COS20019 – CLOUD COMPUTING ARCHITECTURE

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ACA MODULE 13 CHALLENGE LAB

IMPLEMENTING A SERVERLESS ARCHITECTURE FOR THE CAFÉ

In this challenging lab, I implemented a serverless architecture to automatically generate the sales daily reports for a café shop. This lab will need the knowledge of Lambda function and SNS service.

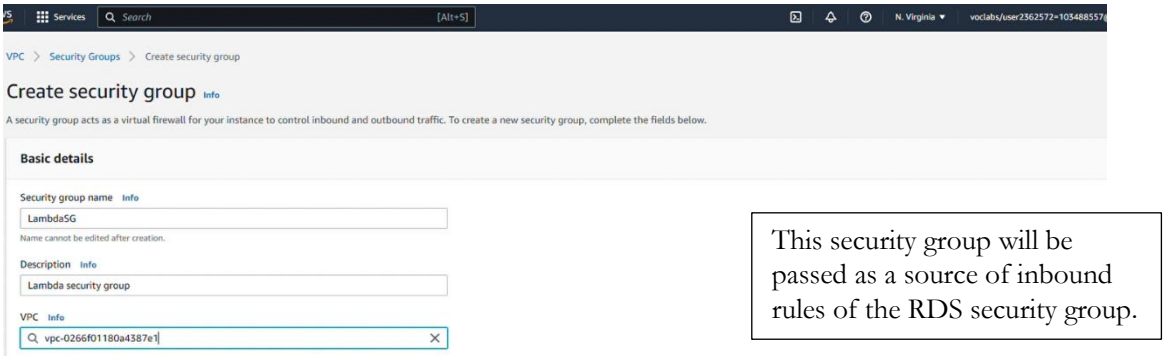
Task 1: Downloading the source code

This task only provides me with some Python source code for the Lambda function I will create in the next steps. Therefore, there is no configuration required here.

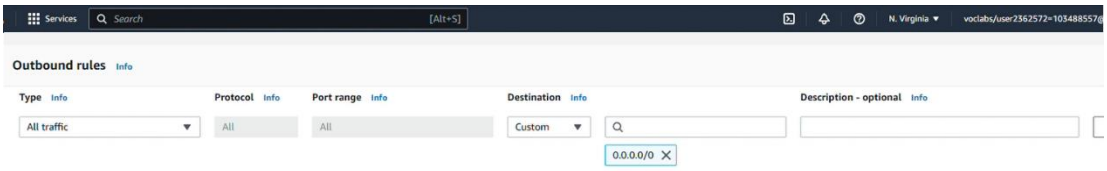
Task 2: Creating the DataExtractor Lambda function in the VPC

Create a security group for the Lambda function

At the beginning of the Lambda configuration stage, I need to create a **Lambda function** which could **extract data** from the RDS database. Therefore, a security group with rules to activate the connection between the RDS and the Lambda function is necessary.

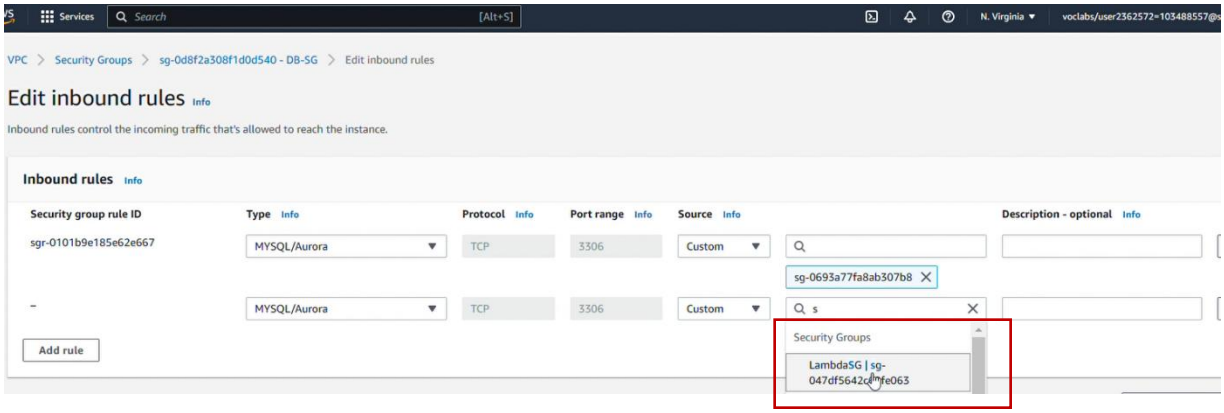


This security group will be passed as a source of inbound rules of the RDS security group.



