Steps:

Set Up Your Terraform Environment

- **Install Terraform**: If you haven't already installed Terraform, download it from Terraform's official site and follow the installation steps.
- Configure AWS CLI: Make sure the AWS CLI is installed and configured with the necessary permissions.

Create a Terraform Project

• Create a directory for your project and navigate to it

Define the Provider

In main.tf, start by defining the provider (AWS)

```
      V terraform.tf
      Y variable.tf
      ■ terraform.exe

      1 terraform.f
      1 terraform {

      2 required_providers {
      aws = {

      4 source = "hashicorp/aws"
      }

      5 }
      random = {

      7 source = "hashicorp/random"
      }

      8 }
      archive = {

      10 source = "hashicorp/archive"
      }

      11 }
      }

      12 }
      }

      13 }
      }
```

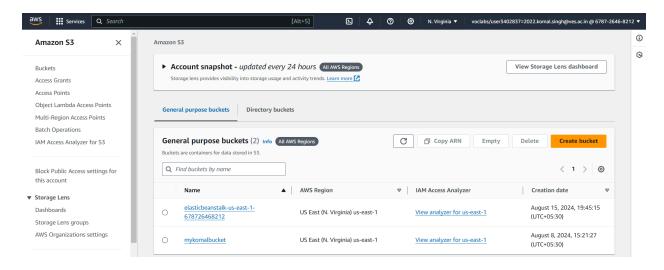
Create an S3 Bucket

• Next, define an S3 bucket where Lambda can receive file uploads.

```
C:\Terraform>set AWS_ACCESS_KEY_ID=ASIAZ4B2AAJ2DIHVPULX
C:\Terraform>set AWS_SECRET_ACCESS_KEY=NFBfgYSnjb9HTYcpFYpuCNVQn0PmTQAR53WbYVNP
C:\Terraform>terraform -v
Terraform v1.9.4
on windows_amd64
C:\Terraform>terraform init
Initializing the backend...
Initializing provider plugins...
- Finding latest version of hashicorp/archive...
- Finding latest version of hashicorp/aws...
- Finding latest version of hashicorp/random...
- Installing hashicorp/archive v2.5.0...
  Installed hashicorp/archive v2.5.0 (signed by HashiCorp)
  Installing hashicorp/aws v5.62.0...
 Installed hashicorp/aws v5.62.0 (signed by HashiCorp)
- Installing hashicorp/random v3.6.2..
- Installed hashicorp/random v3.6.2 (signed by HashiCorp)
Terraform has created a lock file .terraform.lock.hcl to record the provider
selections it made above. Include this file in your version control repository
so that Terraform can guarantee to make the same selections by default when you run "terraform init" in the future.
Terraform has been successfully initialized!
should now work.
```

```
C:\Terraform>terraform plan
Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
Terraform will perform the following actions:
  # random_pet.komalbucket717 will be created
  Plan: 1 to add, 0 to change, 0 to destroy.
Note: You didn't use the -out option to save this plan, so Terraform can't guarantee to take exactly these actions if you run "terraform apply" now.
C:\Terraform>terraform apply
Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
Terraform will perform the following actions:
  \begin{tabular}{ll} \textbf{\# random\_pet.komalbucket717} & will be created \\ \end{tabular}
     + id = (known after apply)
+ length = 3
+ prefix = "fdp"
+ separator = "-"
  resource "random_pet"
                            "komalbucket717
Plan: 1 to add, 0 to change, 0 to destroy. Terraform will perform the following actions:
  # random pet.komalbucket717 will be created
```

```
# random_pet.komalbucket717 will be created
  + resource "random pet" "komalbucket717" {
     + id = (known after apply)
     + length = 3
+ prefix = "fdp"
+ separator = "-"
Plan: 1 to add, 0 to change, 0 to destroy.
 + resource "random_pet" "komalbucket717" {
     + id = (known after apply)
     + length = 3
+ prefix = "fdp"
+ separator = "-"
Plan: 1 to add, 0 to change, 0 to destroy.
    + prefix = "fdp"
+ separator = "-"
Plan: 1 to add, 0 to change, 0 to destroy.
Plan: 1 to add, 0 to change, 0 to destroy.
Plan: 1 to add, 0 to change, 0 to destroy.
Do you want to perform these actions?
  Terraform will perform the actions described above.
  Terraform will perform the actions described above.
 Only 'yes' will be accepted to approve.
 Enter a value: yes
random_pet.komalbucket717: Creating...
random_pet.komalbucket717: Creation complete after 0s [id=fdp-likely-native-kingfish]
Apply complete! Resources: 1 added, 0 changed, 0 destroyed.
```



```
resource "random_pet" "komalbucket717" {
9
10
       length = 3
      prefix = "fdp"
11
13
14
     resource "aws_s3_bucket" "komalbucket717" {
15
       bucket = "${random pet.komalbucket717.id}-bucket"
       acl
             = "private"
16
17
18
19
    output "s3 arn" {
20
       value = aws s3 bucket.komalbucket717.arn
21
      description = "The ARN of the S3 bucket"
22
23
24
    variable "myregion" {
      description = "The AWS region to deploy resources in"
                   = "us-east-1" # You can change this to your desired region
```

