

School of Computer Science, Engineering and Applications (SCSEA)

B. Tech TY (CCSA)

Subject: Cloud Architecture And Protocol

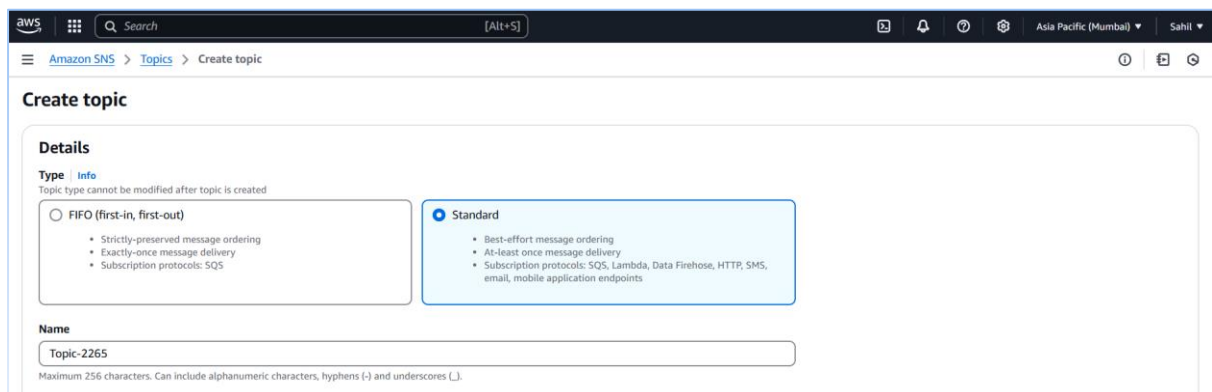
Name of the Student: Sahil S. Mandawgade

PRN: 20220802265

Title of Practical: 12. AWS SNS: Integrating Amazon S3 Event Notifications with Amazon SNS for Real-Time Event Propagation.

Step 1:- Create an SNS Topic.

- Go to AWS SNS in the AWS dashboard.
- In SNS, go to 'Topics' and click on 'Create topic'.
- Select '**Standard**' as the type.
- Enter a Name for the topic as "**Topic-2265**".
- Click on 'Create topic'.



- Our topic is created successfully.

Step 2: Create an Email Subscription.

- Under Subscriptions, select Create Subscription.
- Select the Topic ARN of the topic we just created.
- Set the Protocol to '**Email**'.
- Enter the Endpoint (the email address to receive notifications).
- Click Create Subscription.

