D Y PATIL INTERNATIONAL UNIVERSITY
AKURDI PUNE

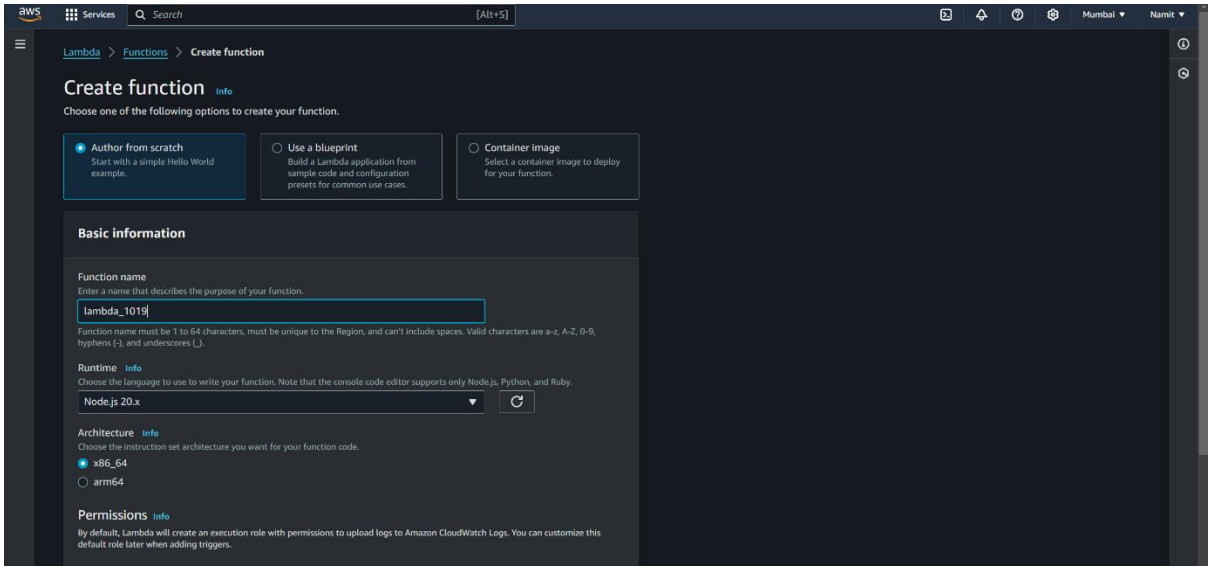
School of Computer Science, Engineering and Applications (SCSEA)
B.C.A. TY (CCSA)
Subject: Advanced Cloud Computing (P)

Name of the Student: Namit Agarwal **PRN:** 20220801019

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

Step 1: Create a Lambda Function

1. Go to the **Lambda Service** in the AWS Management Console.
2. Click **Create Function**.
3. Select **Author from Scratch**.
4. Enter a **function name**.
5. Set the **runtime** to **Node.js 20**.
6. Click **Create Function** to finish.



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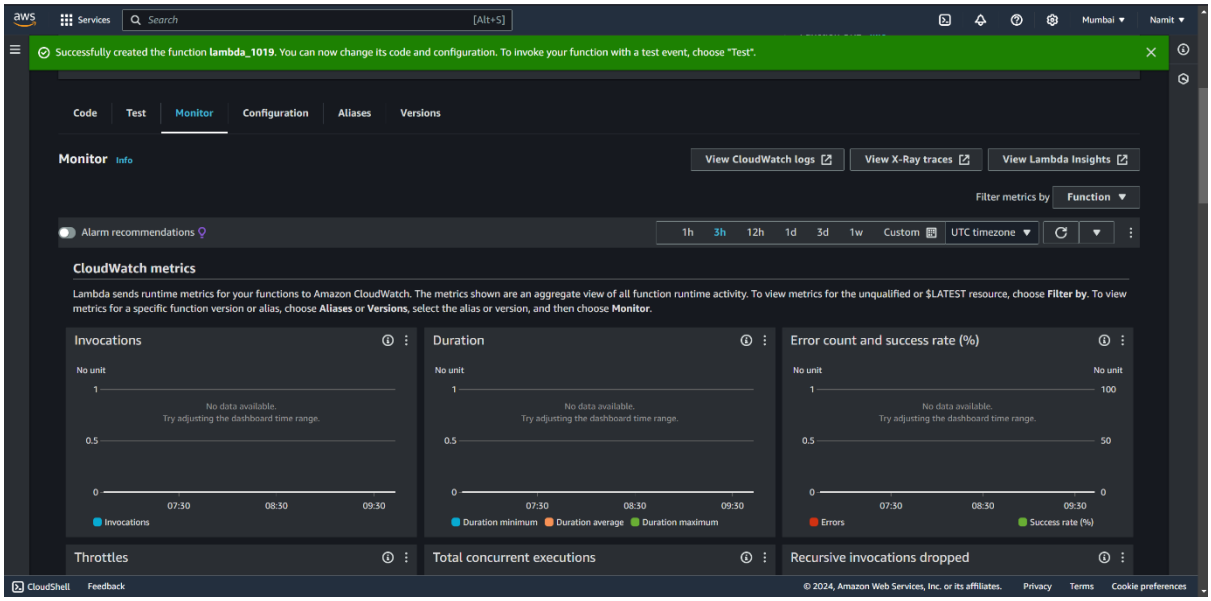
Step 2: Monitor Lambda Metrics