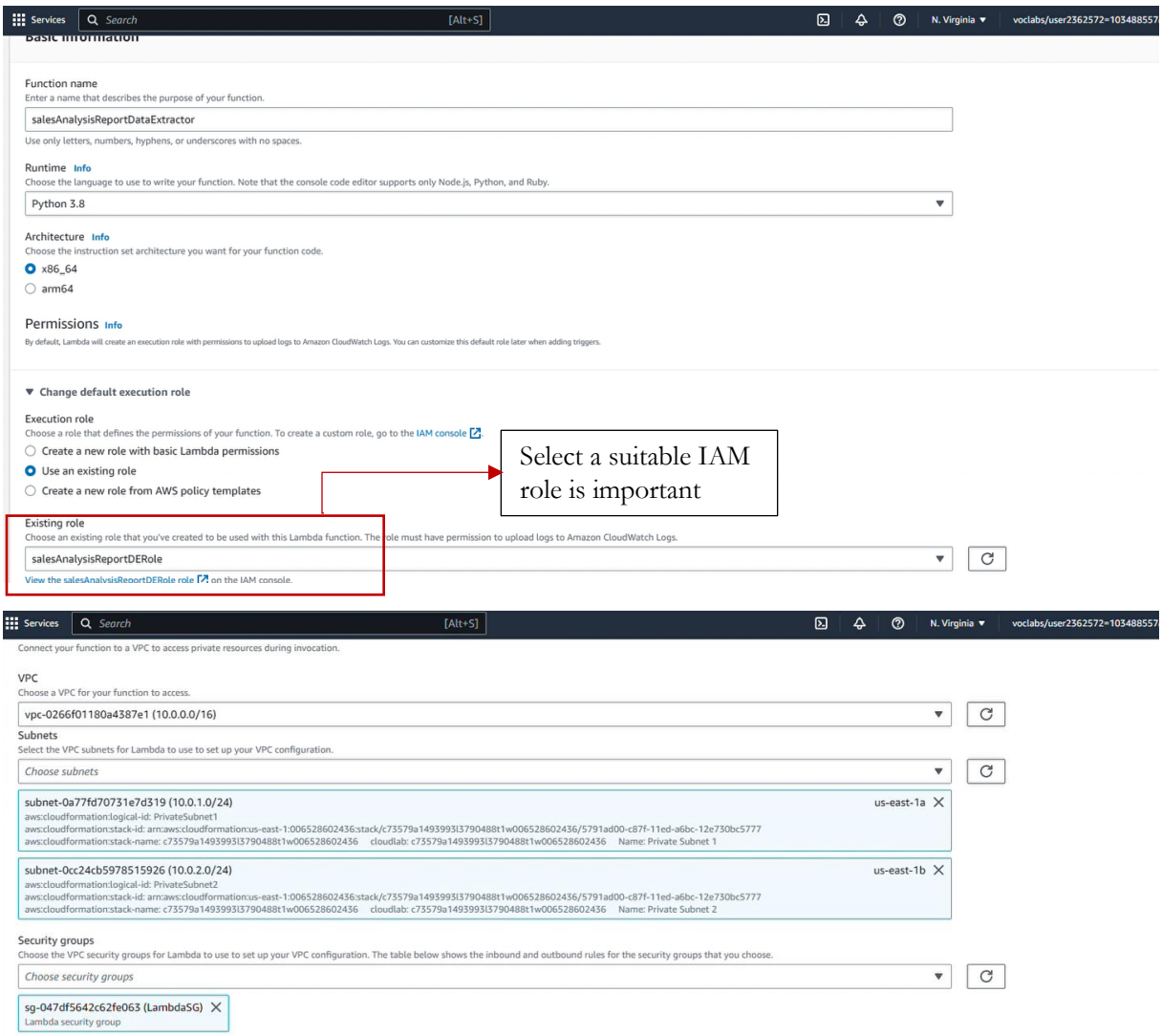
Update the DatabaseSG security group

Next, I also need to configure the RDS security group to establish the connection. I added a new **MySQL/Aurora** rule and defined the traffic source of this rule as the Lambda security group.