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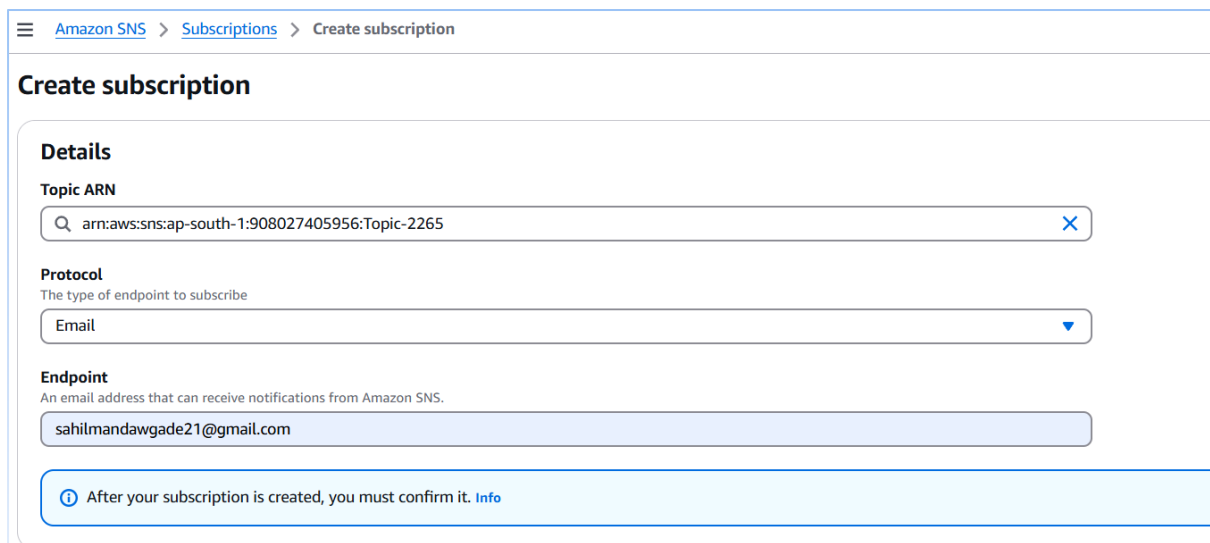
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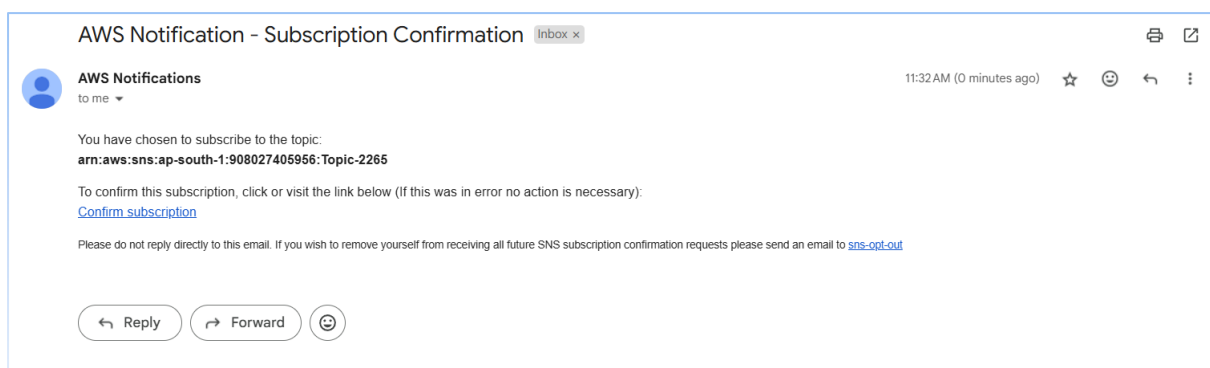
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- Our subscription is created successfully.
- Confirm the subscription by verifying the email and clicking the confirmation link sent to the provided email address.
- NOTE: Check Spam if you can't find the confirmation e-mail.



- Click on 'Confirm subscription'.

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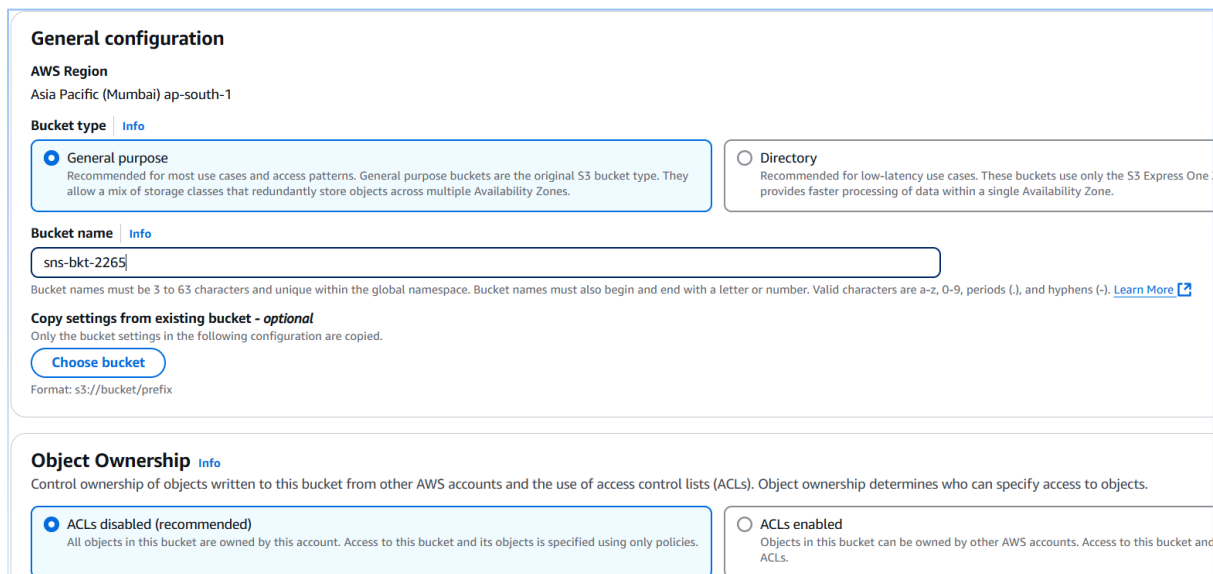
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Step 3: Create a S3 Bucket.