1. After the function is created, navigate to your Lambda function.
2. Select the **Monitor** tab, then click on the **Metrics** sub-tab.
3. 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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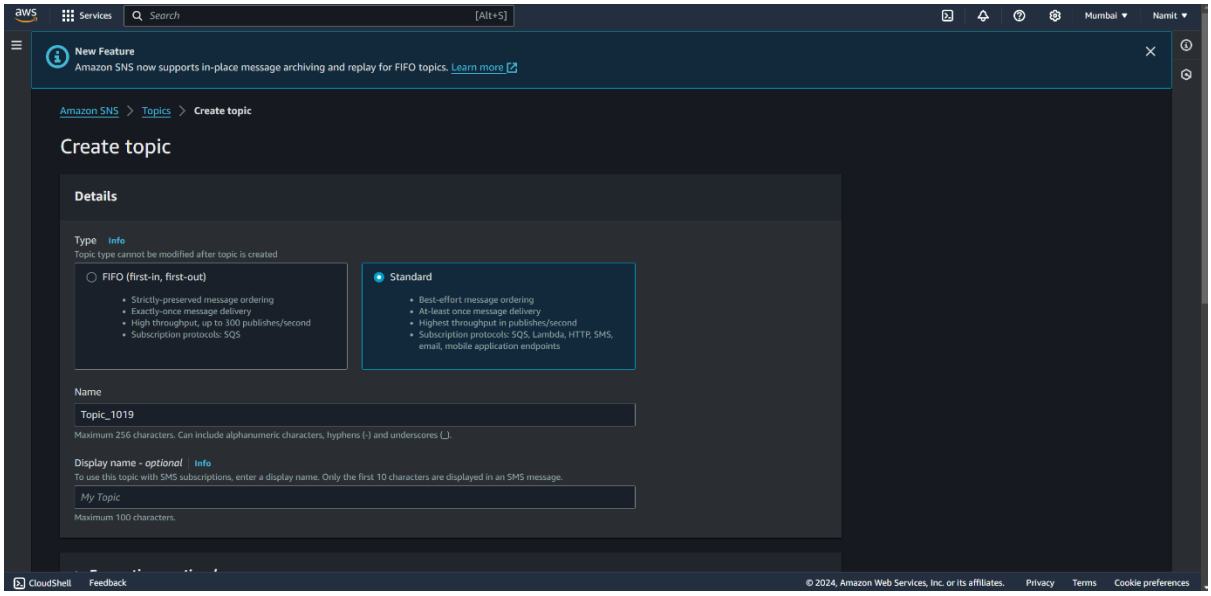
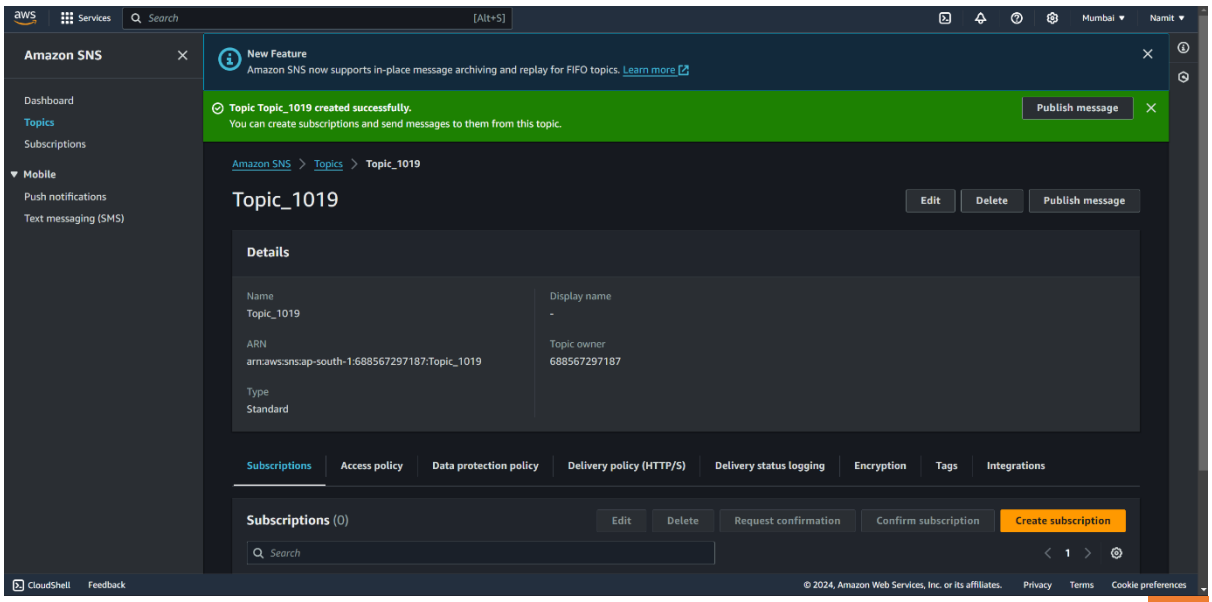
Step 3: Create an SNS Topic for Notifications