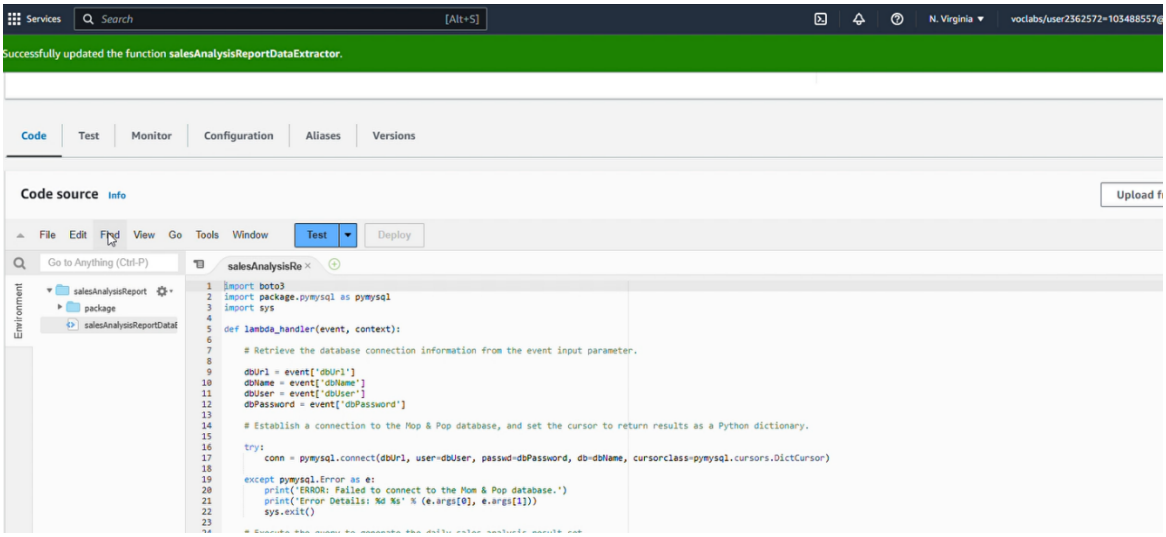


Create a DataExtractor Lambda function

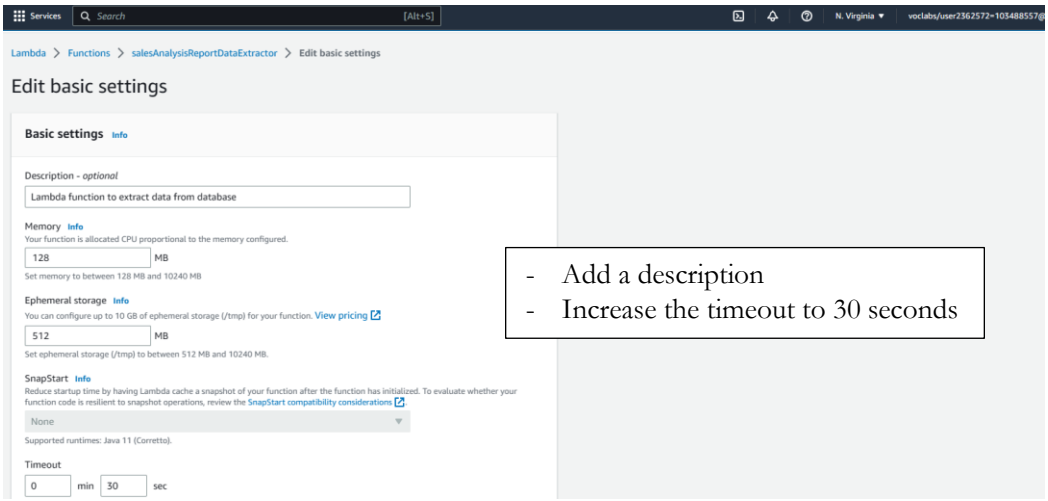
This Lambda will be used to extract data from the RDS database. The below Lambda function configurations followed the instructions (correct VPC, Security groups, IAM role, and subnets).



When the Lambda function is created, I uploaded the downloaded **zip package** to the **Code tab**.

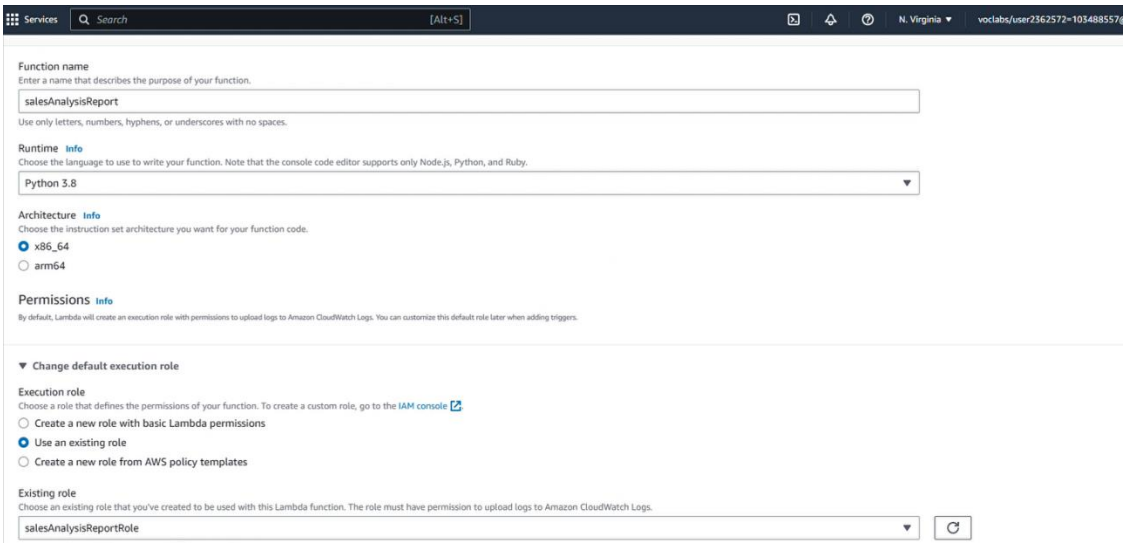


I also modified the handler and other general information of this Lambda function.

