

**School of Computer Science, Engineering and Applications(SCSEA)
B.C.A. TY (CCSA)
Subject : Advanced Cloud Computing (P)**

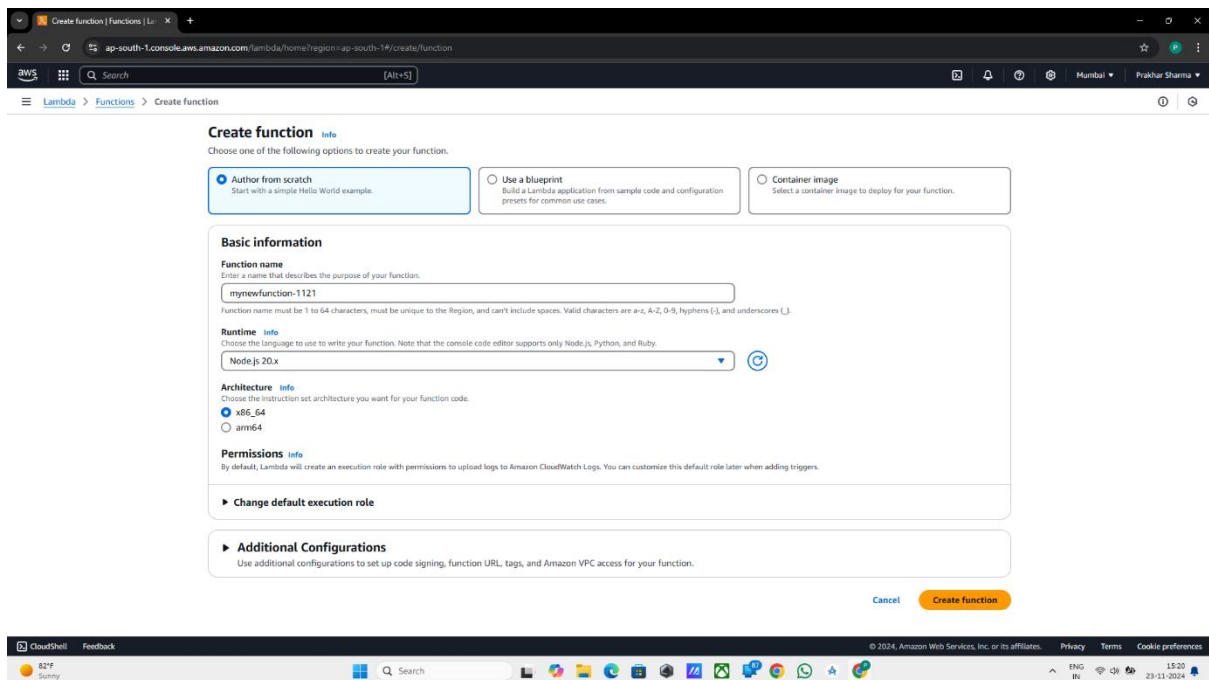
Name of the Student: **Prakhar Anil Sharma**

PRN: 20220801121

Title of Practical : **Configuring a Cloud Watch Alarm for Lambda
Invocation Errors with SNS Notifications**

Step 1: Create a Lambda Function

- Go to the Lambda Service in the AWS Management Console.
- Click Create Function.
- Select Author from Scratch.
- Enter a function name.
- Set the runtime to Node.js 20.
- Click Create Function to finish.



The screenshot shows the AWS Lambda 'Create function' page. The 'Author from scratch' option is selected. The function name is 'mynewfunction-1121'. The runtime is set to 'Node.js 20.x' and the architecture is 'x86_64'. The page includes sections for 'Permissions' and 'Additional Configurations'.

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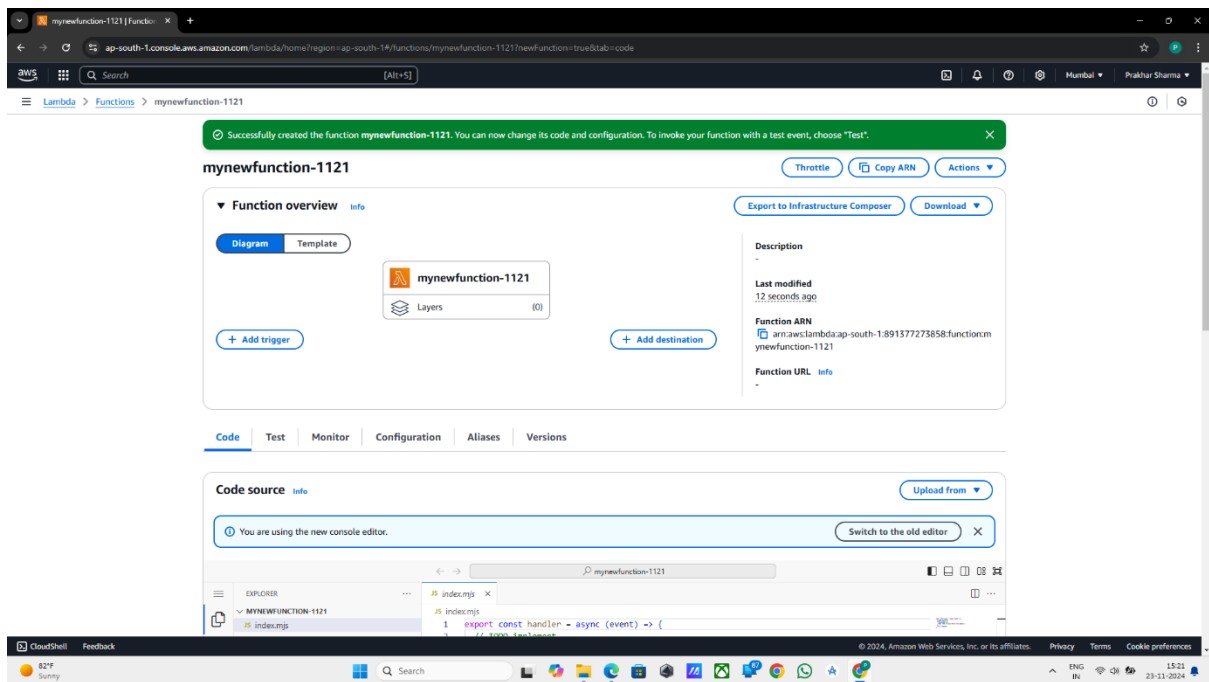
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Step 2: Monitor Lambda Metrics

- After the function is created, navigate to your Lambda function.
- Select the Monitor tab, then click on the Metrics sub-tab.
- You will see metrics like Error Count and Success Rate (%).
- These metrics will allow us to set up an alarm that triggers when the error count exceeds a certain threshold.

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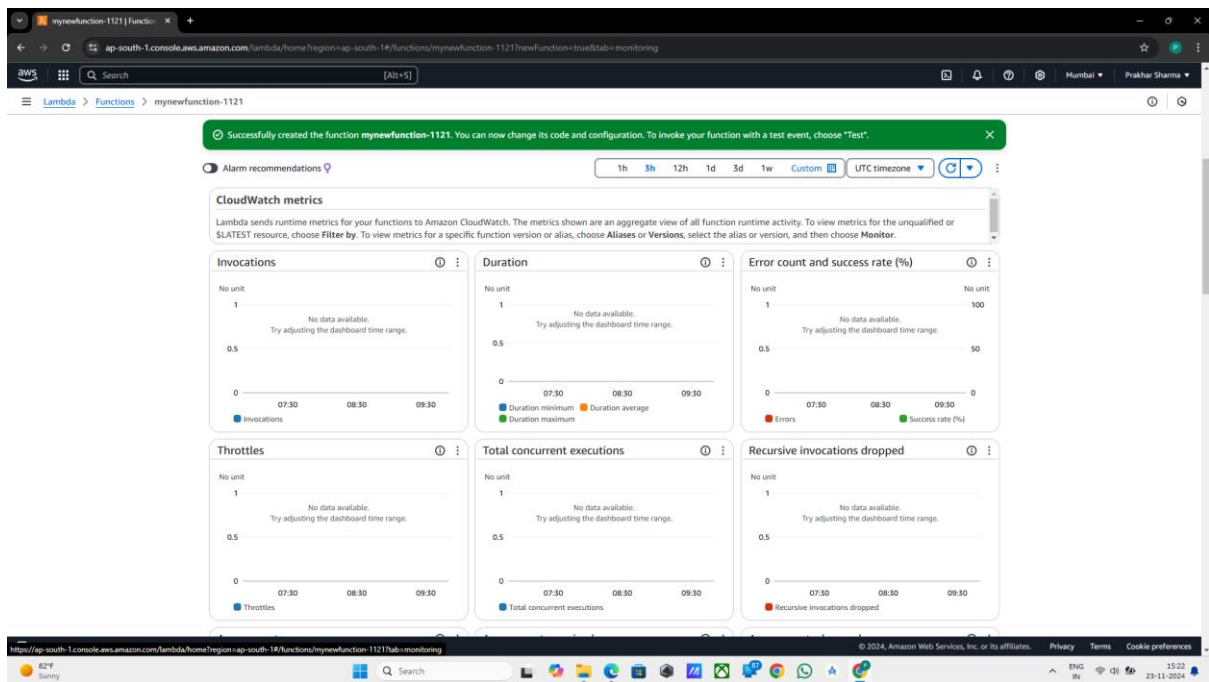
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Step 3: Create an SNS Topic for Notifications