1. Navigate to the **Simple Notification Service (SNS)** in the AWS console.
2. Click **Create Topic**.





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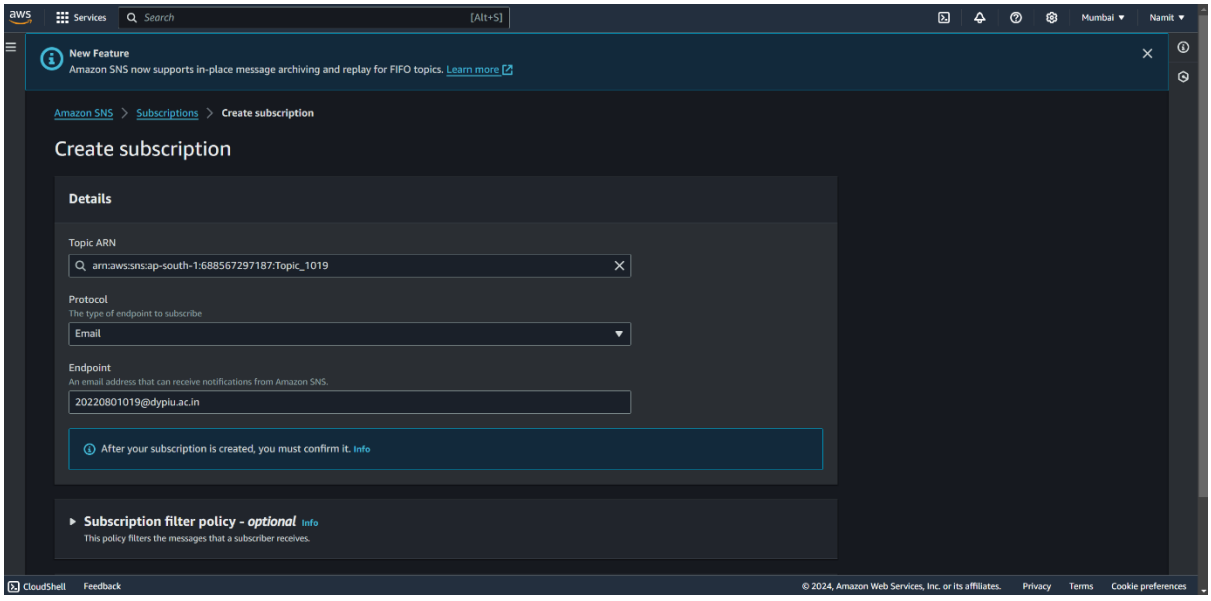
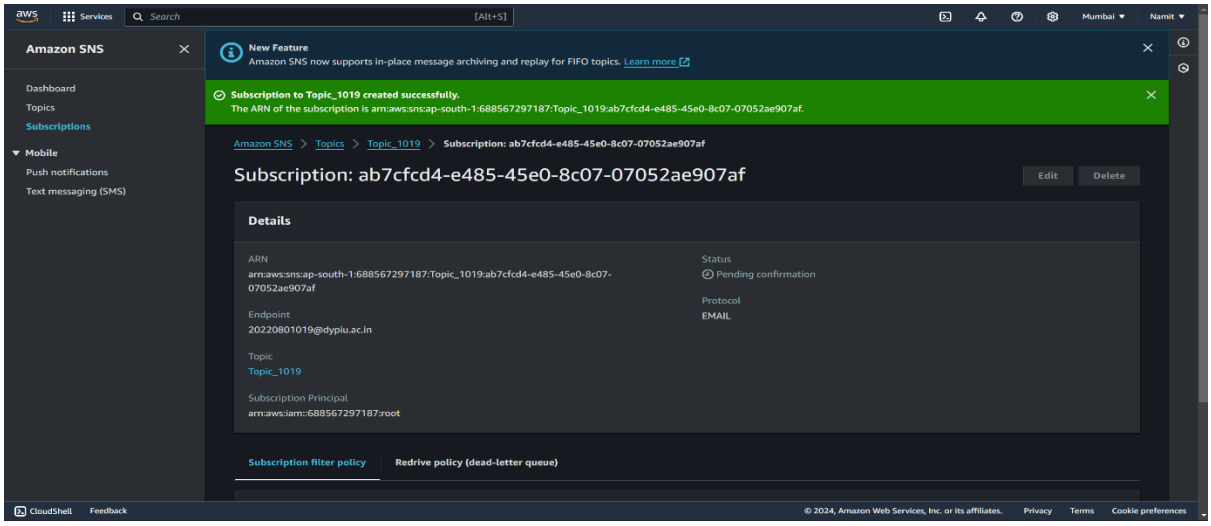
Step 4: Subscribe to the SNS Topic

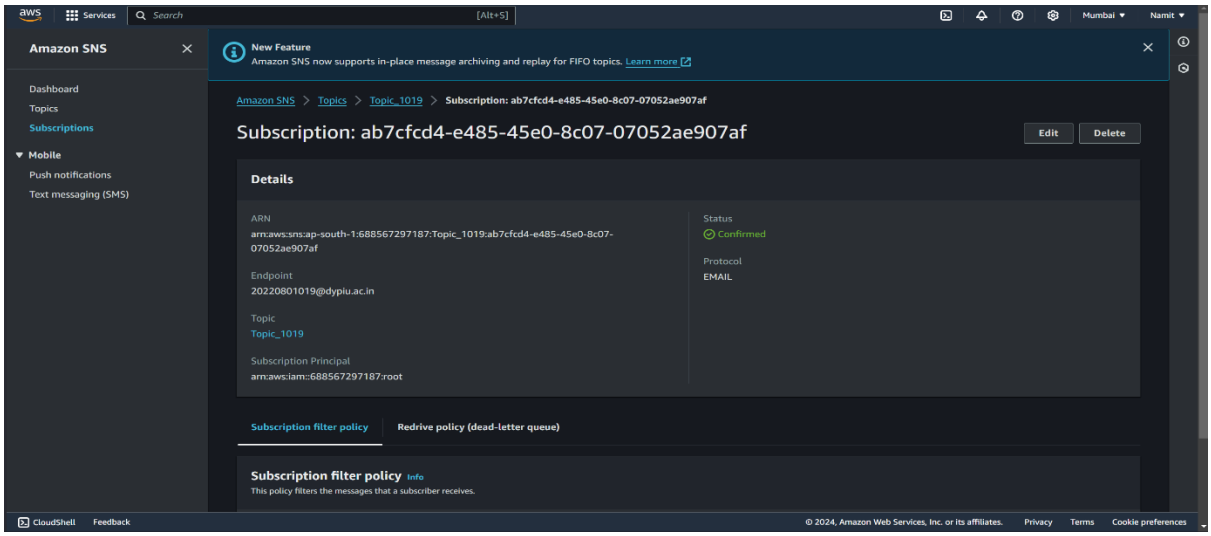
1. After the topic is created, go to the **Subscriptions** tab for that topic.
2. Click **Create Subscription**.