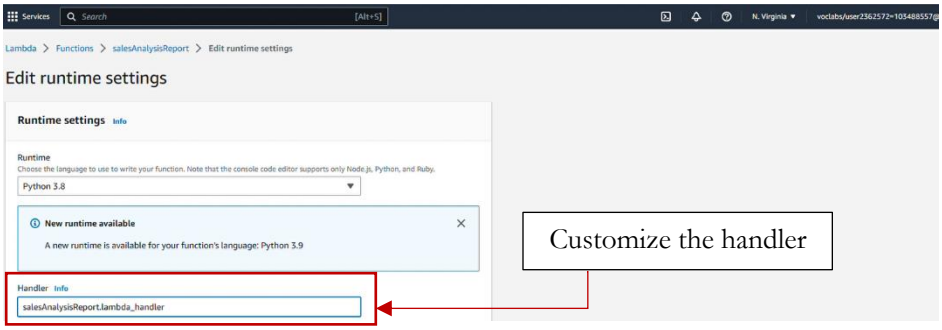


Task 3: Creating the salesAnalysisReport Lambda function

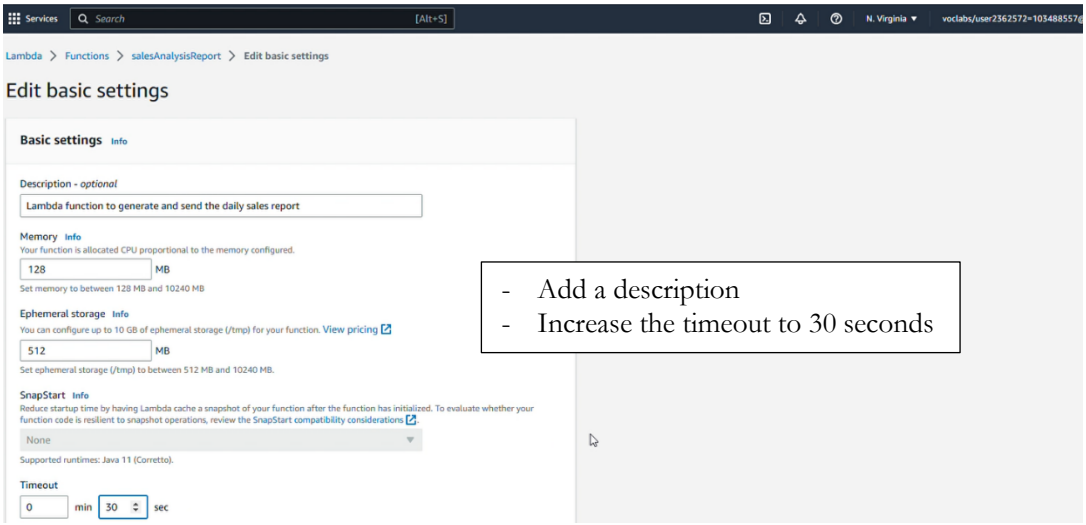
I created another Lambda function to automate the process of generating and sending daily sales reports. Most configurations of the current Lambda and the previous Lambda were the same. However, this Lambda function was not attached to a VPC, and it uses another IAM role.



I modified the handler of this function



The general information of the 2 functions was identical.