- Navigate to Amazon S3 in the AWS Console.
- Click on 'Create bucket'.
- Provide a unique Bucket Name as 'sns-bkt-2265'.
- Set ACLs to disabled (recommended for security).
- Click on 'Create bucket'.

A screenshot of the AWS S3 'Create bucket' console. The 'General configuration' section shows the AWS Region as 'Asia Pacific (Mumbai) ap-south-1'. Under 'Bucket type', 'General purpose' is selected. The 'Bucket name' field contains 'sns-bkt-2265'. Below this, there is a note about bucket name requirements and a 'Choose bucket' button. The 'Object Ownership' section shows 'ACLs disabled (recommended)' as the selected option.

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- Now, go to the SNS topic, click on 'Edit topic' and follow the given steps in 'Access Policy'.

- Modify the Access Policy to allow the required permissions.
- Access Policy code:

```
{
  "Version": "2008-10-17",
  "Id": "__default_policy_ID",
  "Statement": [
    {
      "Sid": "__default_statement_ID",
      "Effect": "Allow",
      "Principal": {
        "AWS": "*"
      },
      "Action": [
        "SNS:GetTopicAttributes",
        "SNS:SetTopicAttributes",
        "SNS:AddPermission",
        "SNS:RemovePermission",
        "SNS:DeleteTopic",
        "SNS:Subscribe",
        "SNS:ListSubscriptionsByTopic",
        "SNS:Publish",
        "SNS:Receive"
      ],
      "Resource": "<Insert_Topic_ARN>",
      "Condition": {
        "ArnLike": {
          "aws:SourceArn": "<Insert_S3_bkt_ARN>"
        }
      }
    }
  ]
}
```

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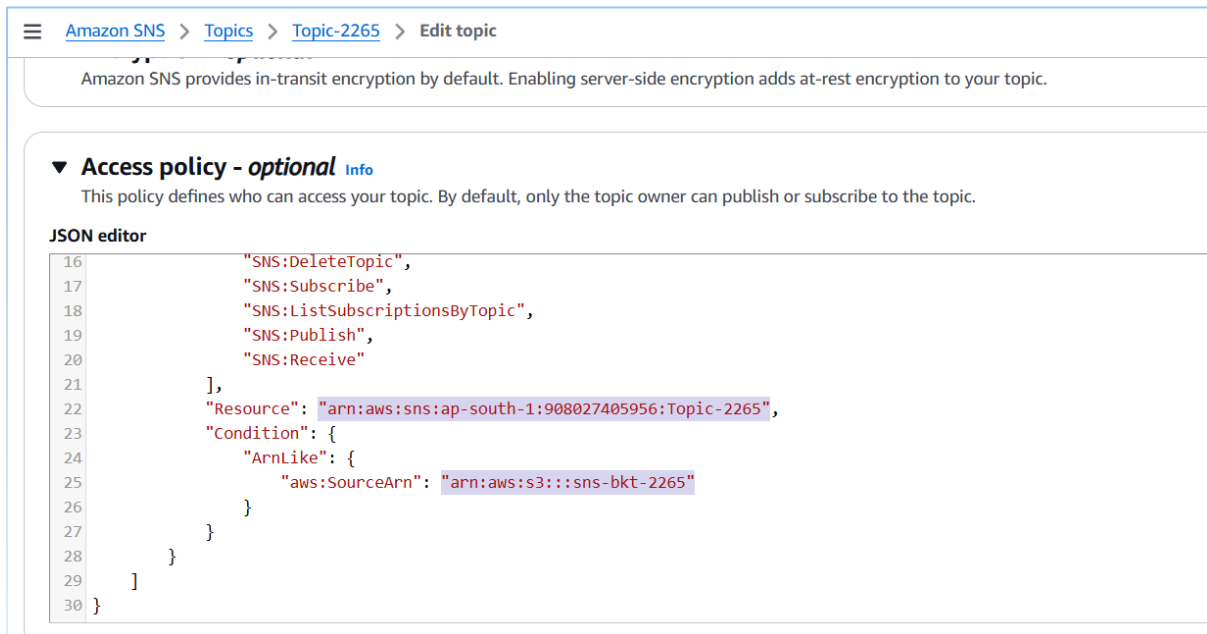
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```
]
}
```

- In the code enter the created SNS topic's ARN at 'Resource'.
- Add the S3 bucket ARN at 'SourceArn'.



The screenshot shows the 'Edit topic' page for 'Topic-2265' in the AWS IAM console. It displays the 'Access policy - optional' section with a JSON editor. The JSON code defines permissions for 'SNS:DeleteTopic', 'SNS:Subscribe', 'SNS:ListSubscriptionsByTopic', 'SNS:Publish', and 'SNS:Receive' on the resource 'arn:aws:sns:ap-south-1:908027405956:Topic-2265'. A condition is set for 'arnLike' with the value 'arn:aws:s3:::sns-bkt-2265'.