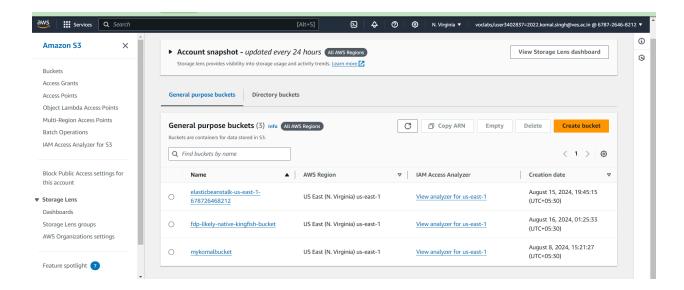
```
C:\Terraformoterraform apply random_pet.komalbucket717: Refreshing state... [id=fdp-likely-native-kingfish]

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbol + create

Terraform will perform the following actions:

# aws_s3_bucket.komalbucket717 will be created + resource "aws_s3_bucket" (*komalbucket717" (* acceleration_status = (known after apply) + acl = "private" (* arm = (known after apply) + bucket domain_name = (known after apply) + bucket_prefix = (known after apply) + core_destroy = false = (known after apply) + core_destroy = (known after apply) + core_destroy = (known after apply) + region = (known after apply) + tags_all = (known after apply) + tags_all = (known after apply) + website_demain = (known after apply) + website_endpoint = (known after apply) + cors_rule (known after apply) + grant (known after apply) + grant (known after apply)
```

```
aws_s3_bucket.komalbucket717: Creating...
aws s3_bucket.komalbucket717: Creation complete after 5s [id=fdp-likely-native-kingfish-bucket]
 Warning: Argument is deprecated
 Enter a value: yes
aws_s3_bucket.komalbucket717: Creating...
aws_s3_bucket.komalbucket717: Creation complete after 5s [id=fdp-likely-native-kingfish-bucket]
 Warning: Argument is deprecated
 Warning: Argument is deprecated
   with aws s3 bucket.komalbucket717,
   on main.tf line 16, in resource "aws_s3_bucket" "komalbucket717":
   16: acl = <u>"private"</u>
   with aws_s3_bucket.komalbucket717,
   on main.tf line 16, in resource "aws_s3_bucket" "komalbucket717":
   16: acl = "private"
 Use the aws s3 bucket acl resource instead
 Use the aws_s3_bucket_acl resource instead
Apply complete! Resources: 1 added, 0 changed, 0 destroyed.
Apply complete! Resources: 1 added, 0 changed, 0 destroyed.
Outputs:
s3 arn = "arn:aws:s3:::fdp-likely-native-kingfish-bucket"
s3_arn = "arn:aws:s3:::fdp-likely-native-kingfish-bucket"
s3_arn = "arn:aws:s3:::fdp-likely-native-kingfish-bucket"
```