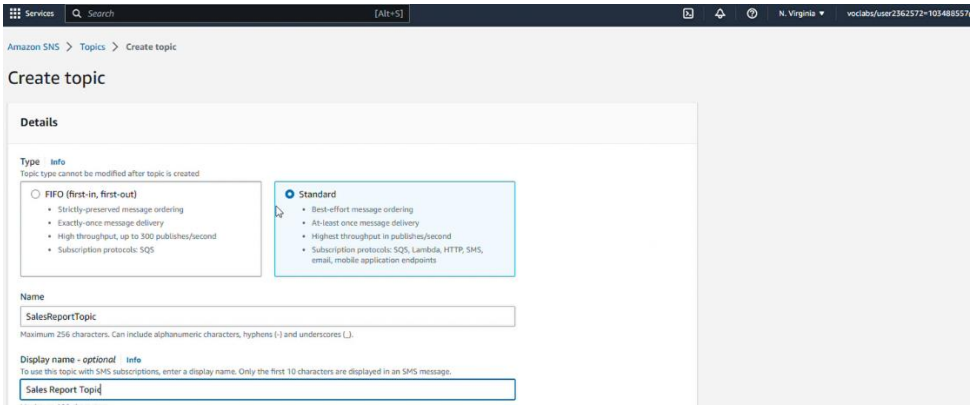


Task 4: Creating an SNS topic

Create a SNS topic

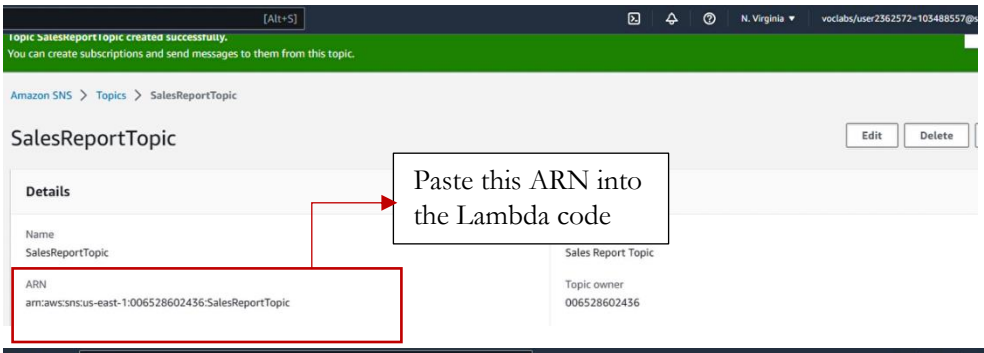
Tasks 4 and 5 will focus on using the **SNS service** to send the daily reports via email to the café managers. First, I created an **SNS topic** and added the topic ARN to the **salesAnalysisReport** Lambda function.

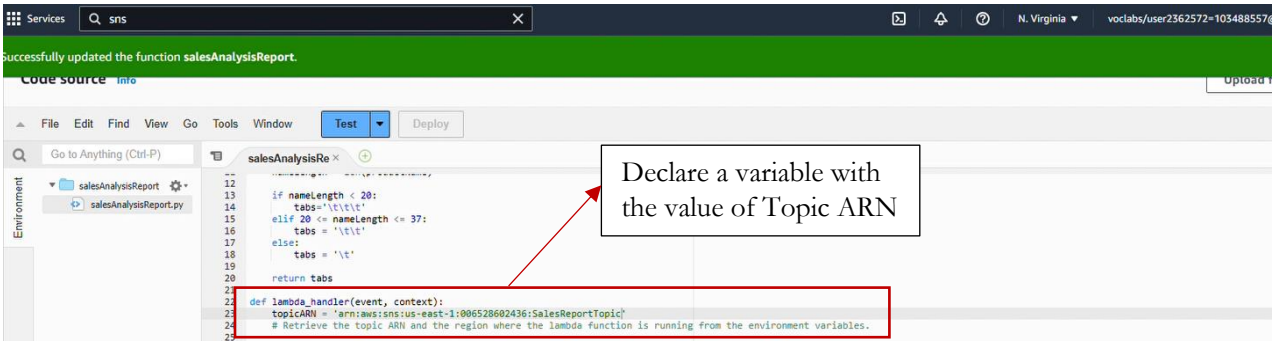
Access the **SNS** service → fill in the **Topic name** → **Next Step**. The topic configurations will be shown below.



Update the salesAnalysisReport Lambda function

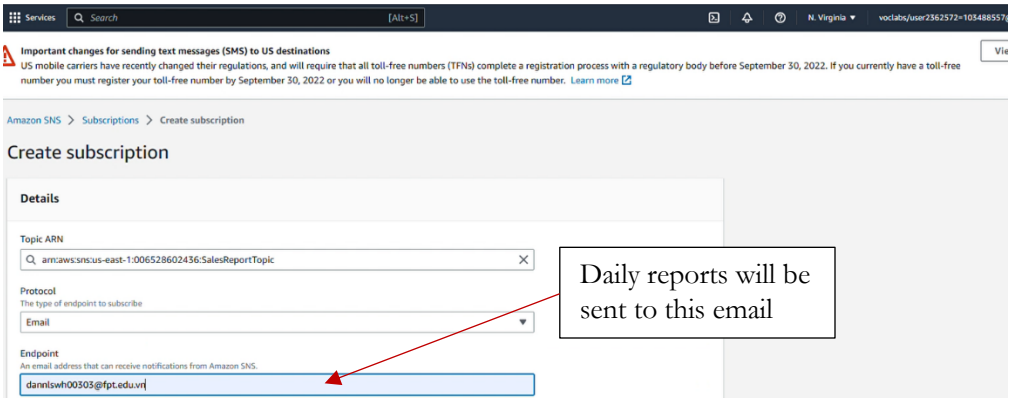
After the SNS topic had been created, I copied the **Topic ARN** and passed it into the Lambda function as a variable.