```
16     "SNS:DeleteTopic",
17     "SNS:Subscribe",
18     "SNS:ListSubscriptionsByTopic",
19     "SNS:Publish",
20     "SNS:Receive"
21   ],
22   "Resource": "arn:aws:sns:ap-south-1:908027405956:Topic-2265",
23   "Condition": {
24     "ArnLike": {
25       "aws:SourceArn": "arn:aws:s3:::sns-bkt-2265"
26     }
27   }
28 }
29 ]
30 }
```

Step 4: Configure Event Notification for the Bucket.

- Go to the 'Properties' tab of the created bucket – 'sns-bkt-2265'.
- Scroll down to 'Event notifications'.
- Click 'Create event notification'.

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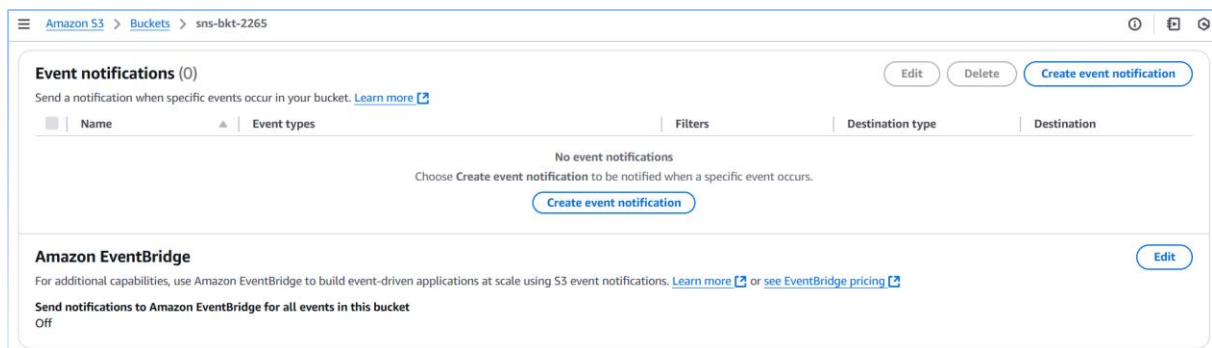
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Amazon S3 > Buckets > sns-bkt-2265

Event notifications (0)

Send a notification when specific events occur in your bucket. [Learn more](#)

Name	Event types	Filters	Destination type	Destination
No event notifications				

Choose [Create event notification](#) to be notified when a specific event occurs.

[Create event notification](#)

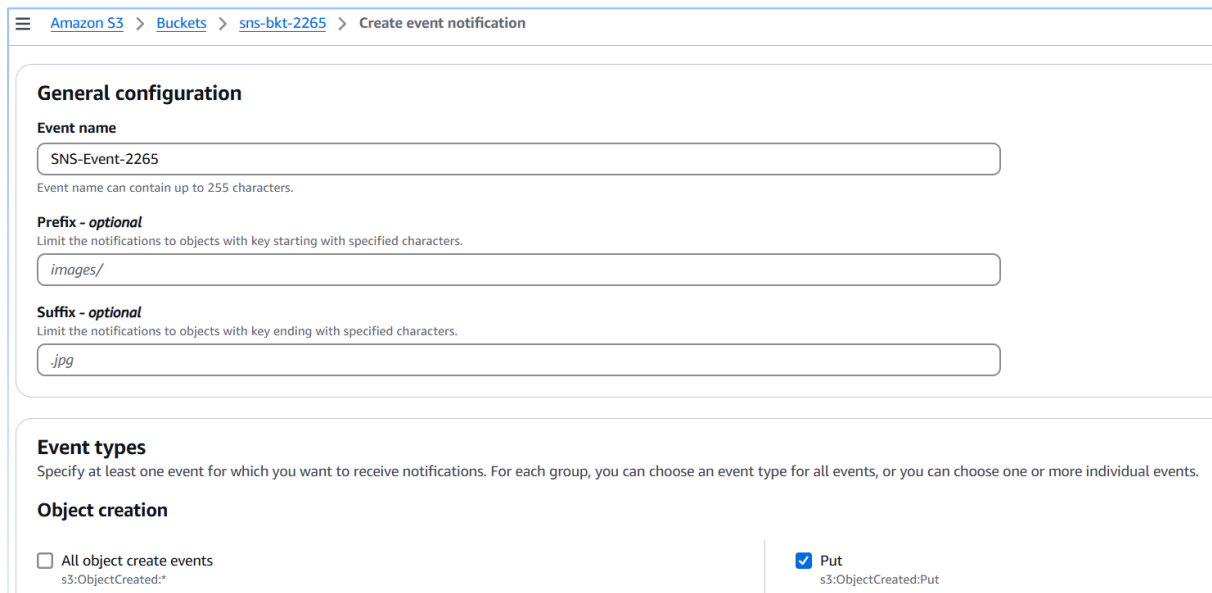
Amazon EventBridge

For additional capabilities, use Amazon EventBridge to build event-driven applications at scale using S3 event notifications. [Learn more](#) or [see EventBridge pricing](#)