Create an SQS Queue

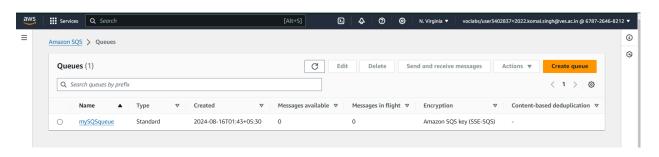
 Add an SQS queue that will receive events from the S3 bucket when a new object is uploaded.

```
resource "aws_sqs_queue" "myqueue" [{
    name = "mySQSqueue"
}
```

```
C:\Terraform>terraform plan
random_pet.komalbucket717: Refreshing state... [id=fdp-likely-native-kingfish]
aws_s3_bucket.komalbucket717: Refreshing state... [id=fdp-likely-native-kingfish-bucket]
Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
Terraform will perform the following actions:
  \begin{tabular}{ll} \textbf{# aws\_sqs\_queue.myqueue} & will be created \\ \end{tabular}
  + resource "aws_sqs_queue" "myqueue" {
                                           = (known after apply)
      + arn
      + content_based_deduplication
                                           = false
      + deduplication scope
                                           = (known after apply)
      + delay_seconds
                                          = 0
      + fifo_queue
                                          = false
      + fifo_throughput_limit
                                          = (known after apply)
                                           = (known after apply)
      + id
      + kms_data_key_reuse_period_seconds = (known after apply)
                                         = 262144
= 345600
      + max_message_size
      + message_retention_seconds
                                         = "mySQSqueue"
= (known after apply)
      + name
      + name_prefix
      + policy
                                          = (known after apply)
      + receive_wait_time_seconds
      + redrive_allow_policy
                                          = (known after apply)
      + redrive_policy
                                          = (known after apply)
      + sqs_managed_sse_enabled
                                          = (known after apply)
      + tags_all
                                          = (known after apply)
                                          = (known after apply)
      + url
      + visibility_timeout_seconds
Plan: 1 to add, 0 to change, 0 to destroy.
```

```
C:\Terraform>terraform apply
random_pet.komalbucket717: Refreshing state... [id=fdp-likely-native-kingfish]
aws_s3_bucket.komalbucket717: Refreshing state... [id=fdp-likely-native-kingfish-bucket]
Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
  + create
Terraform will perform the following actions:
  # aws_sqs_queue.myqueue will be created
  + resource "aws_sqs_queue" "myqueue" {
                                             = (known after apply)
      + arn
      + content based deduplication
                                             = false
      + deduplication_scope
                                             = (known after apply)
      + delay_seconds
      + fifo_queue
                                             = false
      + fifo_throughput_limit
                                             = (known after apply)
                                             = (known after apply)
      + id
      + kms_data_key_reuse_period_seconds = (known after apply)
      + max_message_size
      + message_retention_seconds
                                             = 345600
      + name
                                            = "mySQSqueue"
      + name_prefix
                                             = (known after apply)
                                             = (known after apply)
      + receive_wait_time_seconds
                                             = (known after apply)
= (known after apply)
      + redrive_allow_policy
      + redrive_policy
+ sqs_managed_sse_enabled
                                             = (known after apply)
      + tags_all
                                             = (known after apply)
      + url
                                             = (known after apply)
      + visibility_timeout_seconds
Plan: 1 to add, 0 to change, 0 to destroy.
  Warning: Argument is deprecated
```

```
Do you want to perform these actions?
  Terraform will perform the actions described above.
Do you want to perform these actions?
 Terraform will perform the actions described above.
Do you want to perform these actions?
 Terraform will perform the actions described above. Only 'yes' will be accepted to approve.
  Enter a value: yes
  Only 'yes' will be accepted to approve.
  Enter a value: yes
aws_sqs_queue.myqueue: Creating...
  Enter a value: yes
aws_sqs_queue.myqueue: Creating...
aws_sqs_queue.myqueue: Creating...
aws_sqs_queue.myqueue: Creating...
aws_sqs_queue.myqueue: Still creating... [10s elapsed]
aws_sqs_queue.myqueue: Still creating... [20s elapsed]
aws_sqs_queue.myqueue: Creation complete after 28s [id=https://sqs.us-east-1.amazonaws.com/678726468212/mySQSqueue]
aws_sqs_queue.myqueue: Still creating... [20s elapsed]
aws_sqs_queue.myqueue: Creation complete after 28s [id=https://sqs.us-east-1.amazonaws.com/678726468212/mySQSqueue]
aws_sqs_queue.myqueue: Creation complete after 28s [id=https://sqs.us-east-1.amazonaws.com/678726468212/mySQSqueue]
Apply complete! Resources: 1 added, 0 changed, 0 destroyed.
Outputs:
s3_arn = "arn:aws:s3:::fdp-likely-native-kingfish-bucket"
```



```
C:\Terraform>terraform apply
random_pet.komalbucket717: Refreshing state... [id=fdp-likely-native-kingfish]
data.archive_file.zip: Reading...
data.archive_file.zip: Read complete after 0s [id=93c92209eafac774599673c33c7e7636e68e60e8]
aws_sq_queue.myqueue: Refreshing state... [id=https://sqs.us-east-1.amazonaws.com/678726468212/mySQSqueue]
aws_s3_bucket.komalbucket717: Refreshing state... [id=fdp-likely-native-kingfish-bucket]

No changes. Your infrastructure matches the configuration.

Terraform has compared your real infrastructure against your configuration and found no differences, so no changes are needed.

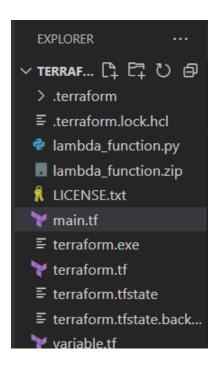
Warning: Argument is deprecated

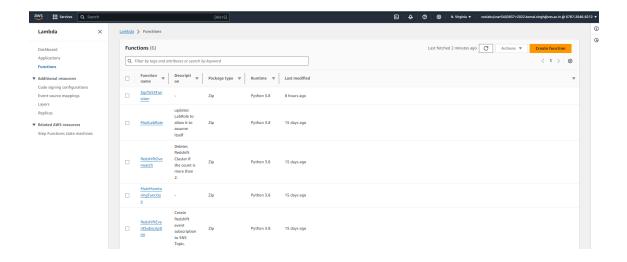
with aws_s3_bucket.komalbucket717,
on main.tf line 16, in resource "aws_s3_bucket" "komalbucket717":
16: acl = "private"

Use the aws_s3_bucket_acl resource instead

(and one more similar warning elsewhere)

Apply complete! Resources: 0 added, 0 changed, 0 destroyed.
```



