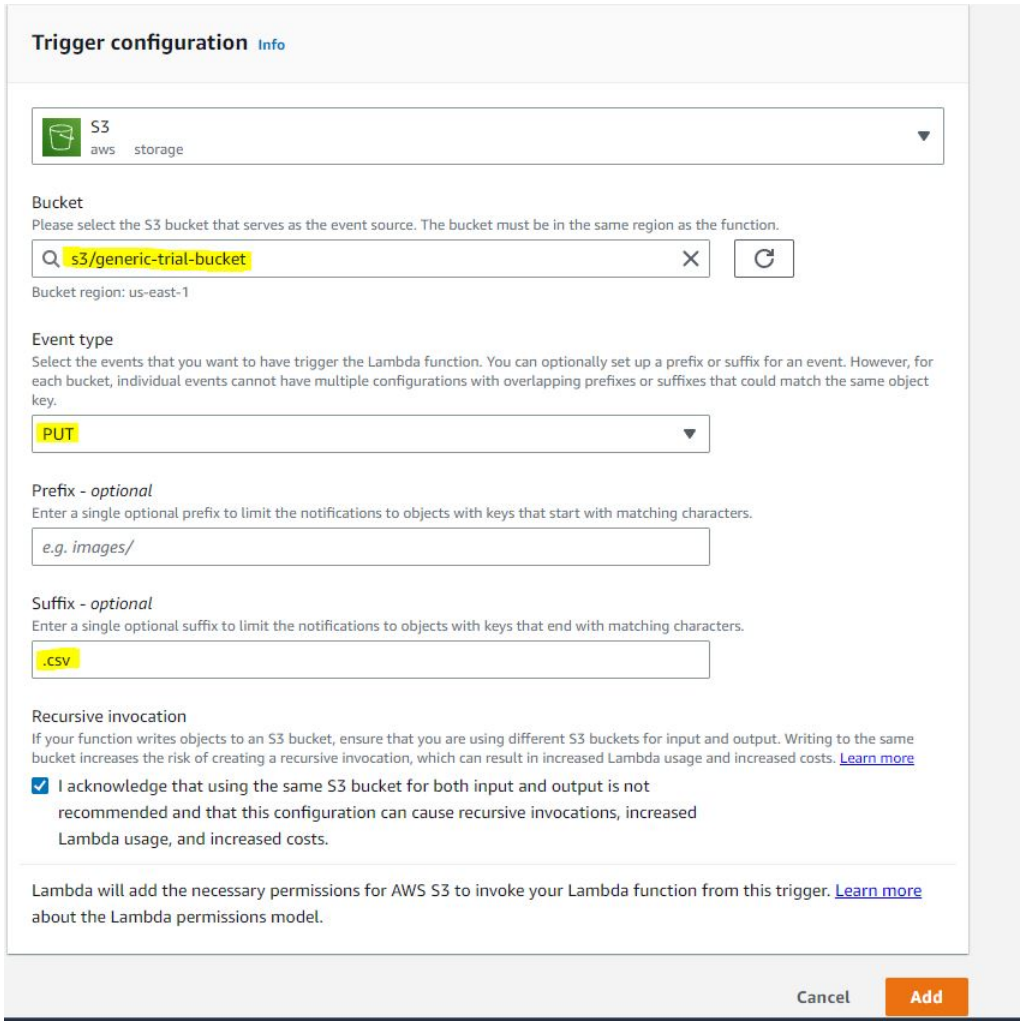

Figure 18: Follow the respective information for triggers related to S3

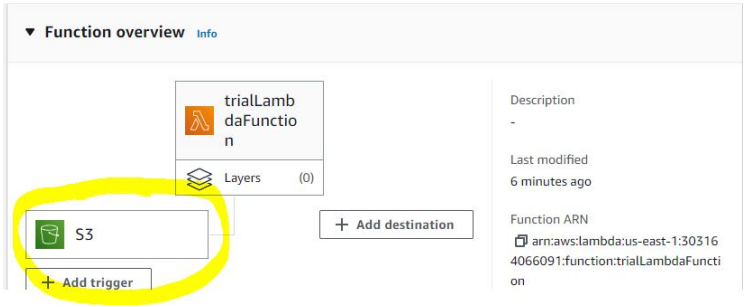

Figure 19: Successful addition of the trigger for function

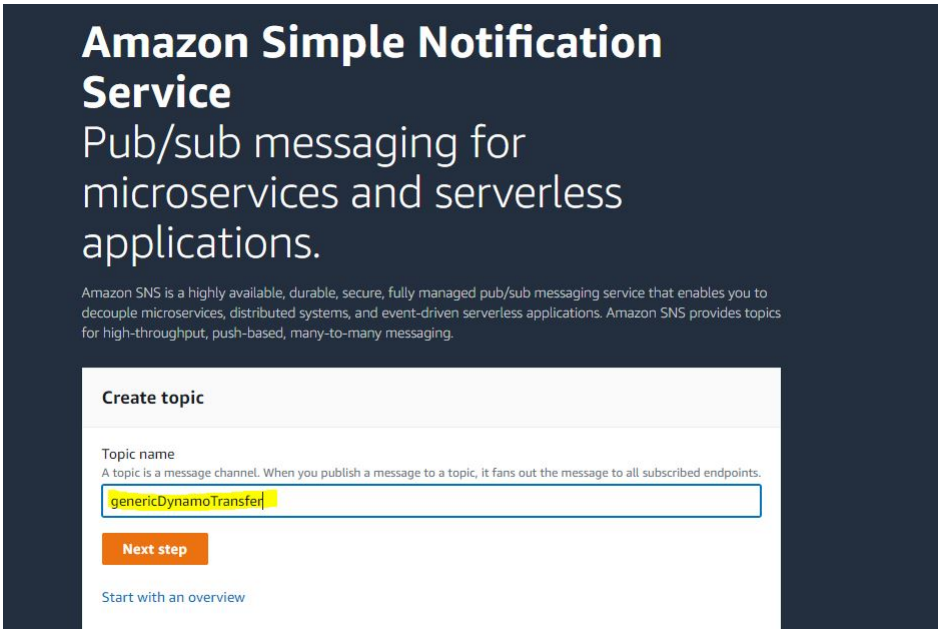

Figure 20: Create the AWS SNS service by the name of your choice