[Edit](#)

Send notifications to Amazon EventBridge for all events in this bucket
Off

- Provide an Event Name as 'SNS-Event-2265'.
- Under Event Types, select:
 - Object creation – Tick 'Put'.
 - Object removal – Tick 'Permanently deleted'.



Amazon S3 > Buckets > sns-bkt-2265 > Create event notification

General configuration

Event name

SNS-Event-2265

Event name can contain up to 255 characters.

Prefix - optional

Limit the notifications to objects with key starting with specified characters.

images/

Suffix - optional

Limit the notifications to objects with key ending with specified characters.

.jpg

Event types

Specify at least one event for which you want to receive notifications. For each group, you can choose an event type for all events, or you can choose one or more individual events.

Object creation

☐ All object create events
s3:ObjectCreated:*

☒ Put
s3:ObjectCreated:Put

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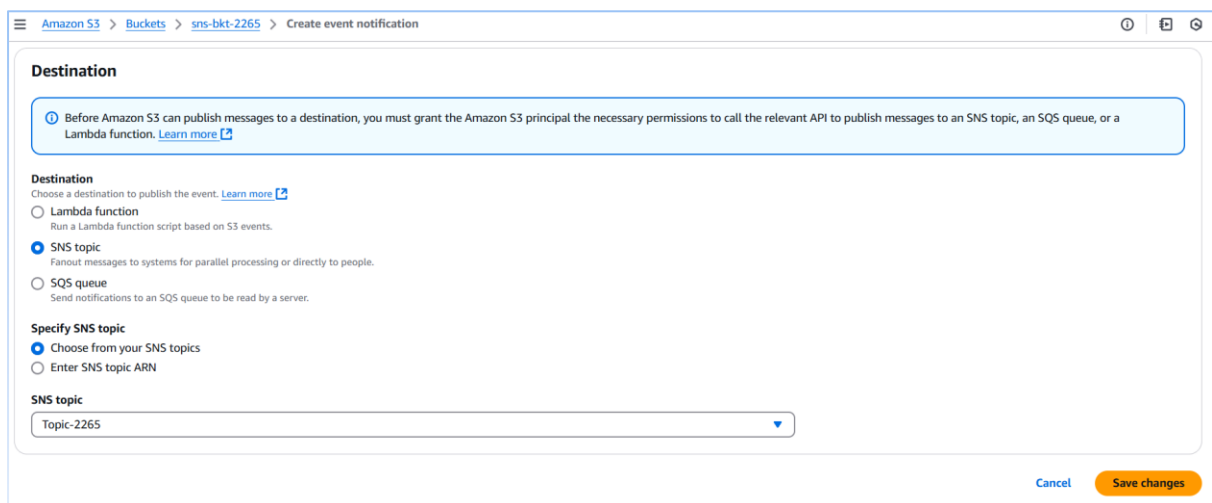
Object removal

☐ All object removal events
s3:ObjectRemoved:*

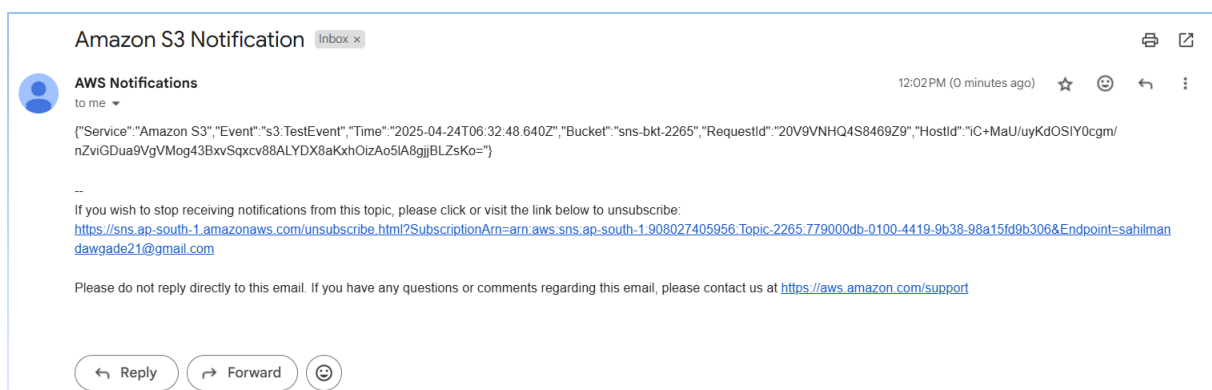
☒ Permanently deleted
s3:ObjectRemoved:Delete

☐ Delete marker created
s3:ObjectRemoved:DeleteMarkerCreated

- Under **Destination**, select SNS Topic.