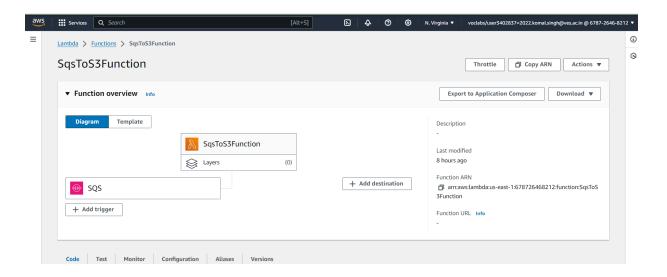


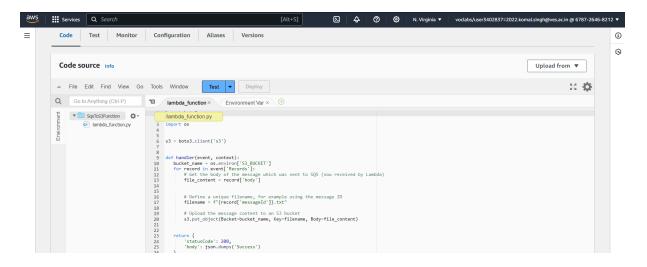
Create a Lambda Function

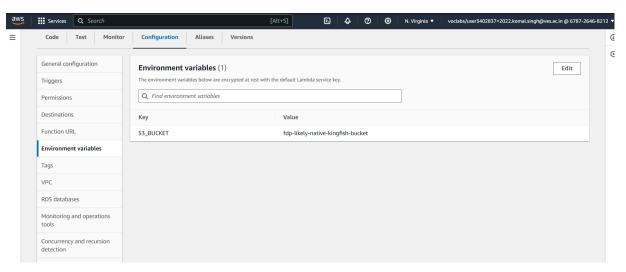
 Define the Lambda function that will be triggered by S3 events and send messages to SQS. You need a ZIP file containing your Lambda function code, which you can upload to the S3 bucket.