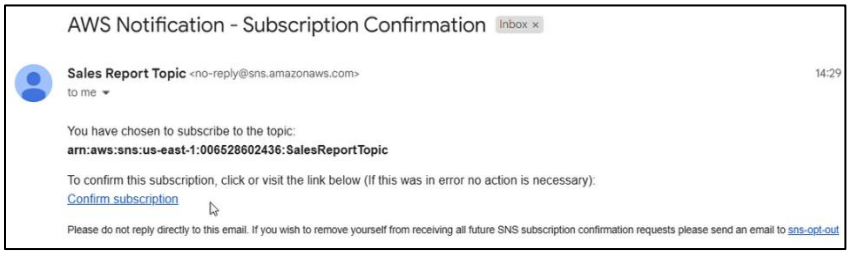


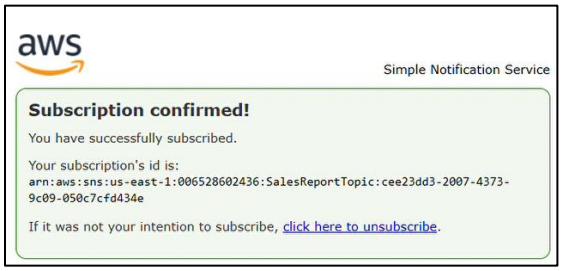
Task 5: Creating an email subscription to the SNS topic

Besides the Topic, I also need to create an **SNS subscription** to receive the daily reports via email.



I had to confirm the subscription to activate it.

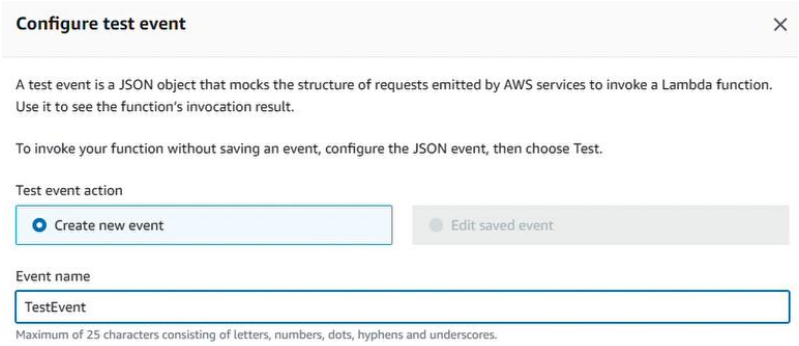




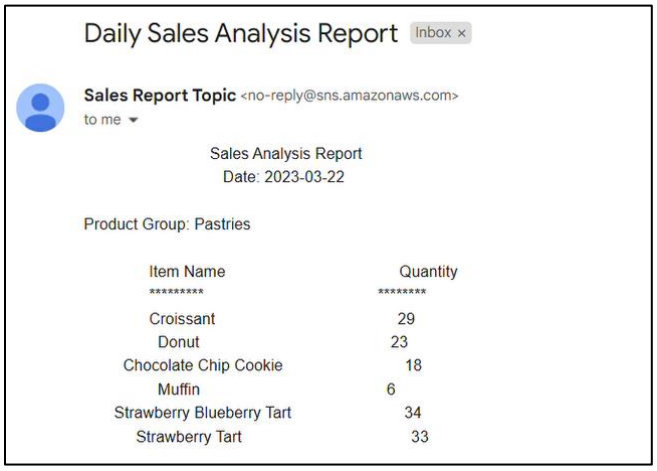
Task 6: Testing the salesAnalysisReport Lambda function

After setting up all necessary things, I run a test to check whether my Lambda function and SNS configurations work correctly.

On the **Code tab** of the function → click on the button **Test** → **Configure test event**. Enter the **test event name** and leave the remaining part by default.



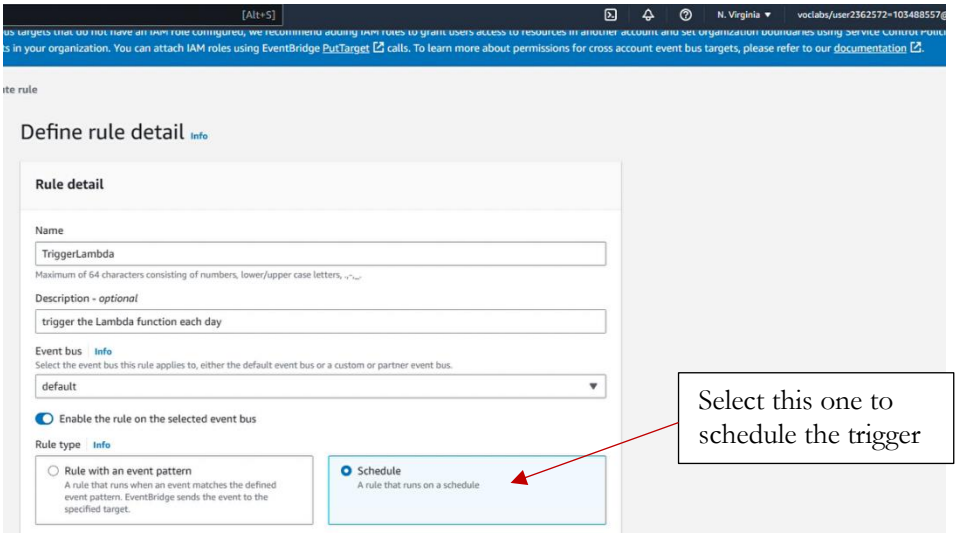
When I run the test, if my configurations are correct, I will receive a daily report via the email I specified on the Subscription setup page.

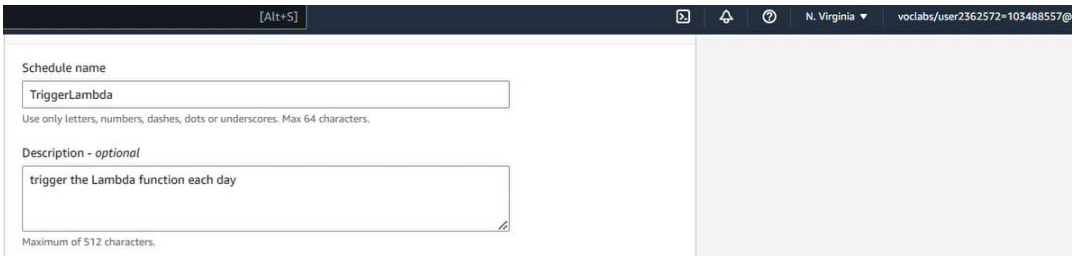


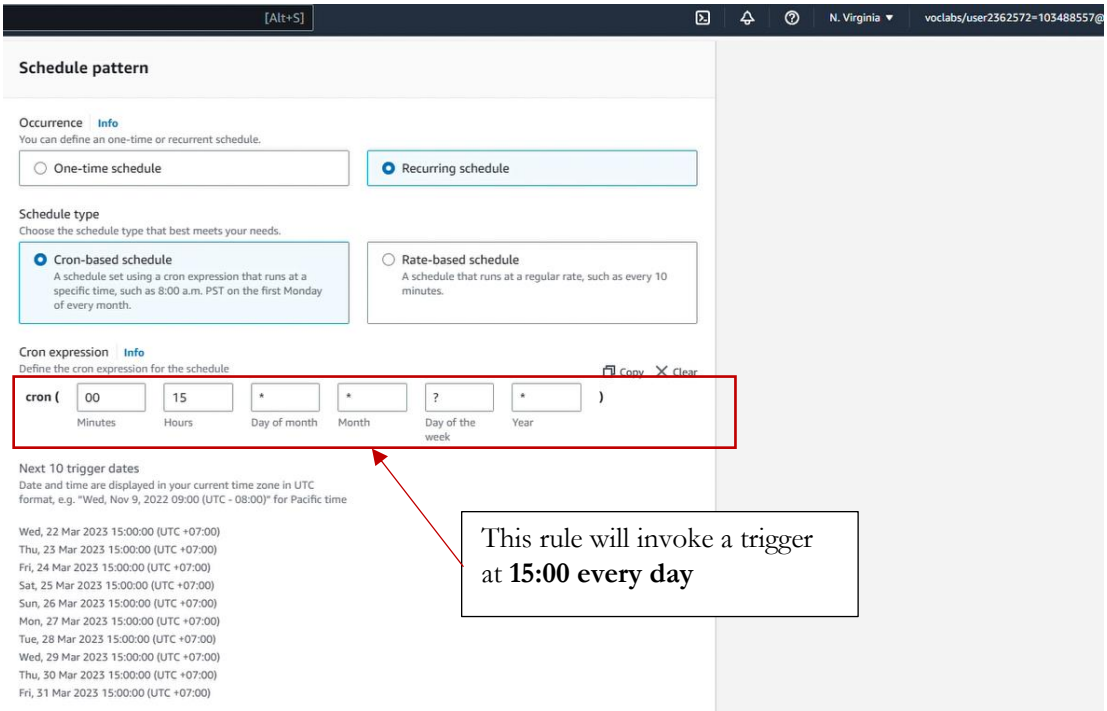
Task 7: Setting up an Amazon EventBridge event to trigger the Lambda function each day

The last issue of the café shop that I need to solve in this lab is setting up a trigger to send the daily reports via email every day without human intervention.