- Choose from an **existing topic** and select the SNS topic **created earlier**.



- **Event Notification** is created successfully, and a **notification email** will be sent to the **subscribed email** address due to the successful creation of it.



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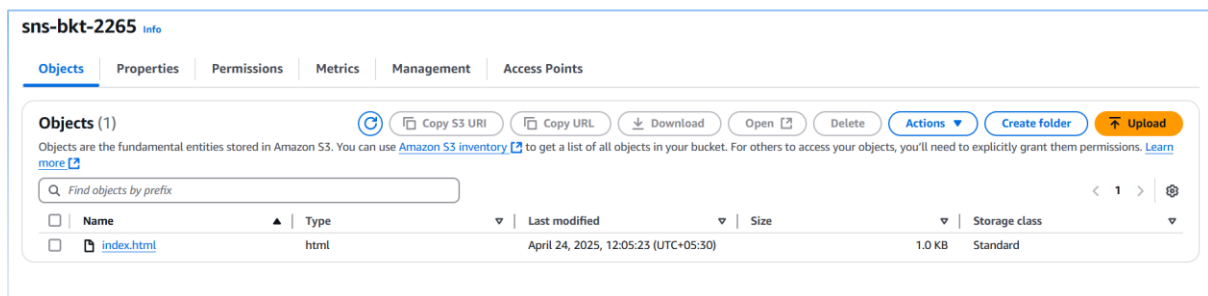
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Step 5: Upload a File in S3 to Trigger Notification.

- In the S3 bucket, select Upload.
- Choose the file to upload.
- Complete the upload process.
- A notification e-mail will be sent to the subscribed email address once the upload is successful.



- Now Delete the object and check e-mail again.

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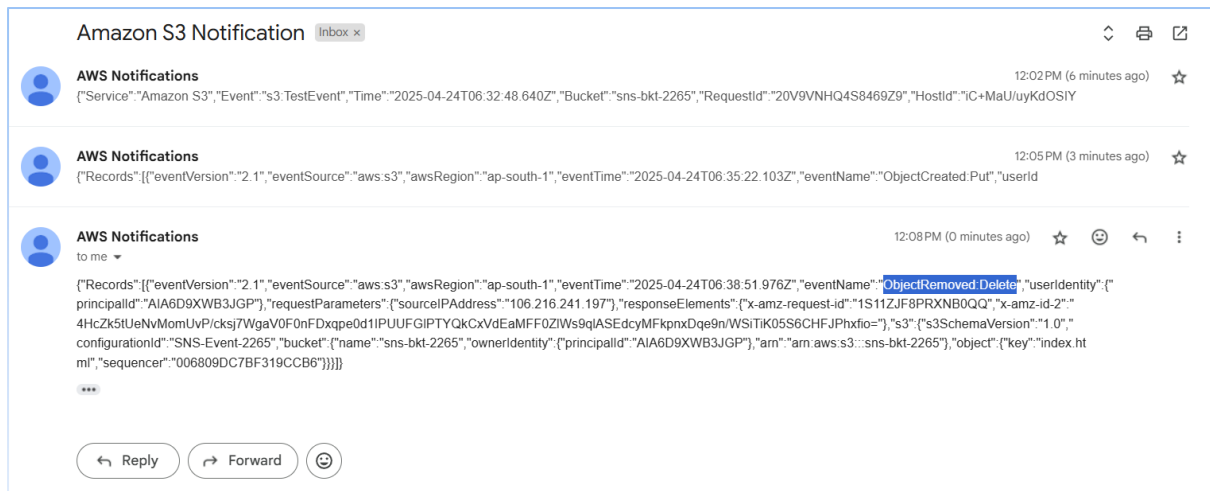
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The screenshot displays the Amazon SNS console interface. At the top, it says "Amazon S3 Notification" with an "Inbox" tab. Below this, there are three notifications from "AWS Notifications".

- Notification 1:** Received at 12:02 PM (6 minutes ago). The message body is a JSON object: `{"Service":"Amazon S3","Event":"s3.TestEvent","Time":"2025-04-24T06:32:48.640Z","Bucket":"sns-bkt-2265","RequestId":"20V9VNHQ4S8469Z9","HostId":"iC+MaU/uyKdOSiY"}`.