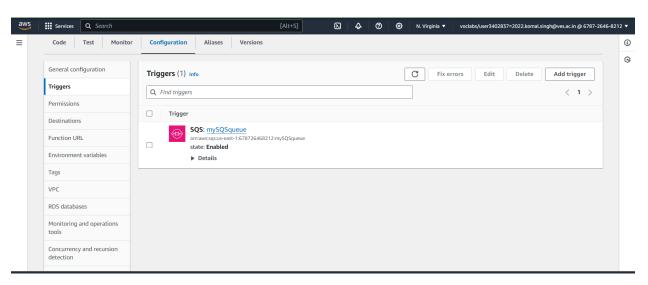
Create IAM Role for Lambda

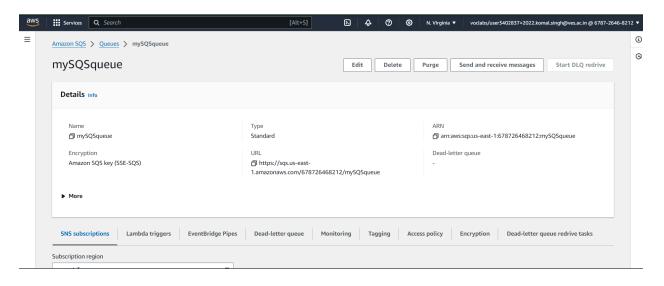
 Lambda needs permissions to read from S3 and send messages to SQS. Define an IAM role and policy for the Lambda function.