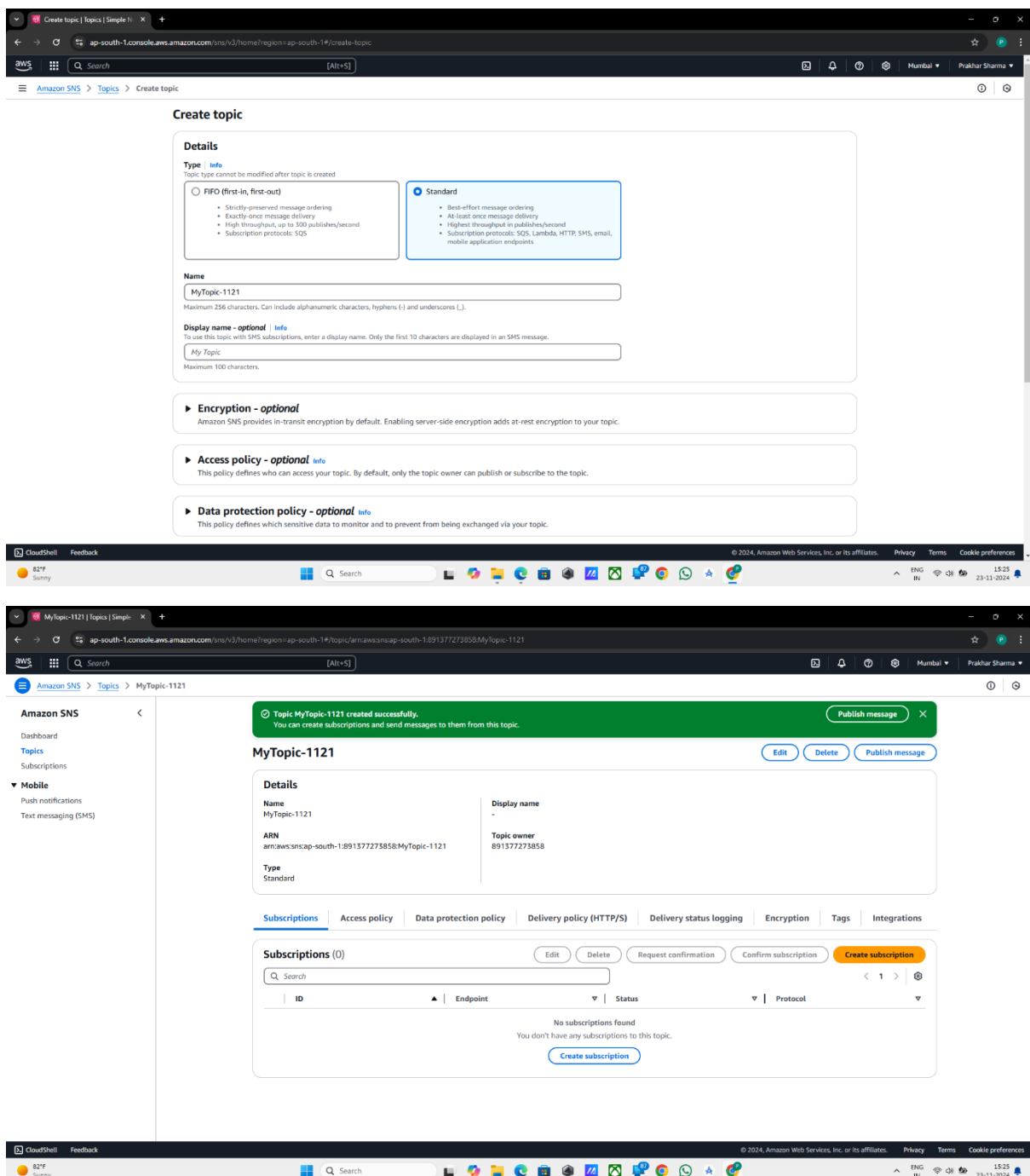
- Navigate to the Simple Notification Service (SNS) in the AWS console.
- In the left panel, click Topics.
- Click Create Topic.
- Select Standard as the type of the topic.
- Enter a name for the topic.
- Click Create Topic.

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The screenshot displays the AWS Management Console interface. The top section shows the 'Create topic' page for 'MyTopic-1121'. The 'Details' section is expanded, showing the 'Type' as 'Standard' (selected) and 'Name' as 'MyTopic-1121'. Below this, there are sections for 'Encryption - optional', 'Access policy - optional', and 'Data protection policy - optional'. The bottom section shows the 'MyTopic-1121' configuration page, which includes a green success message 'Topic MyTopic-1121 created successfully.' and a table for 'Subscriptions (0)'. The table has columns for ID, Endpoint, Status, and Protocol. A 'Create subscription' button is visible at the bottom of the table.

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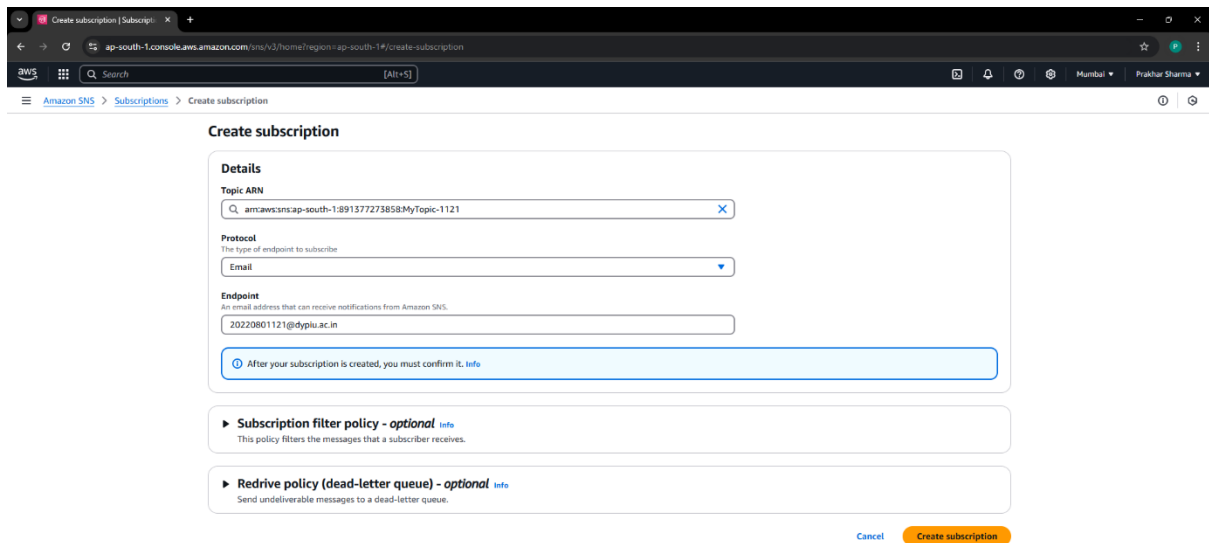
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Step 4: Subscribe to the SNS Topic

- After the topic is created, go to the Subscriptions tab for that topic.
- Click Create Subscription.
- In the Create Subscription section:
 - ❖ Select Email as the protocol.
 - ❖ Enter your email address where you want to receive notifications.
- Click Create Subscription.