3. The status of the subscription will be **Pending**. Go to your email and confirm the subscription.

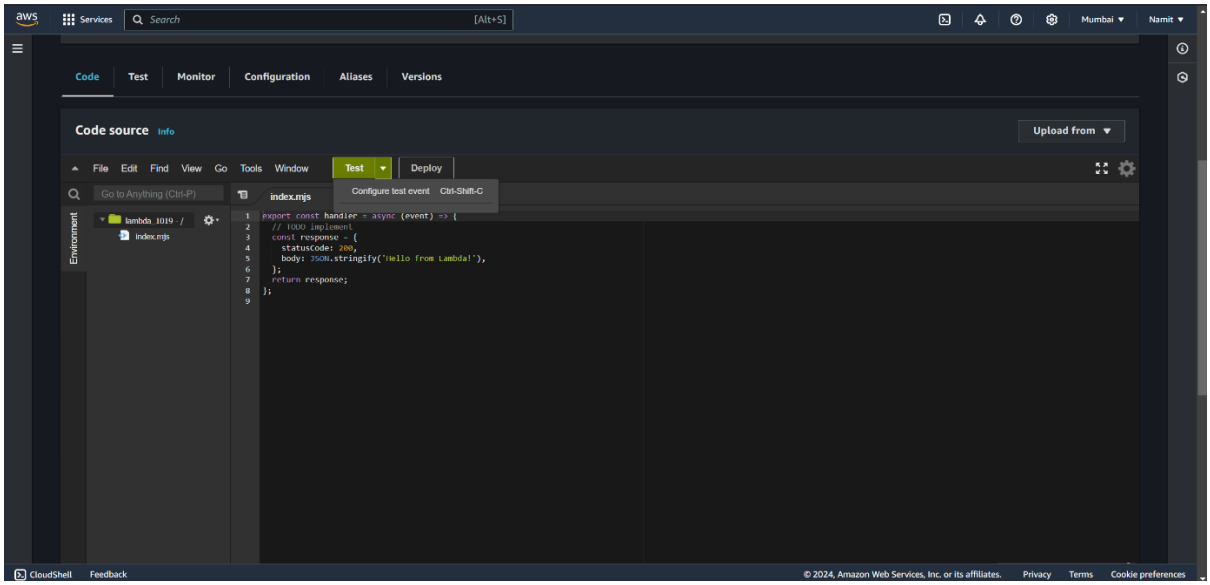


4. After confirmation, the status will change to **Confirmed**.

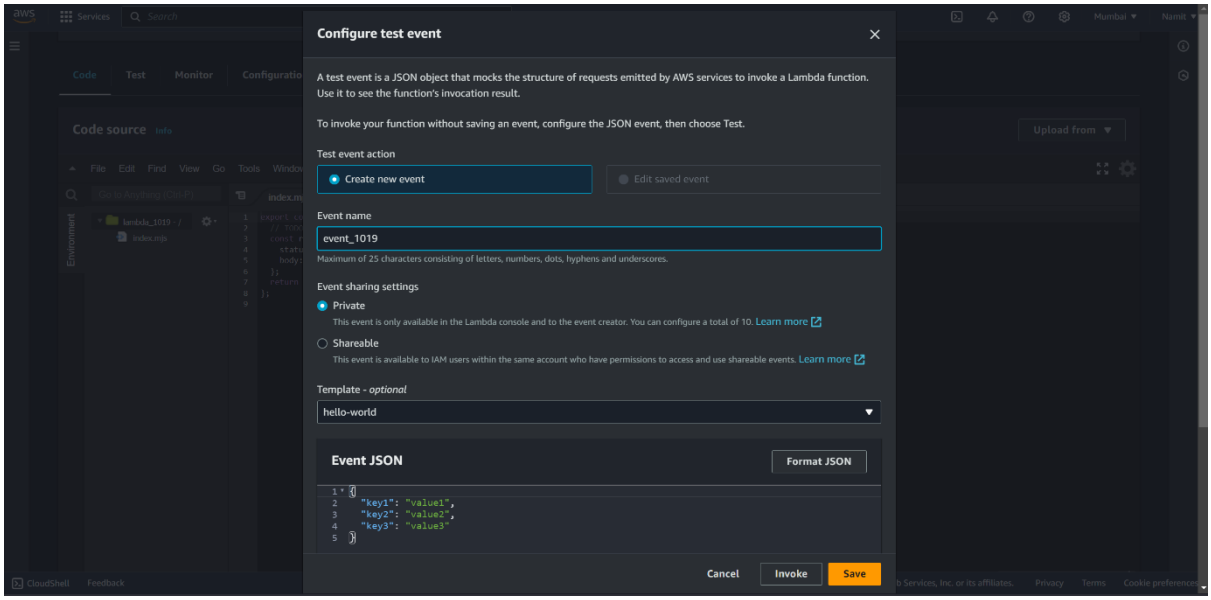


Step 5: Test the Lambda Function

1. Return to your Lambda function, and go to the **Code** tab.
2. Click the dropdown next to the **Test** button, then select **Configure Test Event**.



3. Enter an **event name**.
4. Click **Save**.



Step 6: Create a CloudWatch Alarm

1. Go to the **CloudWatch** service in the AWS console.
2. Click **Create Alarm**.
3. Click **Select Metrics**.
4. In the **Metrics** section, select **Lambda Metrics**.
5. Choose the **By Function Name** option.
6. Select your Lambda function, and choose the **Errors** metric.
7. Click **Select Metric**.