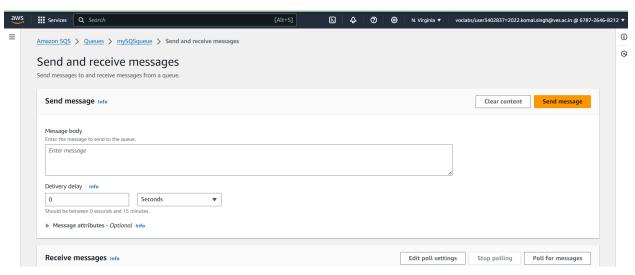


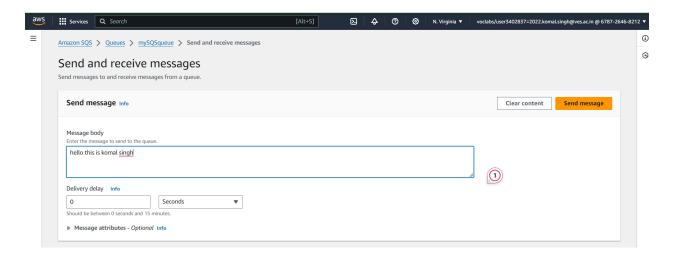


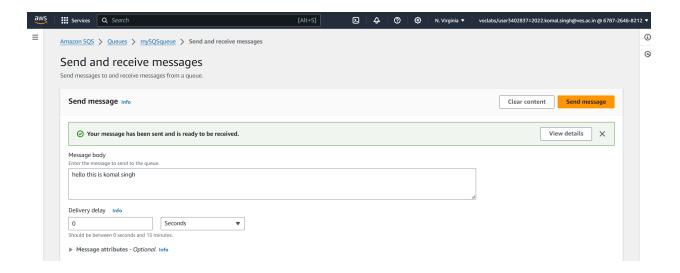






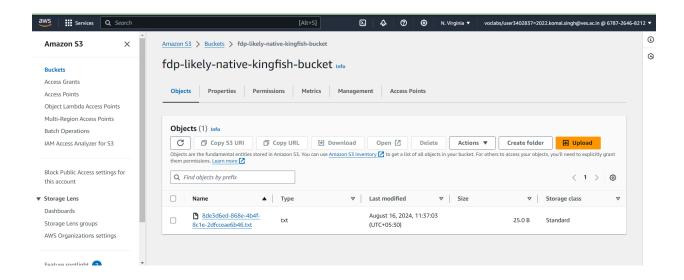


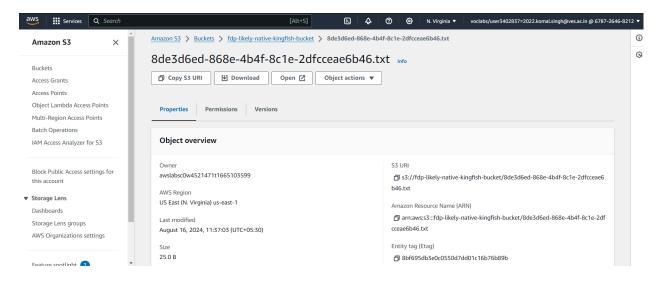


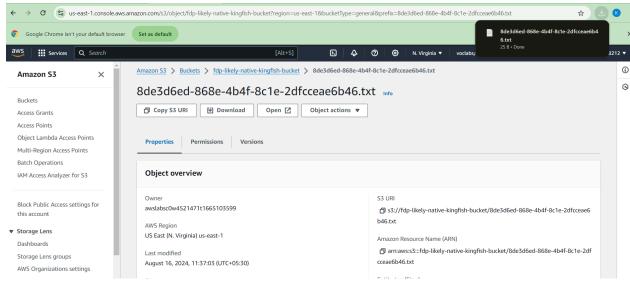


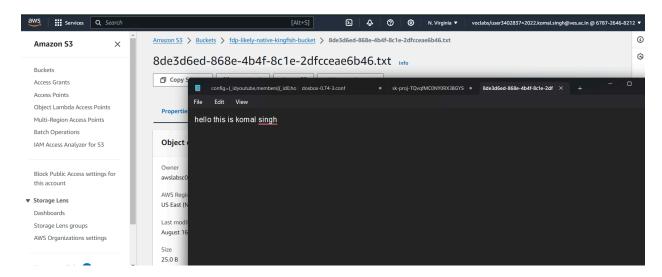
Add S3 Event Notification for Lambda Trigger

 Define a bucket notification to trigger the Lambda function when objects are uploaded to the S3 bucket.



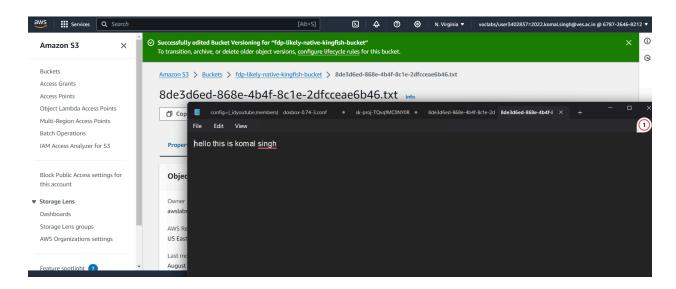


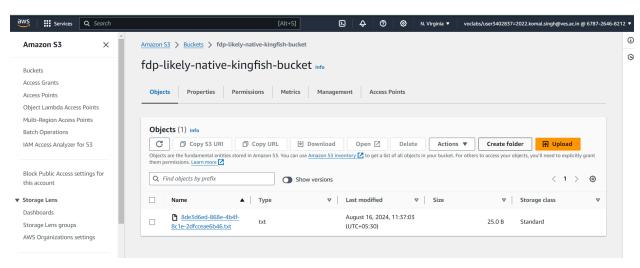




Initialize and Apply Terraform

Initialize the Terraform configuration.





```
DEBUG CONSOLE TERMINAL PORTS SEARCH ERROR
Microsoft Windows [Version 10.0.22000.2057]
(c) Microsoft Corporation. All rights reserved.
C:\Terraform>terraform destroy
random_pet.komalbucket717: Refreshing state... [id=fdp-likely-native-kingfish]
 data.archive_file.zip: Reading...
data.archive_file.zip: Read complete after 0s [id=93c92209eafac774599673c33c7e7636e68e60e8]
aws_sqs_queue.myqueue: Refreshing state... [id=https://sqs.us-east-1.amazonaws.com/678726468212/mySQSqueue]
aws_3_bucket.komalbucket717: Refreshing state... [id=fdp-likely-native-kingfish-bucket]
aws_lambda_event_source_mapping.SqsToLambda: Refreshing state... [id=4582b6aa-1865-4866-86eb-1062635c21a7]
aws_lambda_function.mykomlambda: Refreshing state... [id=5qsToS3Function]
 Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
 Terraform will perform the following actions:
   # aws_lambda_event_source_mapping.SqsToLambda will be destroy
- resource "aws_lambda_event_source_mapping" "SqsToLambda" {
             batch_size = 1 -> null
bisect batch on function error = false -> null
             enabled
                                                                       = "arn:aws:sqs:us-east-1:678726468212:mySQSqueue" -> null
= "arn:aws:lambda:us-east-1:678726468212:function:SqsToS3Function" -> null
= "arn:aws:lambda:us-east-1:678726468212:function:SqsToS3Function" -> null
              function_arn
              function name
                                                                      = (1) -> null
= "4582b6aa-1865-4866-86eb-1962635c21a7" -> null
= "2024-08-16T06:50:00Z" -> null
               function_response_types
              last modified
             maximum_batching_window_in_seconds = 0 -> null
              maximum_record_age_in_seconds
             maximum_retry_attempts
parallelization_factor
                                                                             "Enabled" -> null
              state
              state transition reason
                                                                        = "USER INITIATED" -> null
              tumbling_window_in_seconds
                                                                        = 0 -> null
= "4582b6aa-1865-4866-86eb-1062635c21a7"
```