- Notification 2:** Received at 12:05 PM (3 minutes ago). The message body is a JSON object: `{"Records":[{"eventVersion":"2.1","eventSource":"aws.s3","awsRegion":"ap-south-1","eventTime":"2025-04-24T06:35:22.103Z","eventName":"ObjectCreated:Put","userId"}`.
- Notification 3:** Received at 12:08 PM (0 minutes ago). The message body is a JSON object: `{"Records":[{"eventVersion":"2.1","eventSource":"aws.s3","awsRegion":"ap-south-1","eventTime":"2025-04-24T06:38:51.976Z","eventName":"ObjectRemoved:Delete","userId":{"principalId":"AIA6D9XWB3JGP"},"requestParameters":{"sourceIPAddress":"106.216.241.197"},"responseElements":{"x-amz-request-id":"1S11ZJF8PRXNB0QQ","x-amz-id-2":"4HcZk5tUeNvMomUvP/cksj7WgaV0F0nFDxpe0d1IPUUFGIPTYQkCxVdEaMFF0ZIWs9qlASEdcyMFkpnxDqe9n/WSiTK05S6CHFJPhxio="},"s3":{"s3SchemaVersion":"1.0","configurationId":"SNS-Event-2265","bucket":{"name":"sns-bkt-2265","ownerIdentity":{"principalId":"AIA6D9XWB3JGP"},"arn":"arn:aws:s3:::sns-bkt-2265"},"object":{"key":"index.html","sequencer":"006809DC7BF319CCB6"}}}]}`. The text "ObjectRemoved:Delete" is highlighted in blue.

At the bottom of the notifications list, there are buttons for "Reply", "Forward", and a "More" icon (three dots).