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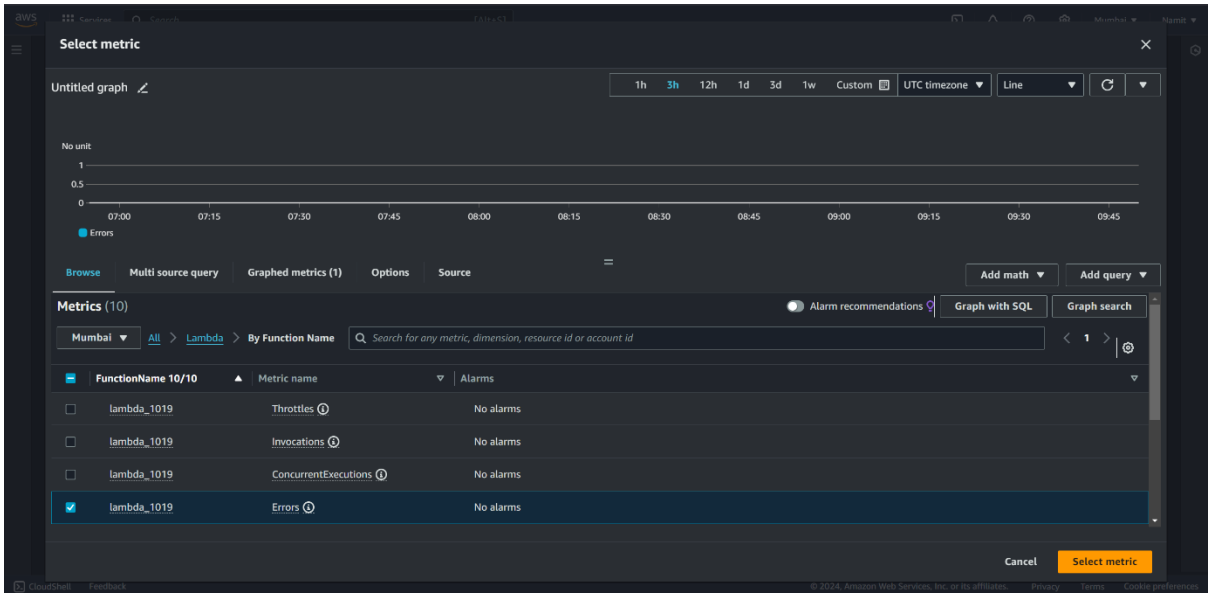
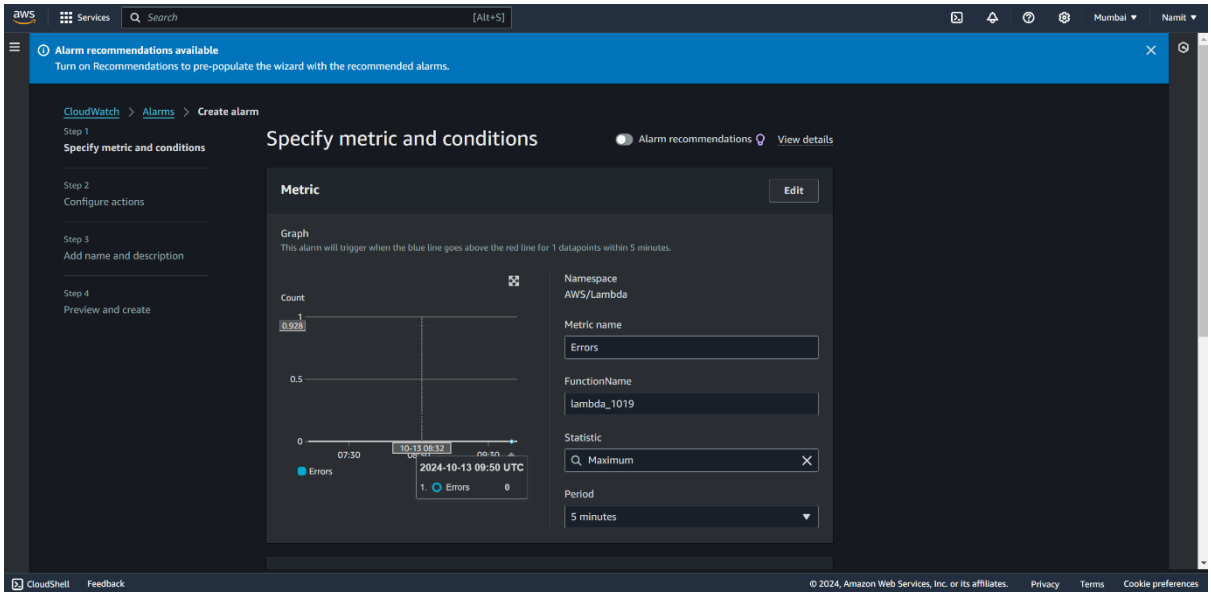
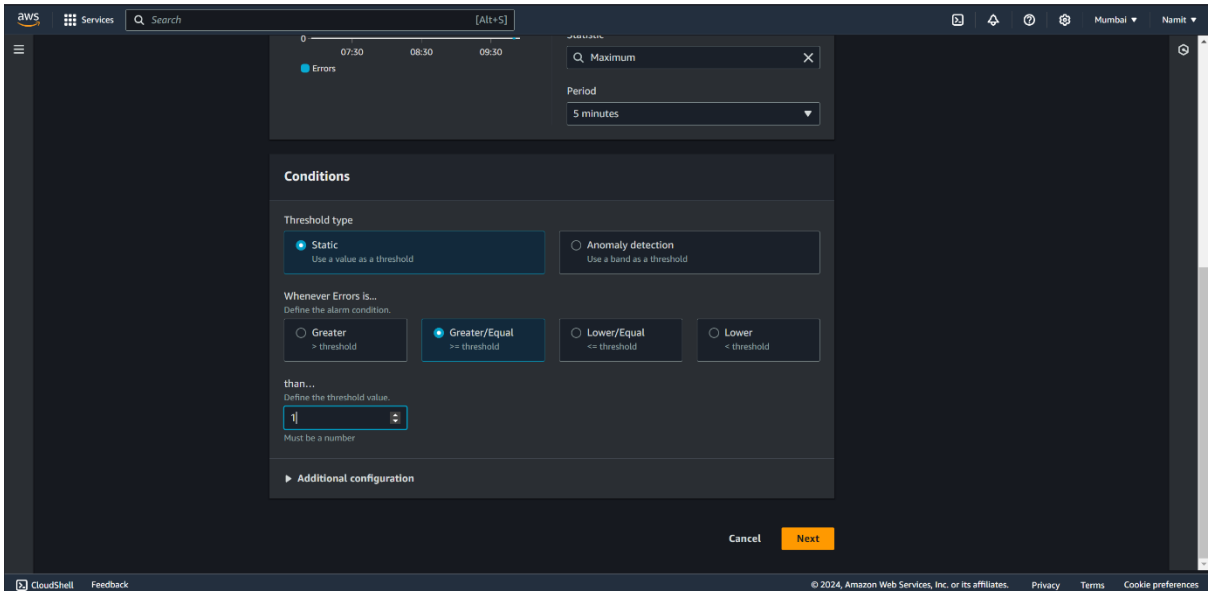


In the **Specify Metric and Conditions** section:

- In the **Statistics** field, change the default **Average** to **Maximum**.