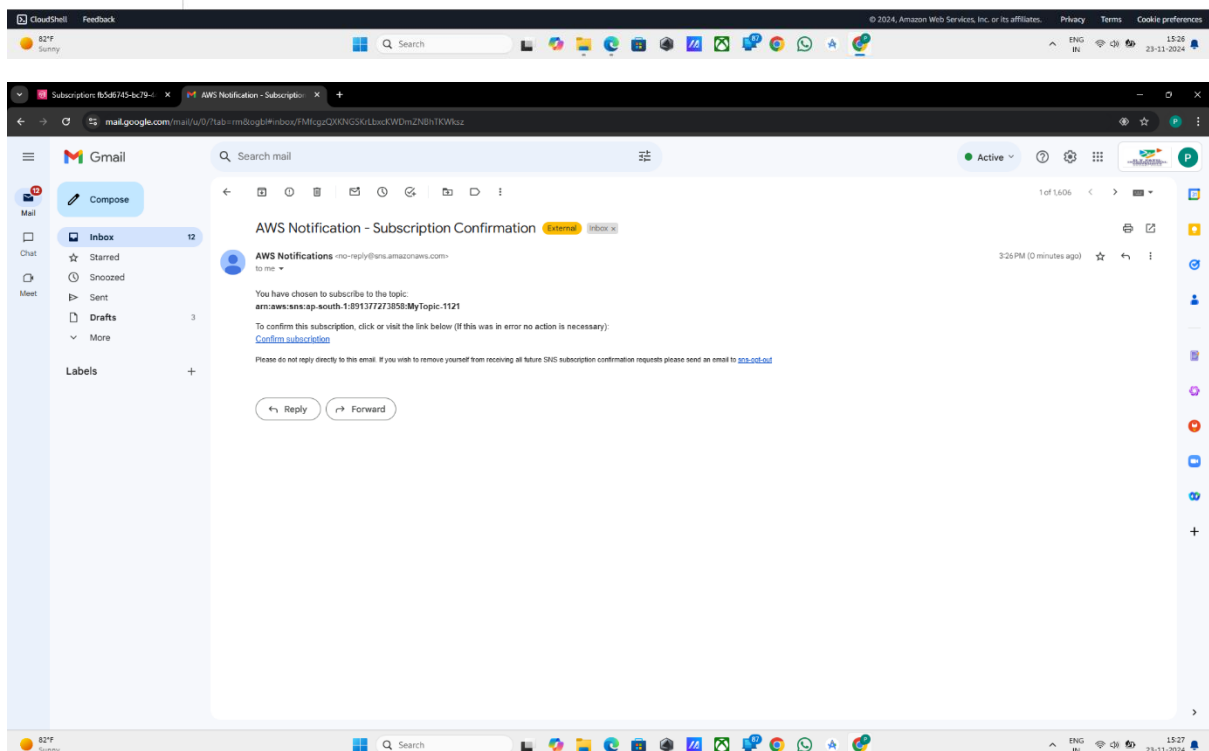
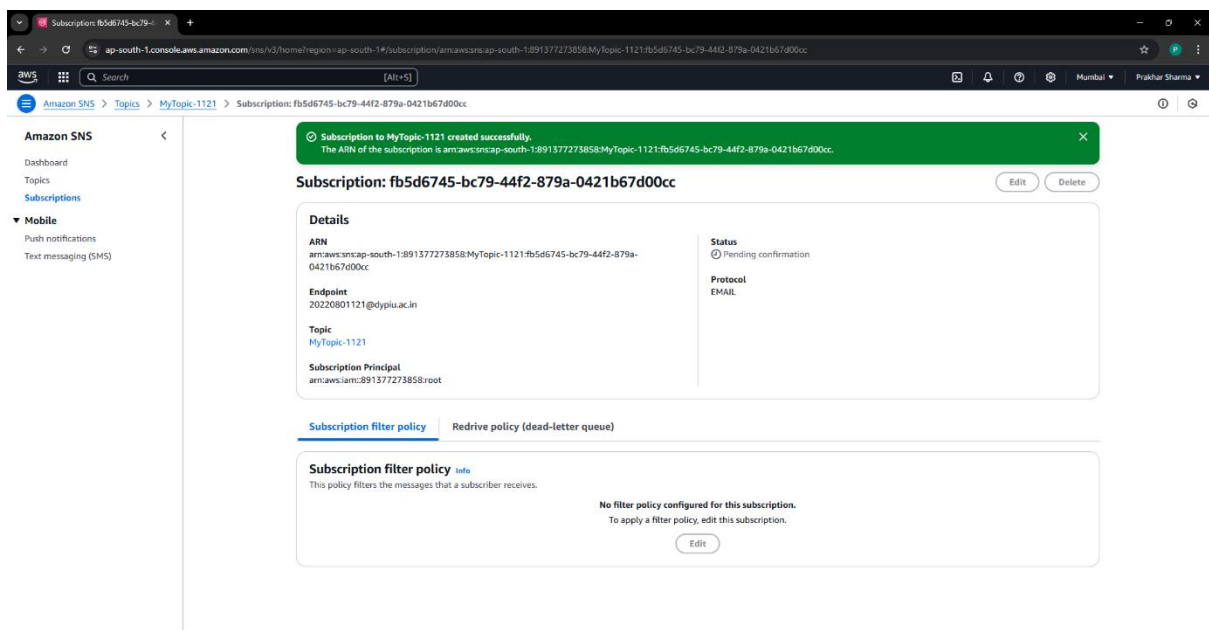
- ❖ The status of the subscription will be Pending. Go to your email and confirm the subscription.

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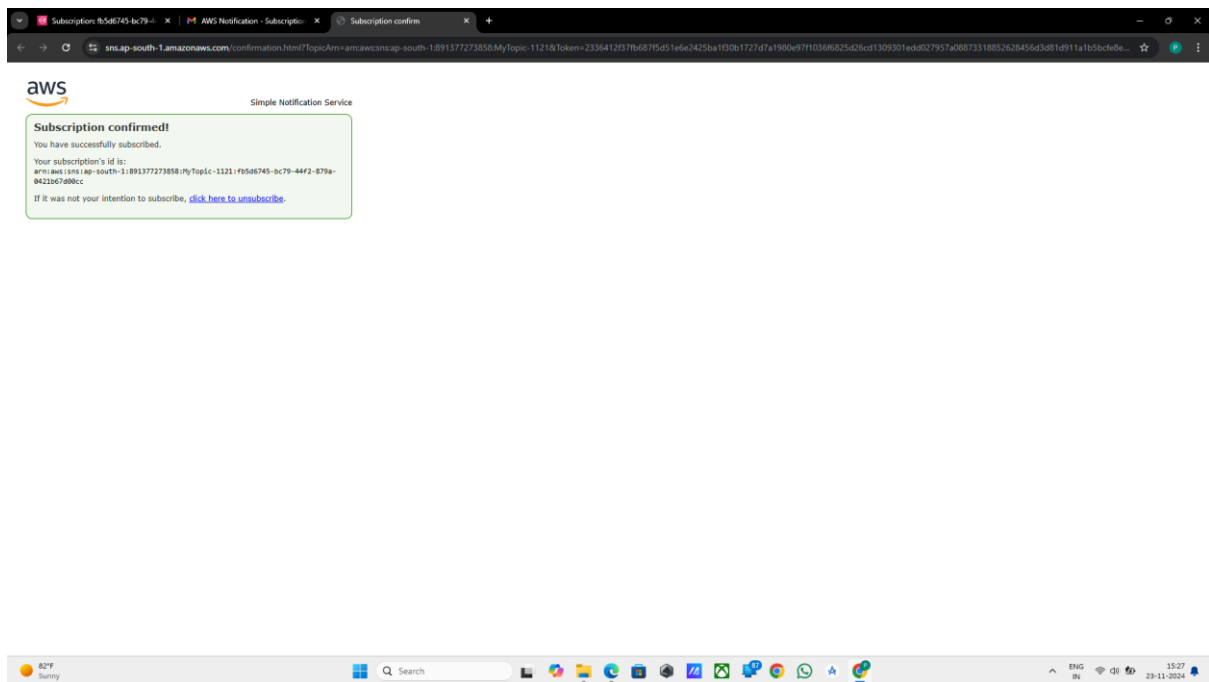
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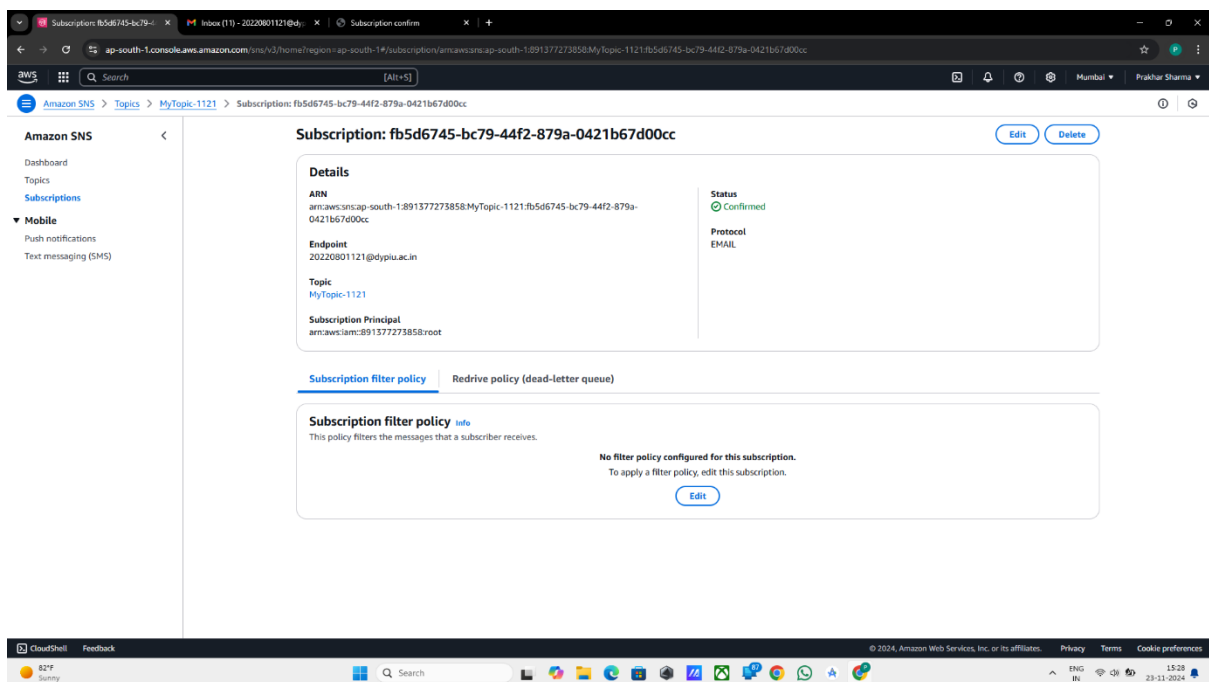
❖ After confirmation, the status will change to Confirmed.