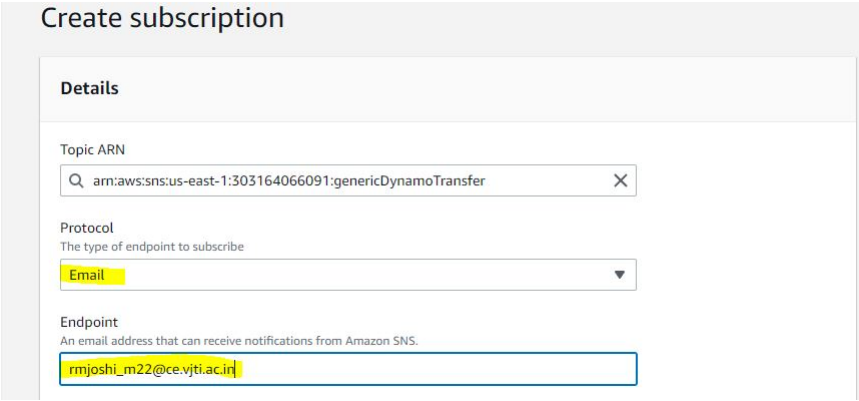

Figure 21: Create the subscription

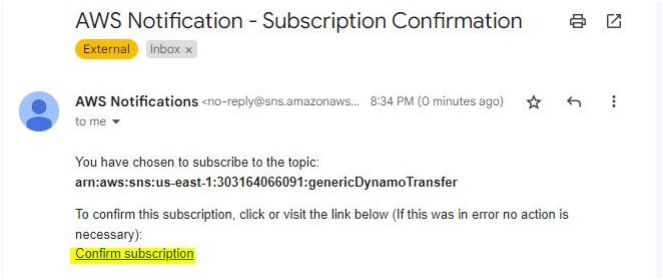

Figure 22: Confirm the email notification

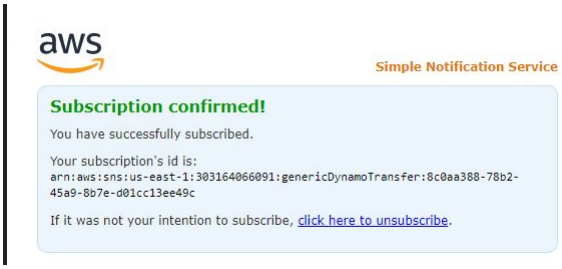

Figure 23: Successful acceptance of subscription

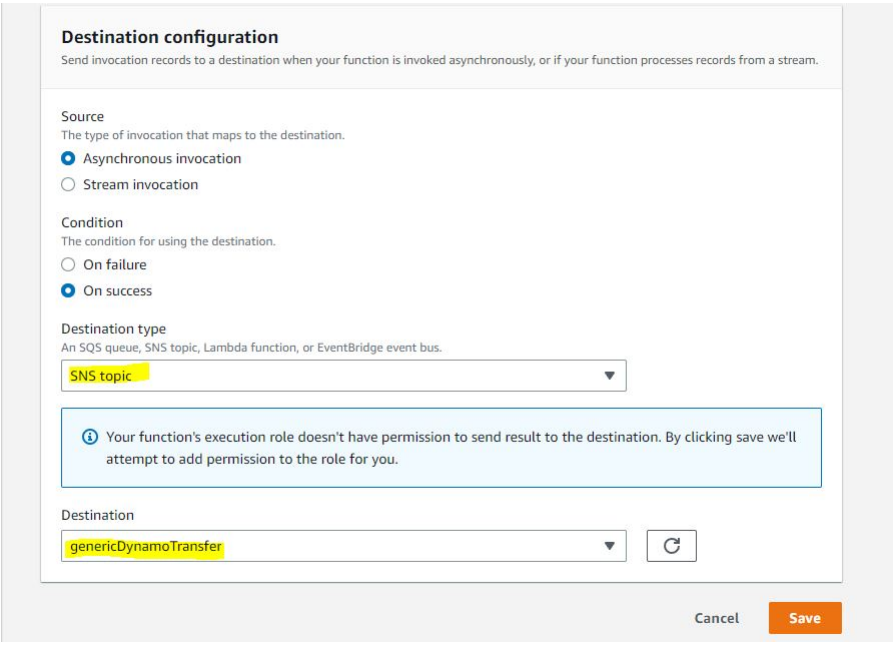

Figure 24: Change the configuration for the lambda service for SNS

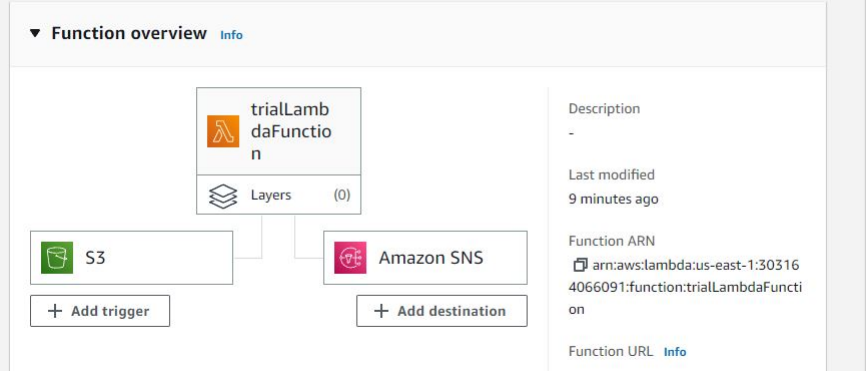

Figure 25: Successful addition of the SNS service for Lambda function

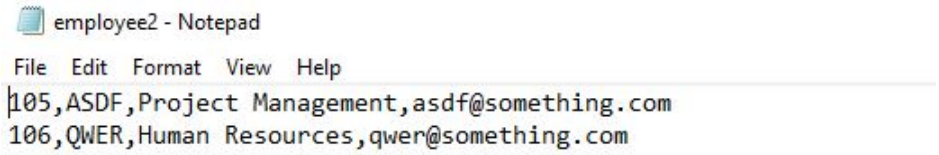

Figure 26: Create one more employee file with more records and upload to S3 bucket

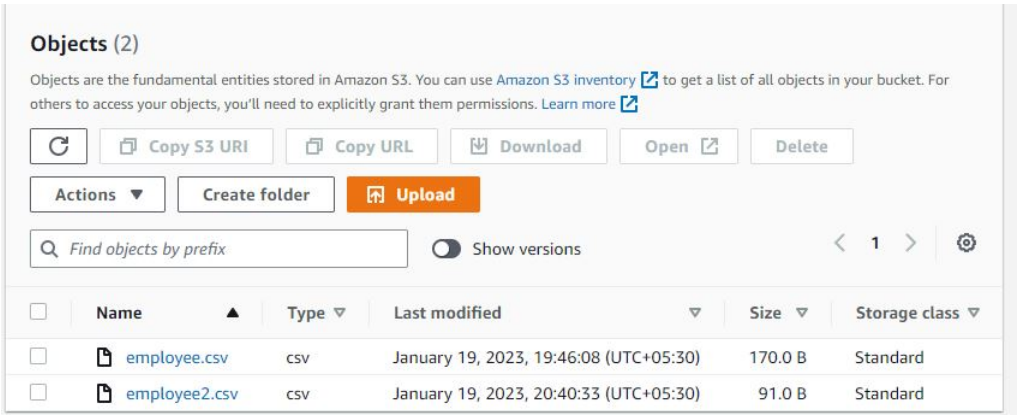

Figure 27: Successful uploading the newly created CSV in the bucket

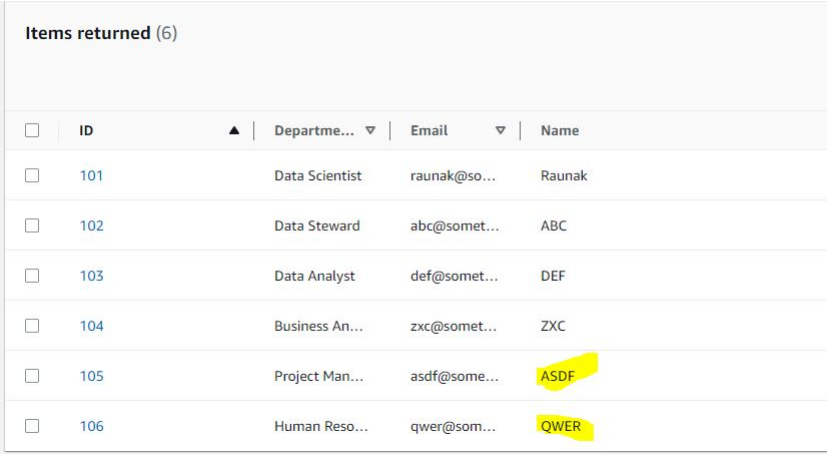

Figure 28: After running the test again successful you can see addition of newly created records

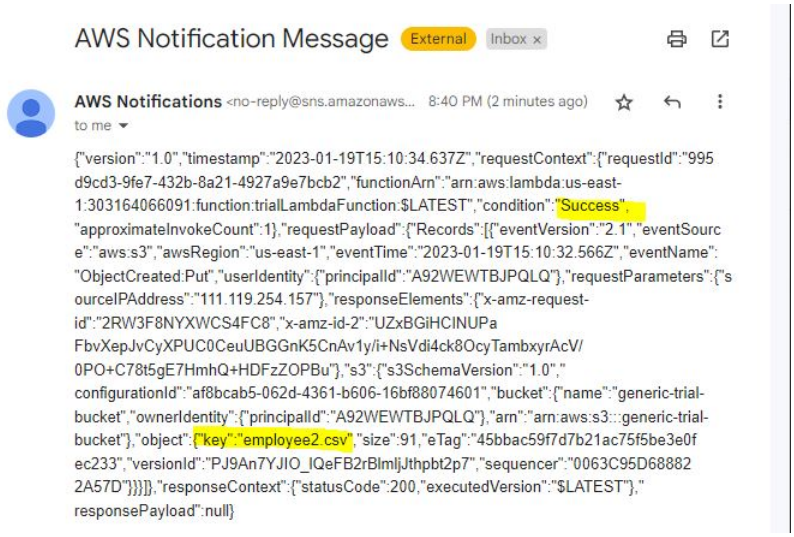

Figure 29: Success email retrieval using SNS is also successful

Conclusion

This experiment is successful demonstration of the AWS Lambda service that considers the content from the AWS S3 bucket and uses for adding the data in the AWS DynamoDB Table. The Lambda basically acts as the server that executes the following service and creates a serverless application. Along with all the said, execution of the AWS SNS is also used that retrieves the success message on successful execution of every service call. The execution of the all the process has been successfully shown in the results section of this experiment respectively.