- 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.



Step 7: Set Up Notifications for the Alarm

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

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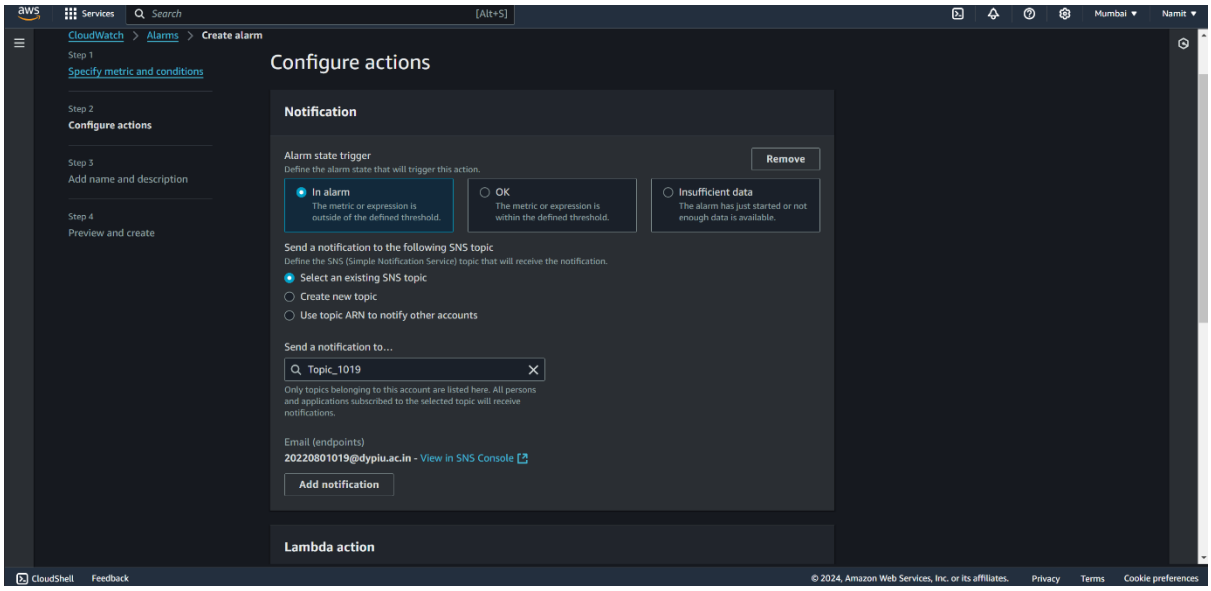
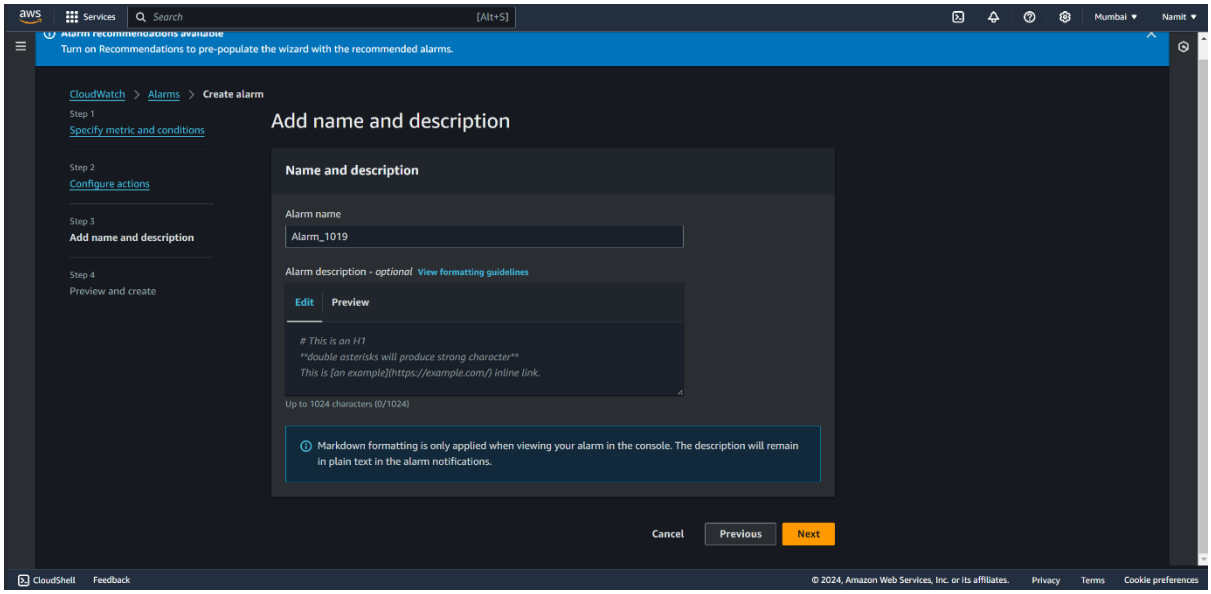