Access the **EventBridge** service → select **EventBridge rule** → **Create rule**






[Alt+S]
N. Virginia
voclabs/user2362572=103488557@
Schedule pattern
Occurrence Info
You can define an one-time or recurrent schedule.
One-time schedule
Recurring schedule
Schedule type
Choose the schedule type that best meets your needs.
Cron-based schedule
A schedule set using a cron expression that runs at a specific time, such as 8:00 a.m. PST on the first Monday of every month.
Rate-based schedule
A schedule that runs at a regular rate, such as every 10 minutes.
Cron expression Info
Define the cron expression for the schedule
Copy
Clear
cron (00 15 * * ? *)
Minutes
Hours
Day of month
Month
Day of the week
Year
Next 10 trigger dates
Date and time are displayed in your current time zone in UTC format, e.g. "Wed, Nov 9, 2022 09:00 (UTC - 08:00)" for Pacific time
Wed, 22 Mar 2023 15:00:00 (UTC +07:00)
Thu, 23 Mar 2023 15:00:00 (UTC +07:00)
Fri, 24 Mar 2023 15:00:00 (UTC +07:00)
Sat, 25 Mar 2023 15:00:00 (UTC +07:00)
Sun, 26 Mar 2023 15:00:00 (UTC +07:00)
Mon, 27 Mar 2023 15:00:00 (UTC +07:00)
Tue, 28 Mar 2023 15:00:00 (UTC +07:00)
Wed, 29 Mar 2023 15:00:00 (UTC +07:00)
Thu, 30 Mar 2023 15:00:00 (UTC +07:00)
Fri, 31 Mar 2023 15:00:00 (UTC +07:00)
This rule will invoke a trigger at **15:00 every day**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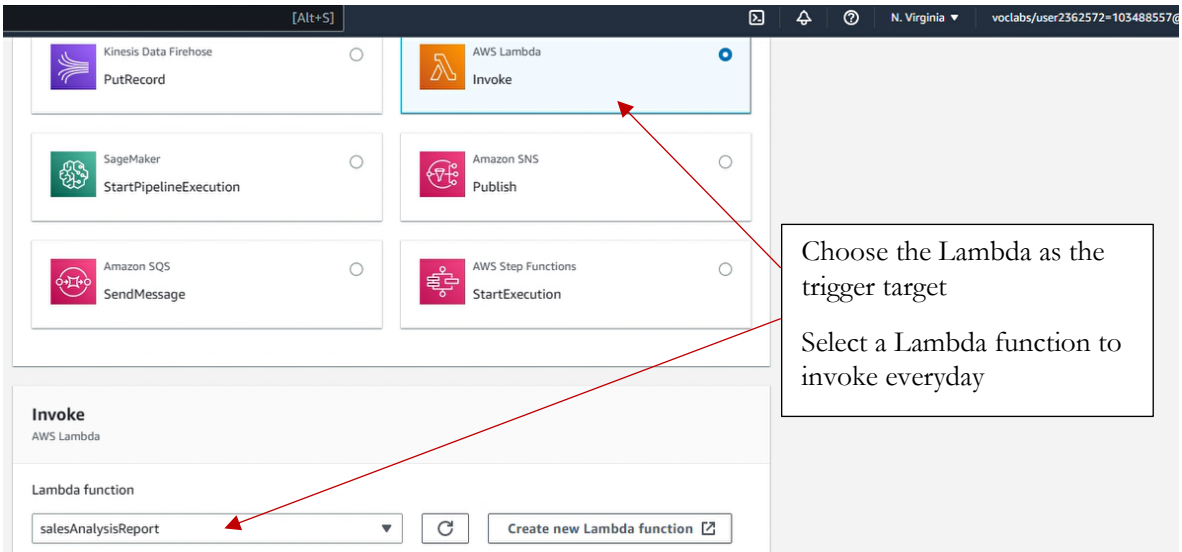
voclabs/user2362572=103488557@
Timezone - *optional*
The timezone for the schedule.
(UTC +07:00) Asia/Bangkok
Start date and time - *optional*
The start date and time of the schedule.
2023/03/22
YYYY/MM/DD
hh:mm
Use 24-hour format timestamp (hh:mm)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voclabs/user2362572=103488557@
Kinesis Data Firehose
PutRecord
AWS Lambda
Invoke
SageMaker
StartPipelineExecution
Amazon SNS
Publish
Amazon SQS
SendMessage
AWS Step Functions
StartExecution
Invoke
AWS Lambda
Lambda function
salesAnalysisReport
Create new Lambda function
Choose the Lambda as the trigger target
Select a Lambda function to invoke everyday