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Step 5: Test the Lambda Function

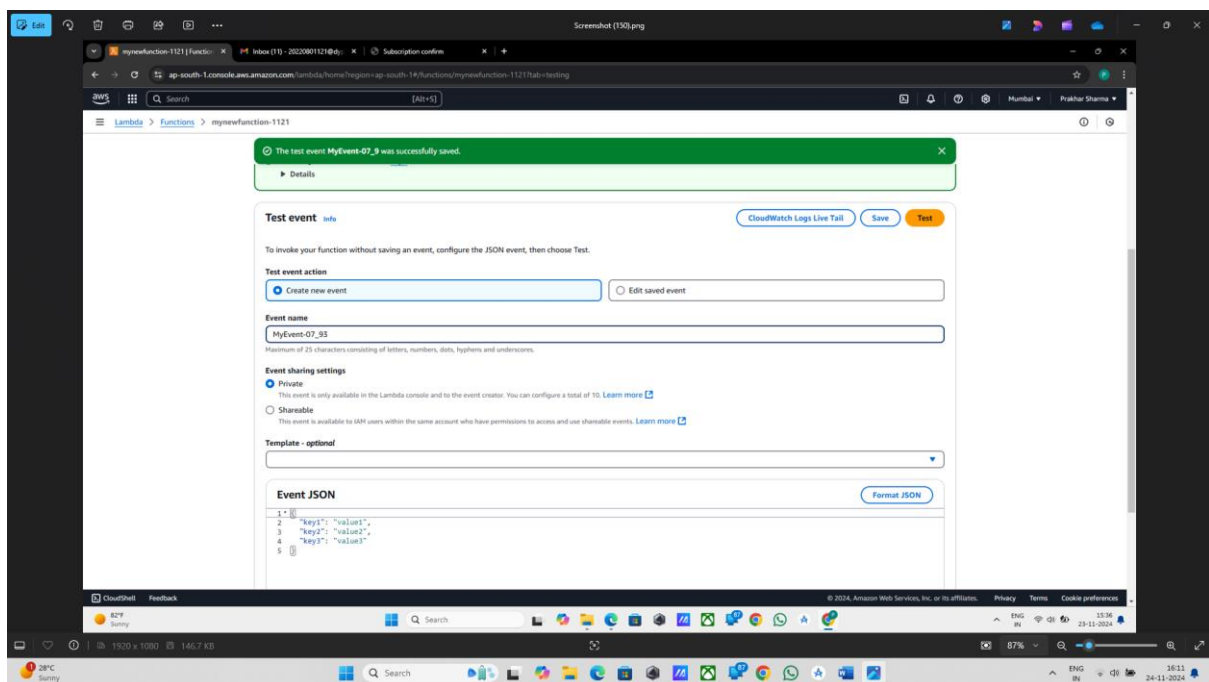
- Return to your Lambda function, and go to the Code tab.
- Click the dropdown next to the Test button, then select Configure Test Event.
- ❖ Enter an event name.
- ❖ Click Save.

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o Now, click Test to execute your Lambda function.

o Note: The error metrics may take some time to reflect in the Monitor tab.

Step 6: Create a CloudWatch Alarm

- Go to the CloudWatch service in the AWS console.
- Click Create Alarm.
- Click Select Metrics.
- In the Metrics section, select Lambda Metrics.
- Choose the By Function Name option.
- Select your Lambda function, and choose the Errors metric.
- Click Select Metric.
- In the Specify Metric and Conditions section:
 - In the Statistics field, change the default Average to Maximum.

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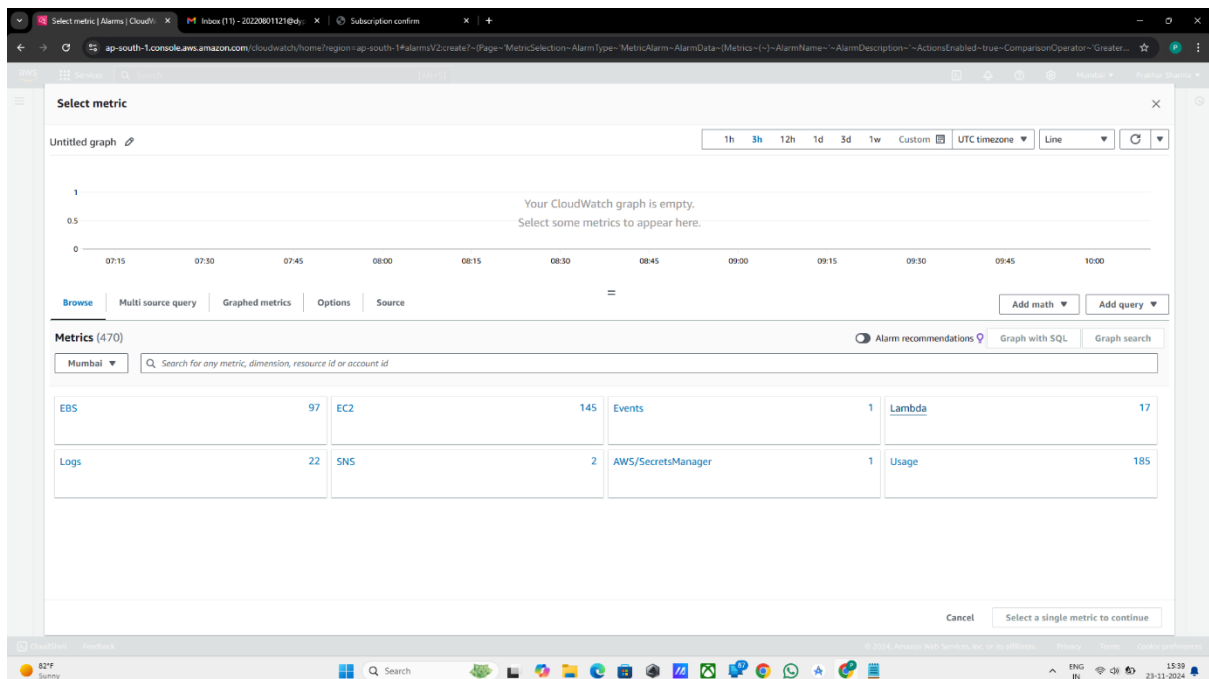
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- In the Conditions section, set the threshold type to Static.
- Under Whenever Error Count is, select Greater Than or Equal to.
- Set the value to 1.