Step 8: Name and Create the Alarm

1. Enter a name for your alarm.
2. Click **Next**, then **Create Alarm**.



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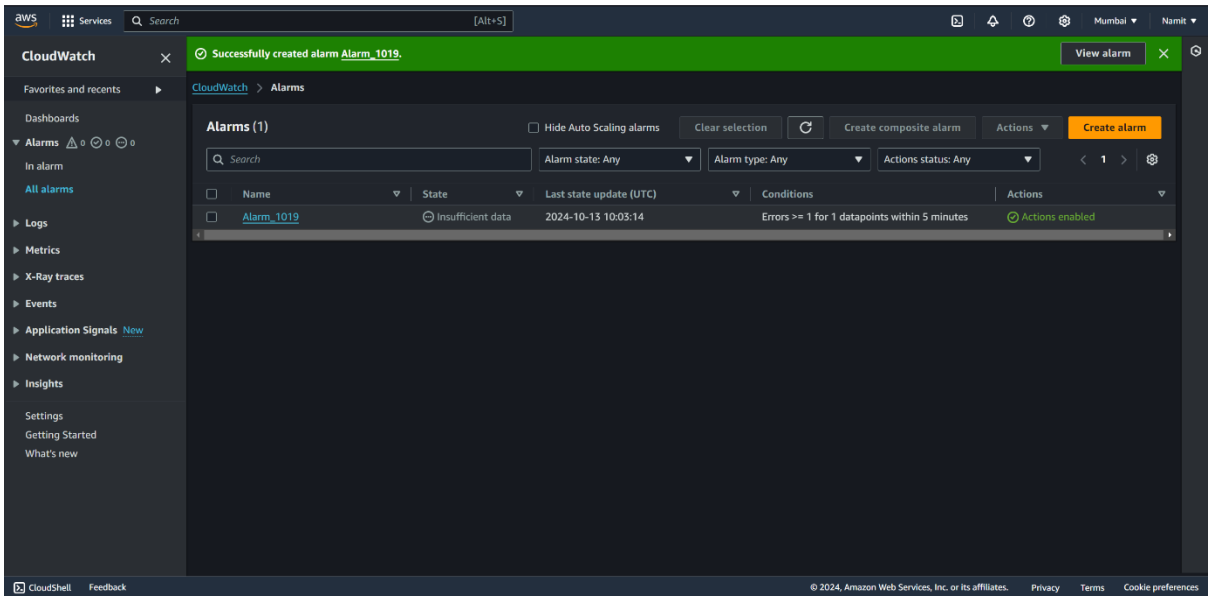

Step 9: Trigger the Alarm with a Lambda Error

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

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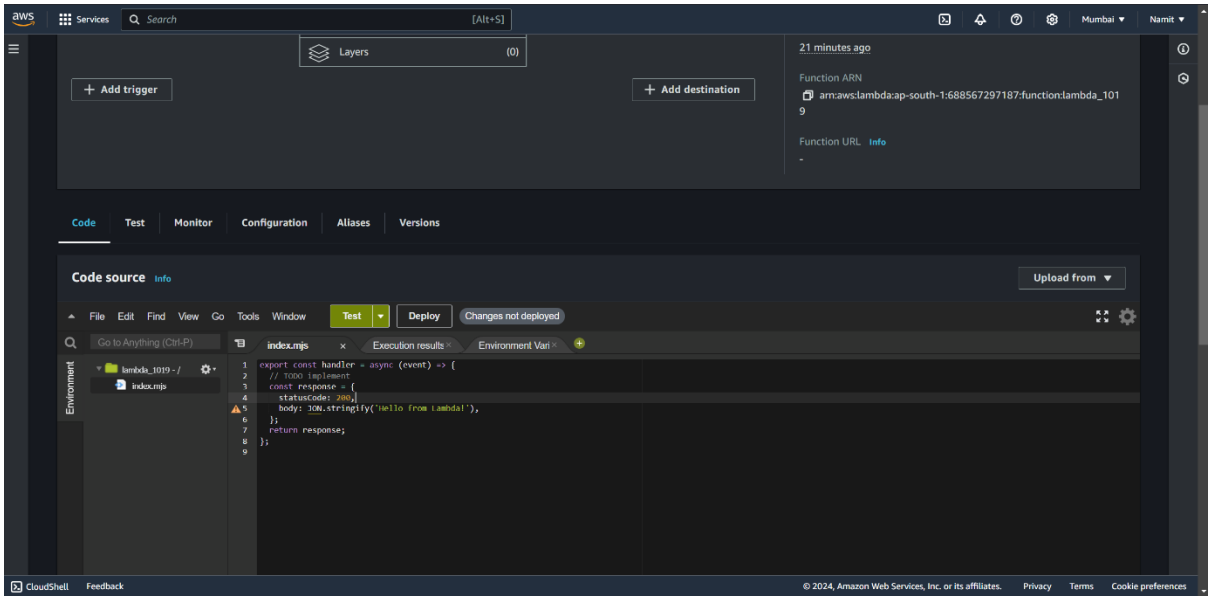
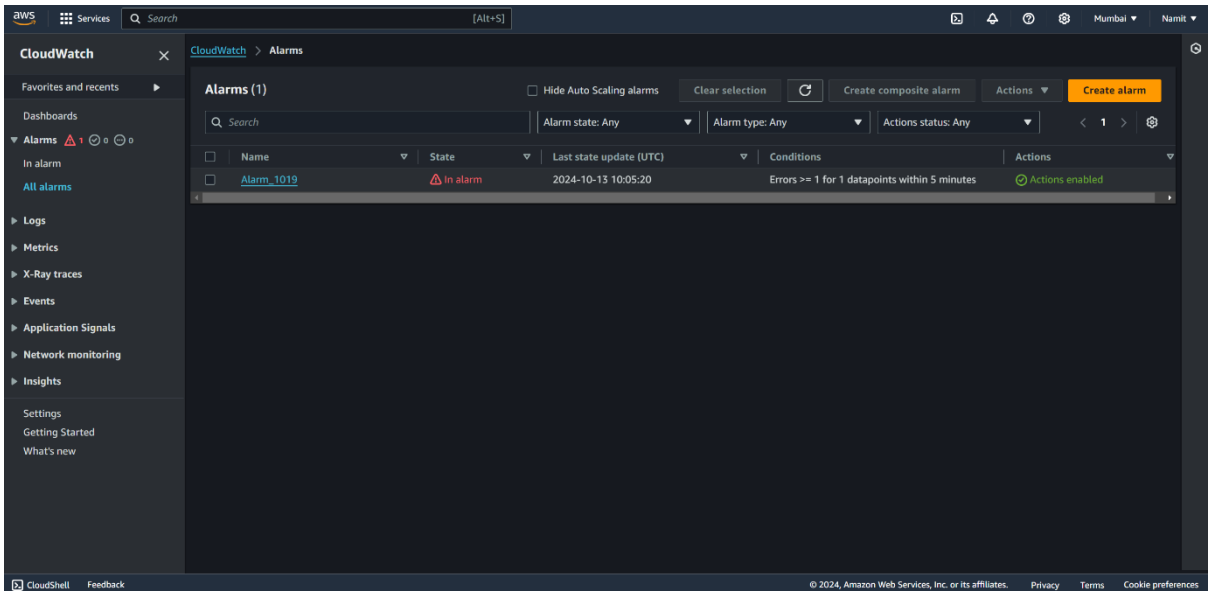