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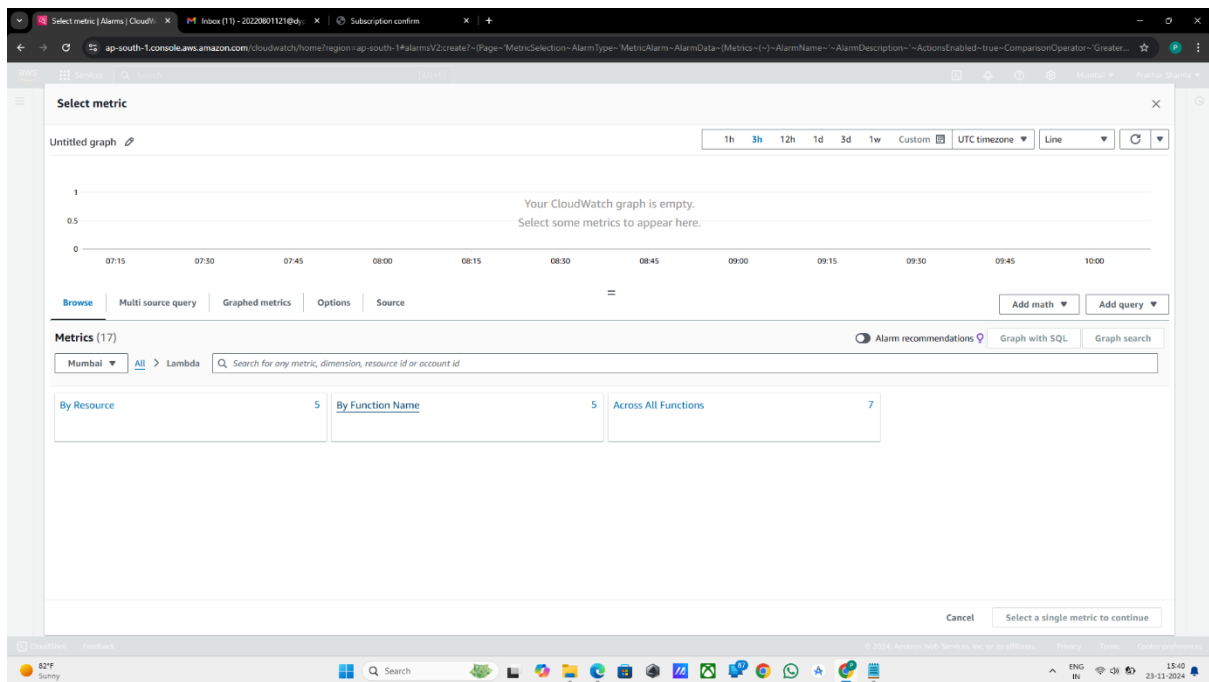
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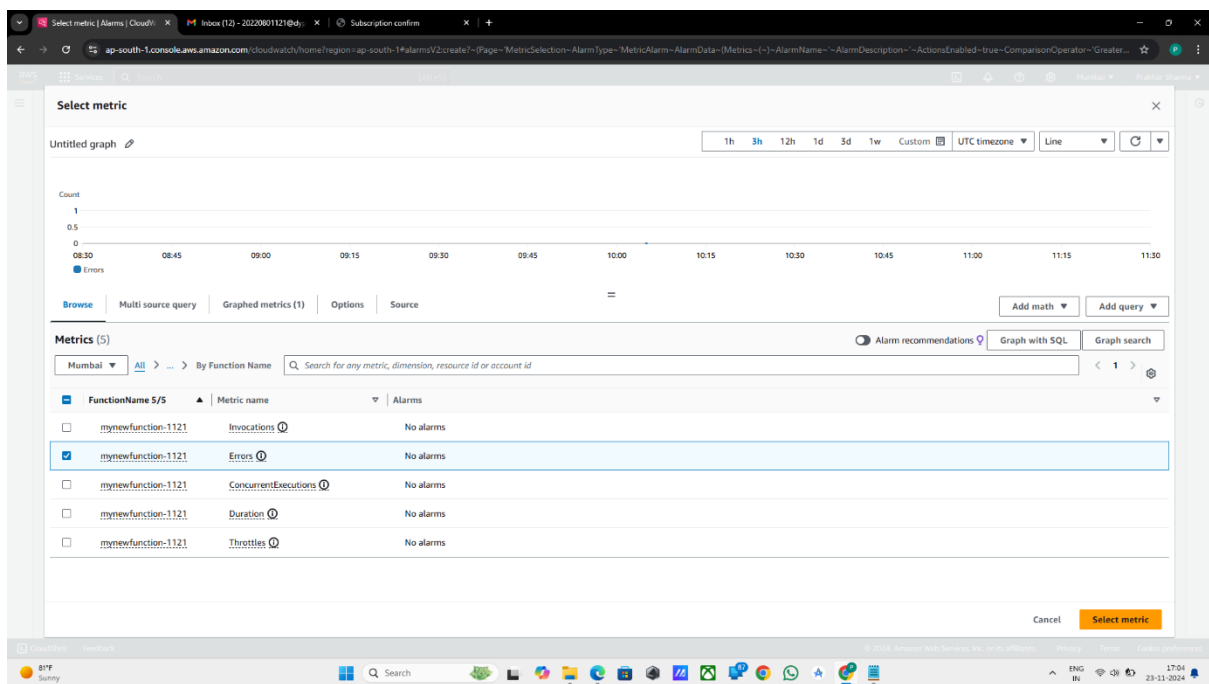
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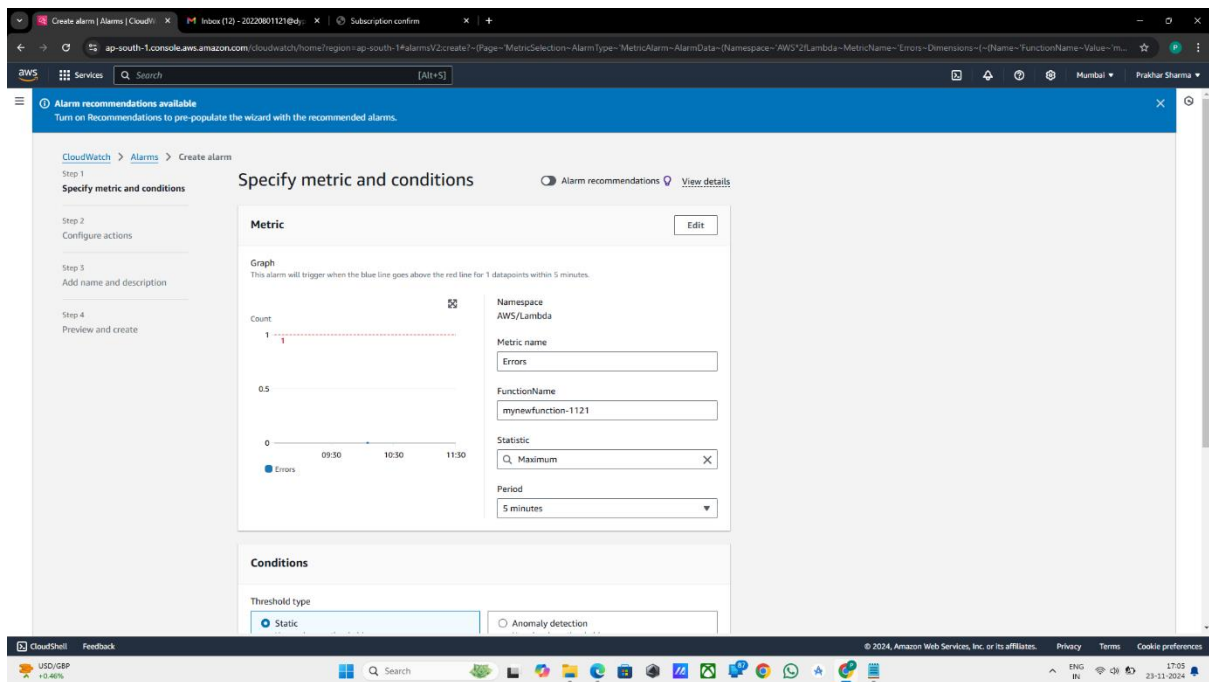
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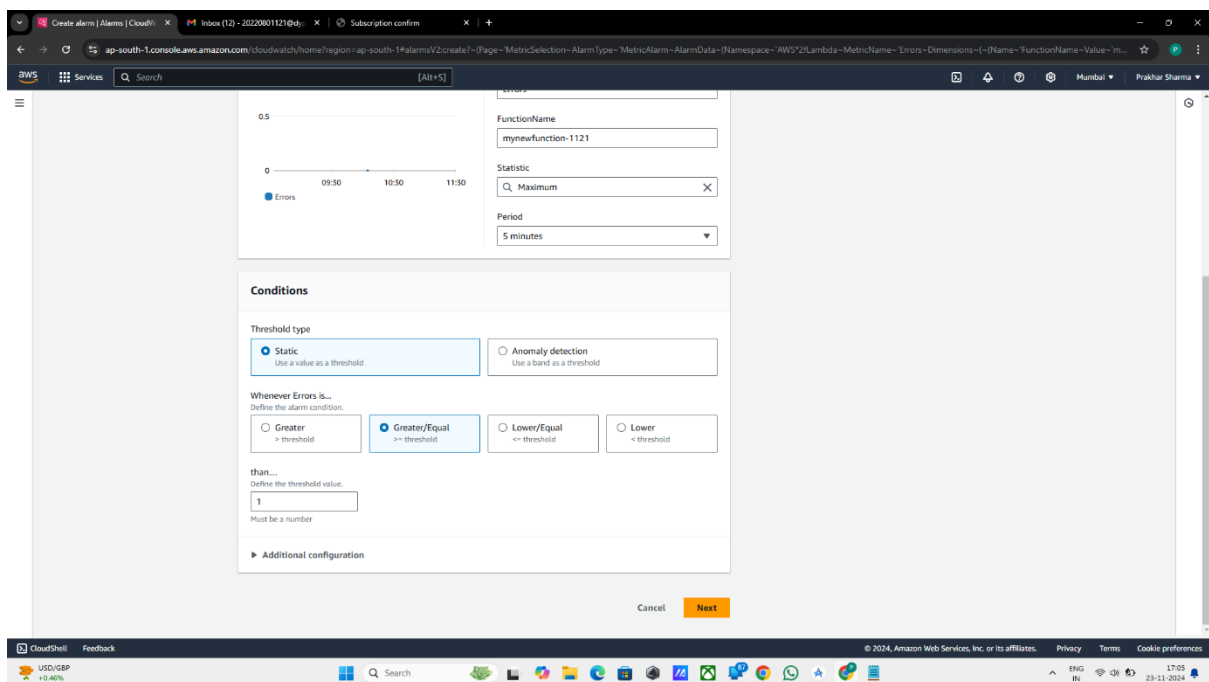
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Step 7: Set Up Notifications for the Alarm

- In the Notifications section, set the Alarm State Trigger to In Alarm.
- Under Send a Notification to, select Existing SNS Topic.
- Choose the SNS topic you created earlier.
- The email endpoint you provided will appear in the notification settings.
- Click Next.

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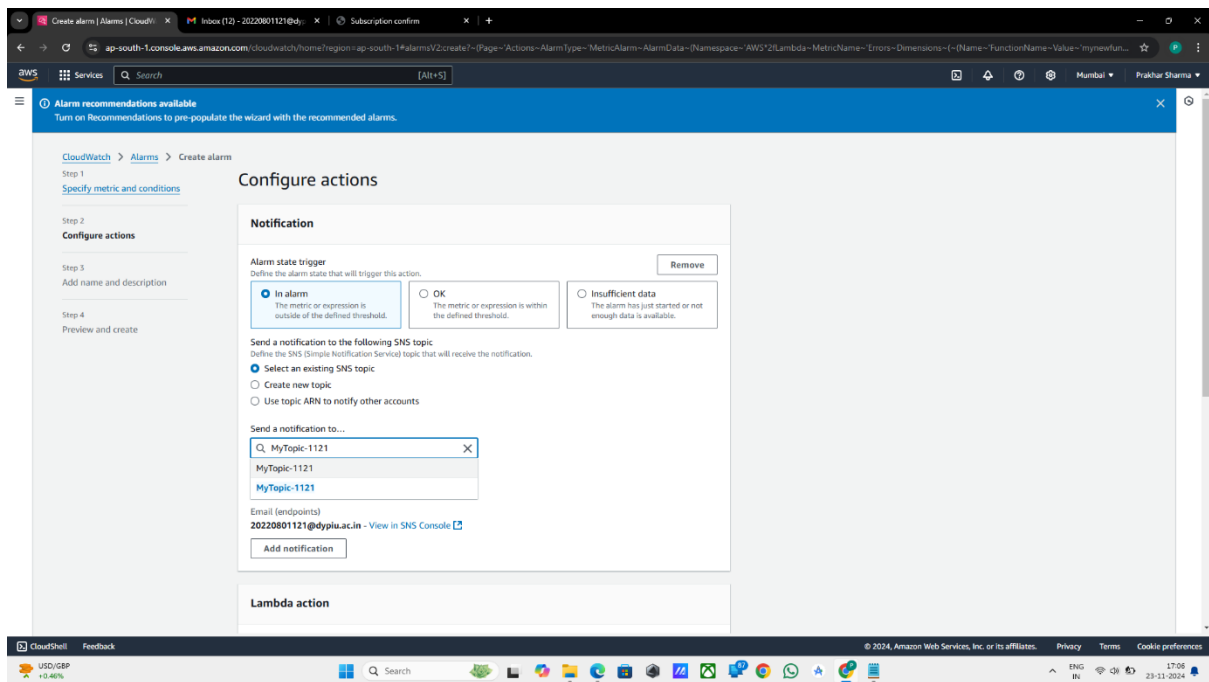
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Step 8: Name and Create the Alarm

- Enter a name for your alarm.
- Click Next, then Create Alarm.

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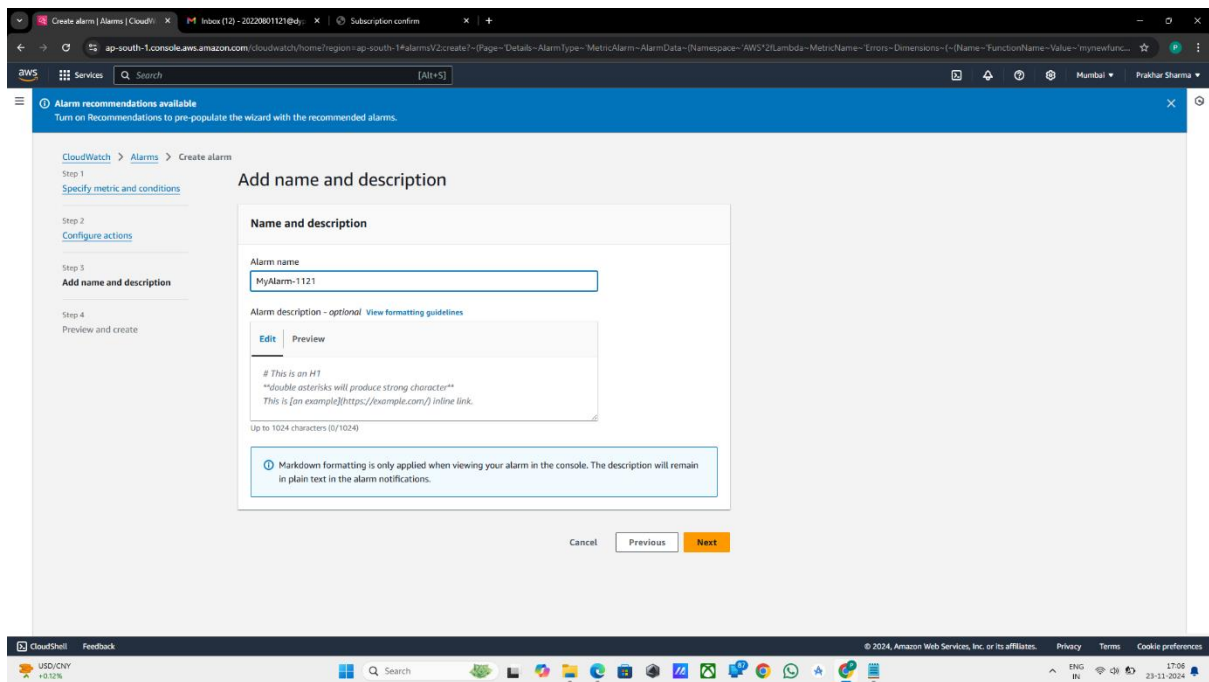
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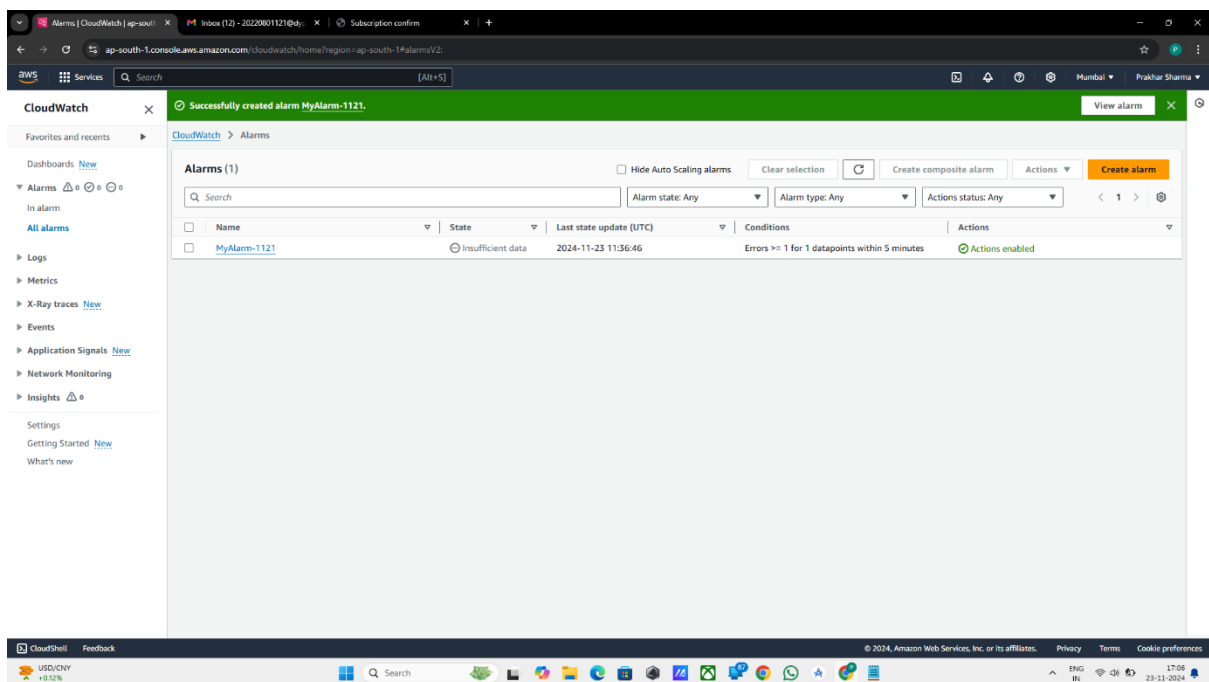
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Step 9: Trigger the Alarm with a Lambda Error

- Go back to your Lambda function.
- Introduce an intentional error in the code (for example, change JSON to JON).
- Click Deploy to save your changes.
- Click Test 4 to 5 times to invoke the function and produce errors.

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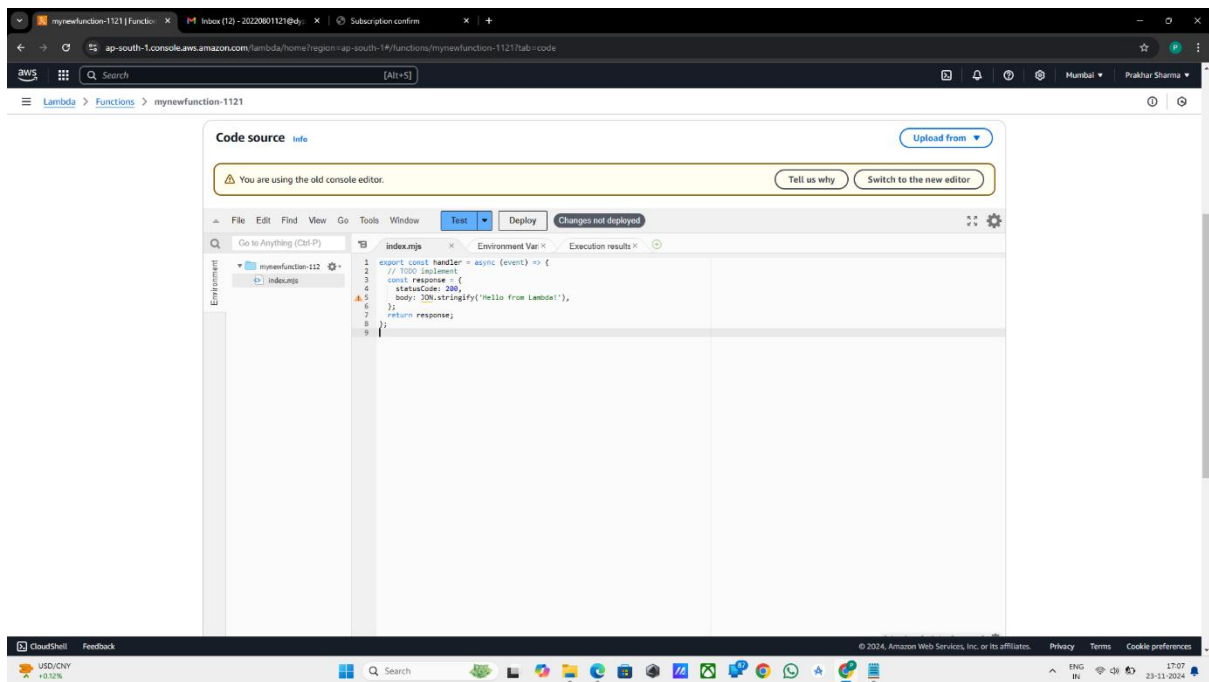
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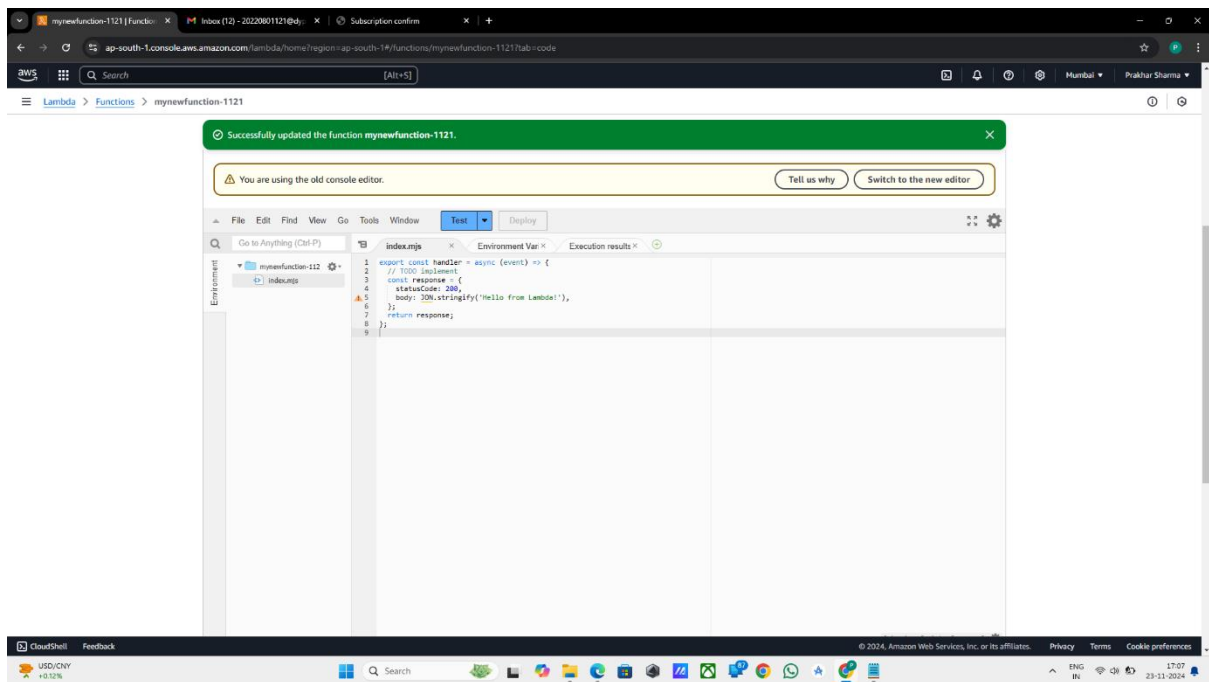
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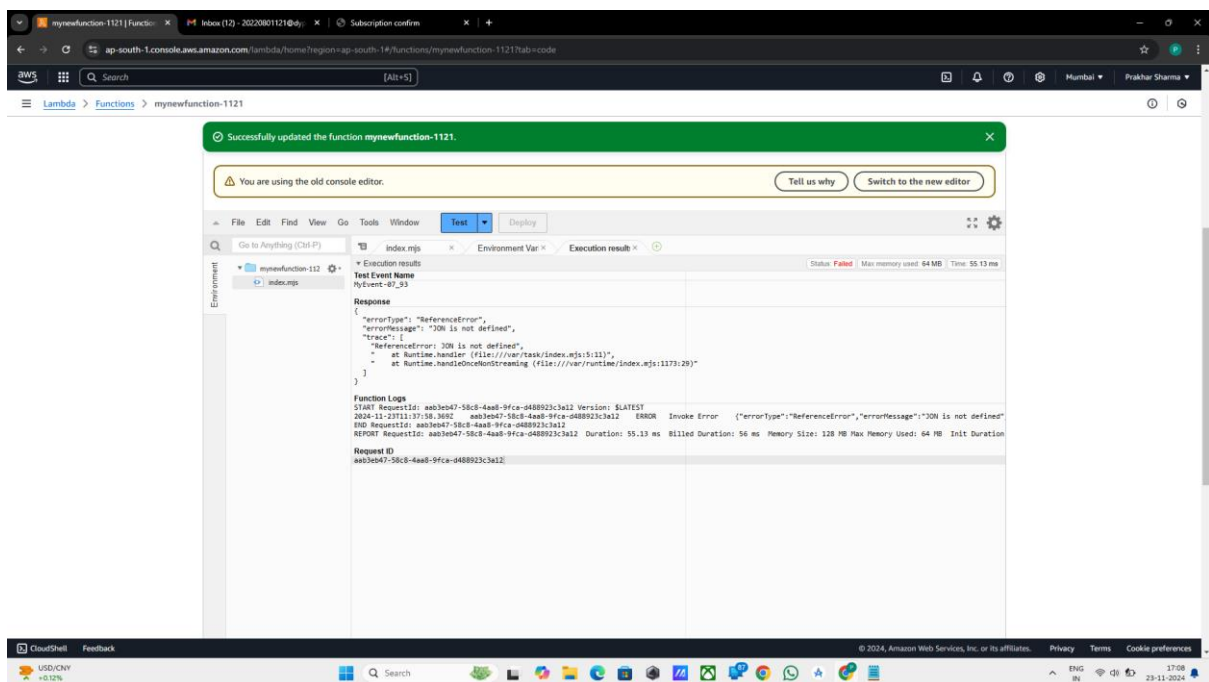
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Step 10: Verify the CloudWatch Alarm

- Go back to the CloudWatch service.
- Check the state of your alarm, which will be set to In Alarm if errors were detected.

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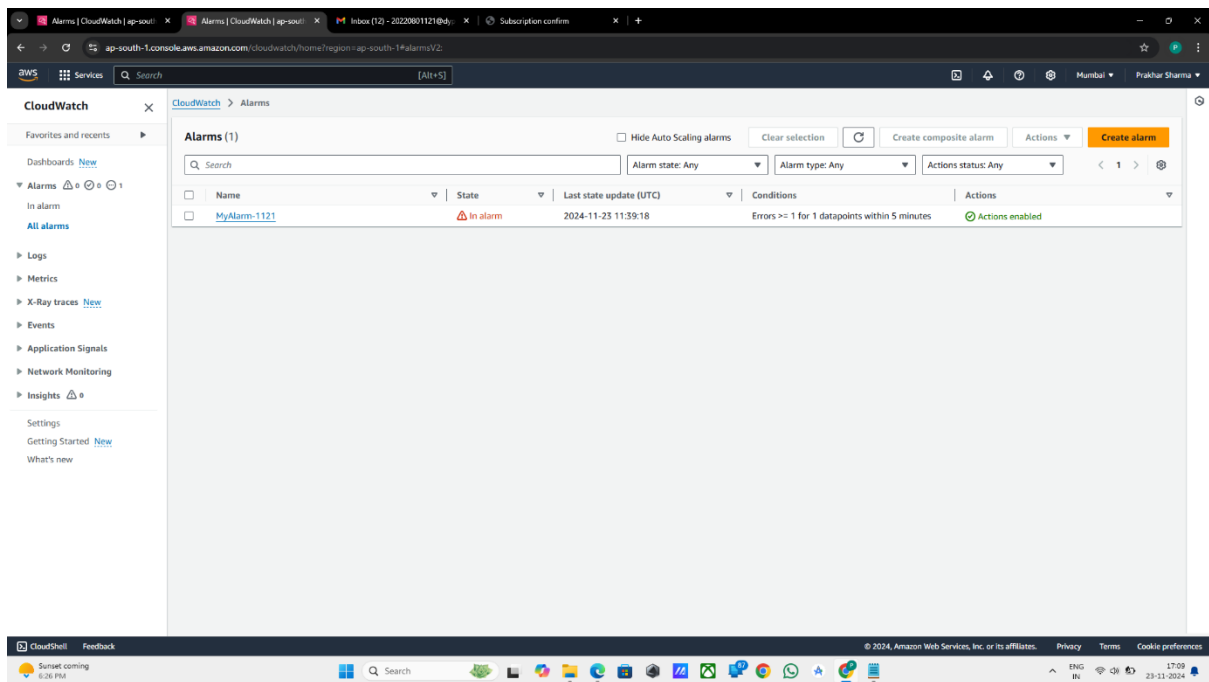
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Step 11: Receive SNS Email Notification

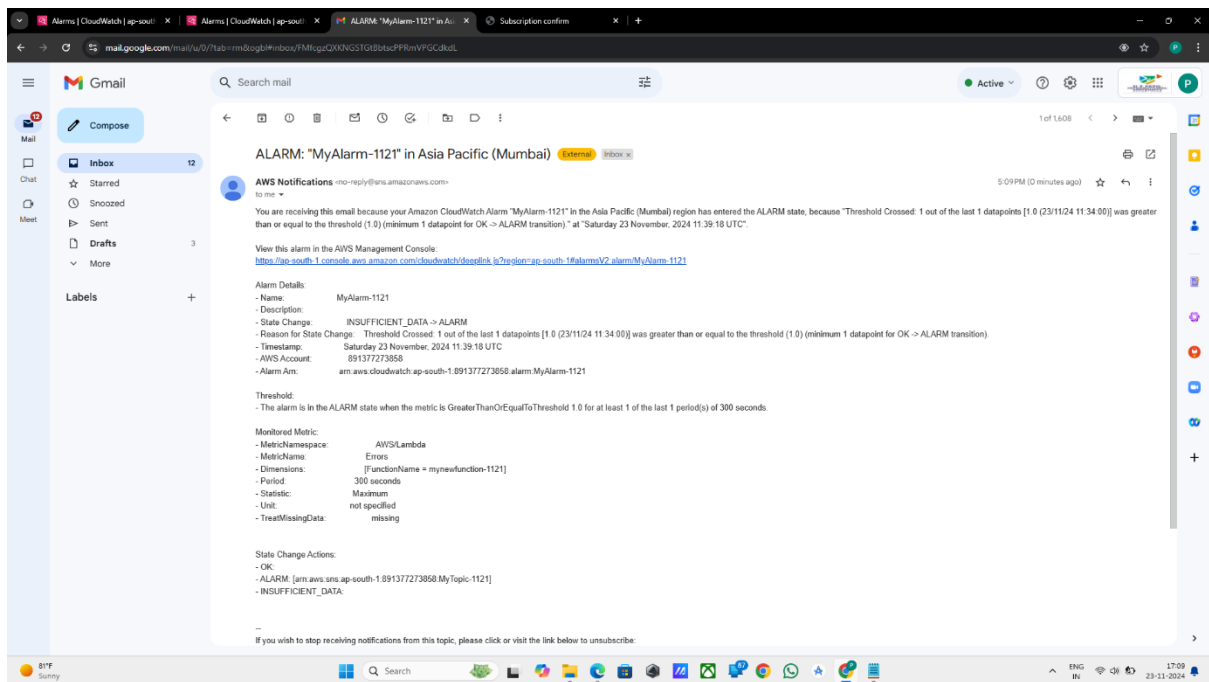
- Once the alarm state changes to In Alarm, you should receive an email notification at the email address you provided during the SNS subscription setup.

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