Step 10: Verify the CloudWatch Alarm

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



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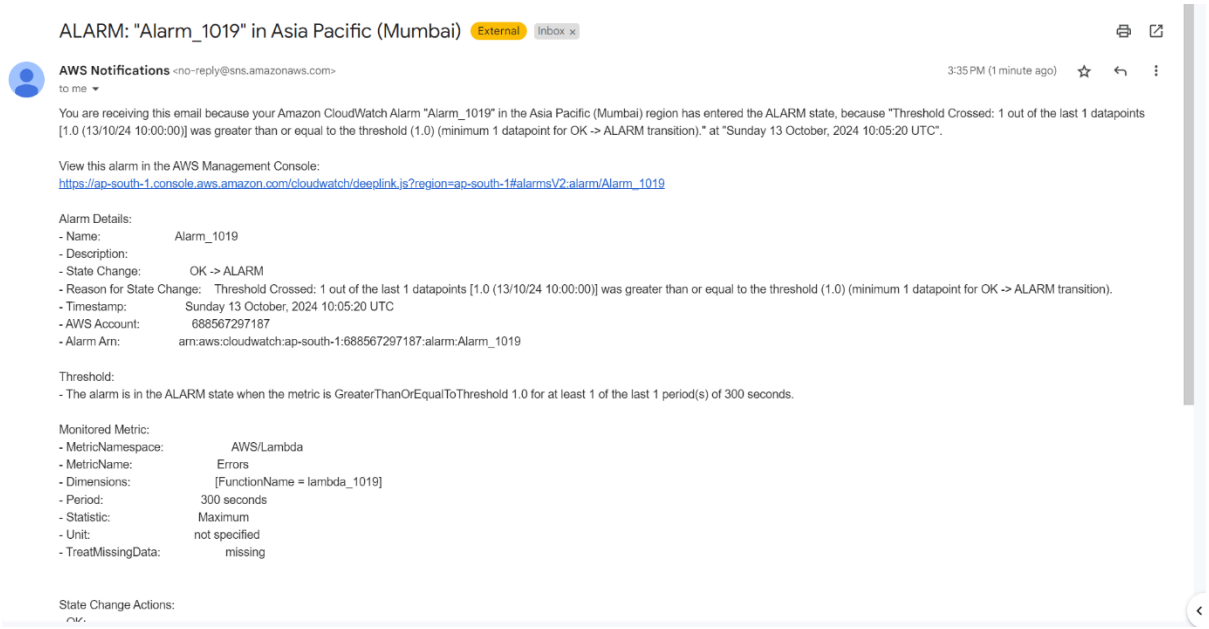
Step 11: Receive SNS Email Notification

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.



ALARM: "Alarm_1019" in Asia Pacific (Mumbai) External Inbox ×

AWS Notifications <no-reply@sns.amazonaws.com> 3:35 PM (1 minute ago)
to me

You are receiving this email because your Amazon CloudWatch Alarm "Alarm_1019" in the Asia Pacific (Mumbai) region has entered the ALARM state, because "Threshold Crossed: 1 out of the last 1 datapoints [1.0 (13/10/24 10:00:00)] was greater than or equal to the threshold (1.0) (minimum 1 datapoint for OK -> ALARM transition)." at "Sunday 13 October, 2024 10:05:20 UTC".

View this alarm in the AWS Management Console:
https://ap-south-1.console.aws.amazon.com/cloudwatch/deeplink.js?region=ap-south-1#alarmsV2:alarm/Alarm_1019

Alarm Details:
- Name: Alarm_1019
- Description:
- State Change: OK -> ALARM
- Reason for State Change: Threshold Crossed: 1 out of the last 1 datapoints [1.0 (13/10/24 10:00:00)] was greater than or equal to the threshold (1.0) (minimum 1 datapoint for OK -> ALARM transition).
- Timestamp: Sunday 13 October, 2024 10:05:20 UTC
- AWS Account: 688567297187
- Alarm Arn: arn:aws:cloudwatch:ap-south-1:688567297187:alarm:Alarm_1019

Threshold:
- The alarm is in the ALARM state when the metric is GreaterThanOrEqualToThreshold 1.0 for at least 1 of the last 1 period(s) of 300 seconds.

Monitored Metric:
- MetricNamespace: AWS/Lambda
- MetricName: Errors
- Dimensions: [FunctionName = lambda_1019]
- Period: 300 seconds
- Statistic: Maximum
- Unit: not specified
- TreatMissingData: missing

State Change Actions: