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D15B
10
Adv Devops Assignment 2

Code:

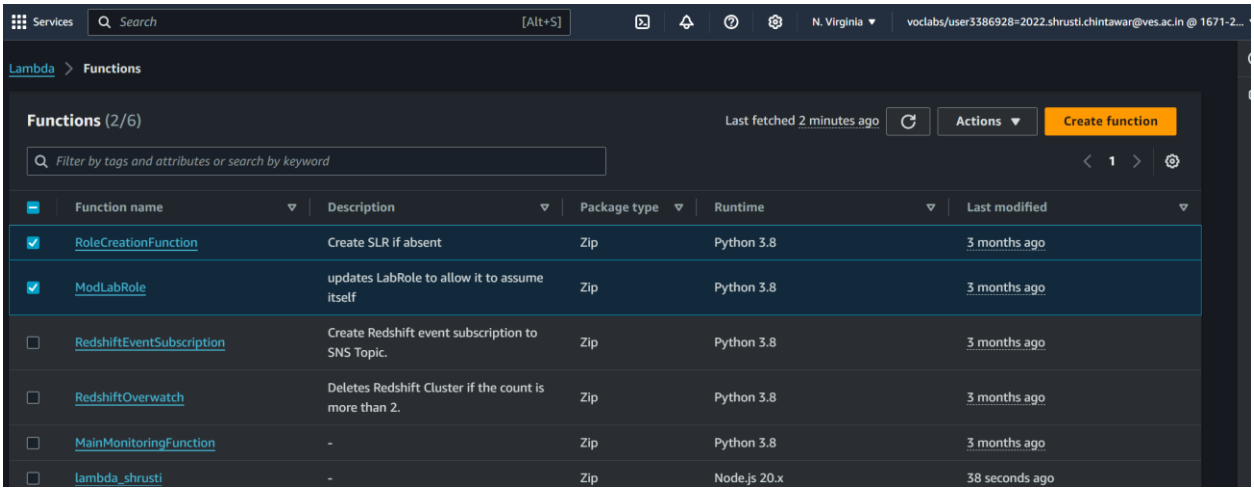
```
provider "aws" {
  region = "ap-south-1"
}

# S3 Bucket
resource "aws_s3_bucket" "s3mayur" {
  bucket = "my-terraform-s3-bucket"
  acl    = "private"

  versioning {
    enabled = true
  }
}

# SQS Queue
resource "aws_sqs_queue" "sqsmayur" {
  name = "my-terraform-sqs-queue"
}

# Lambda Function
resource "aws_lambda_function" "lambda_mayur" {
  function_name = "s3-to-sqs-lambda"
  role          = aws_iam_role.lambda_exec.arn
  handler       = "index.handler"
  runtime       = "nodejs14.x"
  timeout       = 10

  filename = "lambda.zip"  # Path to the Lambda zip file

  environment {
    variables = {
      QUEUE_URL = aws_sqs_queue.sqsmayur.id
    }
  }
}

# IAM Role for Lambda execution
resource "aws_iam_role" "lambda_exec" {
```

```
  name = "lambda_exec_role"

  assume_role_policy = jsonencode({
    Version = "2012-10-17",
    Statement = [{
      Action    = "sts:AssumeRole",
      Effect    = "Allow",
      Principal = {
        Service = "lambda.amazonaws.com"
      }
    }]
  })
}

# IAM Role Policy for Lambda (grant permissions to interact with S3 and SQS)
resource "aws_iam_role_policy" "lambda_exec_policy" {
  role = aws_iam_role.lambda_exec.id

  policy = jsonencode({
    Version = "2012-10-17",
    Statement = [
      {
        Action = [
          "sqs:SendMessage"
        ],
        Effect   = "Allow",
        Resource = aws_sqs_queue.sqsmayur.arn
      },
      {
        Action = [
          "s3:GetObject"
        ],
        Effect   = "Allow",
        Resource = "${aws_s3_bucket.s3mayur.arn}/*"
      }
    ]
  })
}

# S3 Bucket Notification to trigger Lambda on object creation
resource "aws_s3_bucket_notification" "s3_notification" {
  bucket = aws_s3_bucket.s3mayur.id

  lambda_function {
```

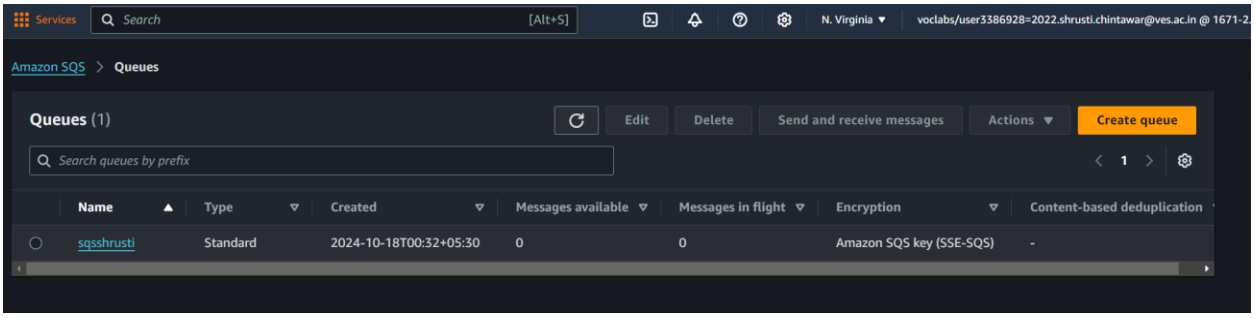
```
    lambda_function_arn = aws_lambda_function.lambda_mayur.arn
    events              = ["s3:ObjectCreated:*"]
  }
}

# Lambda Permission for S3 to invoke the Lambda function
resource "aws_lambda_permission" "allow_s3" {
  statement_id  = "AllowS3InvokeLambda"
  action        = "lambda:InvokeFunction"
  function_name = aws_lambda_function.lambda_mayur.function_name
  principal     = "s3.amazonaws.com"

  source_arn = aws_s3_bucket.s3mayur.arn
}
```

Implementation:

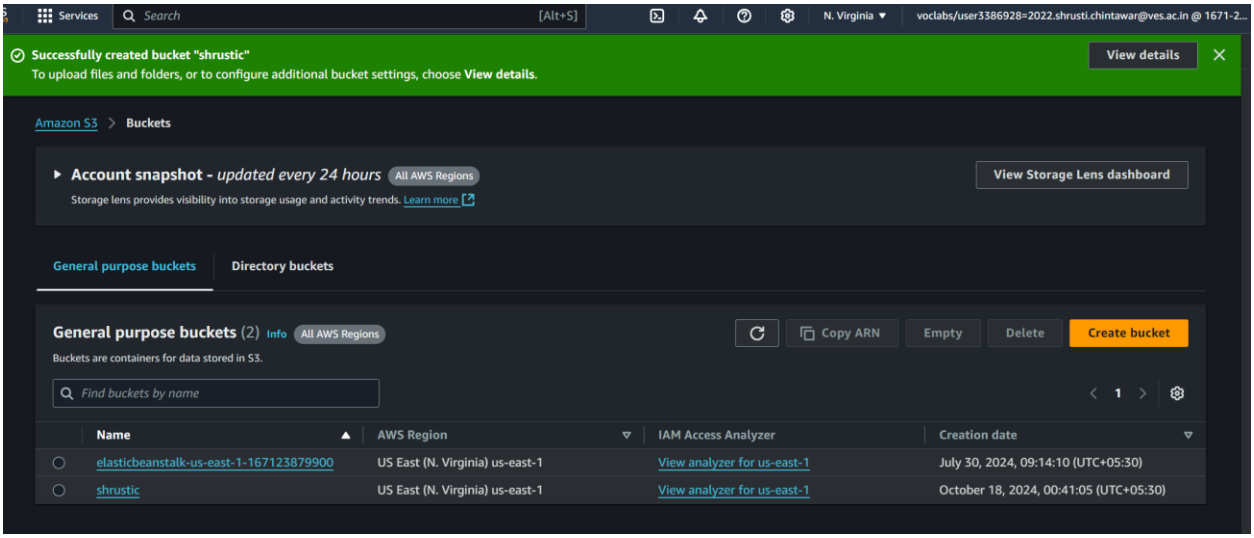
1. Creating Lambda Function



2. Creating Sqs Queue



3. Creating S3 Bucket



Performing Terraform commands

1. Terraform init

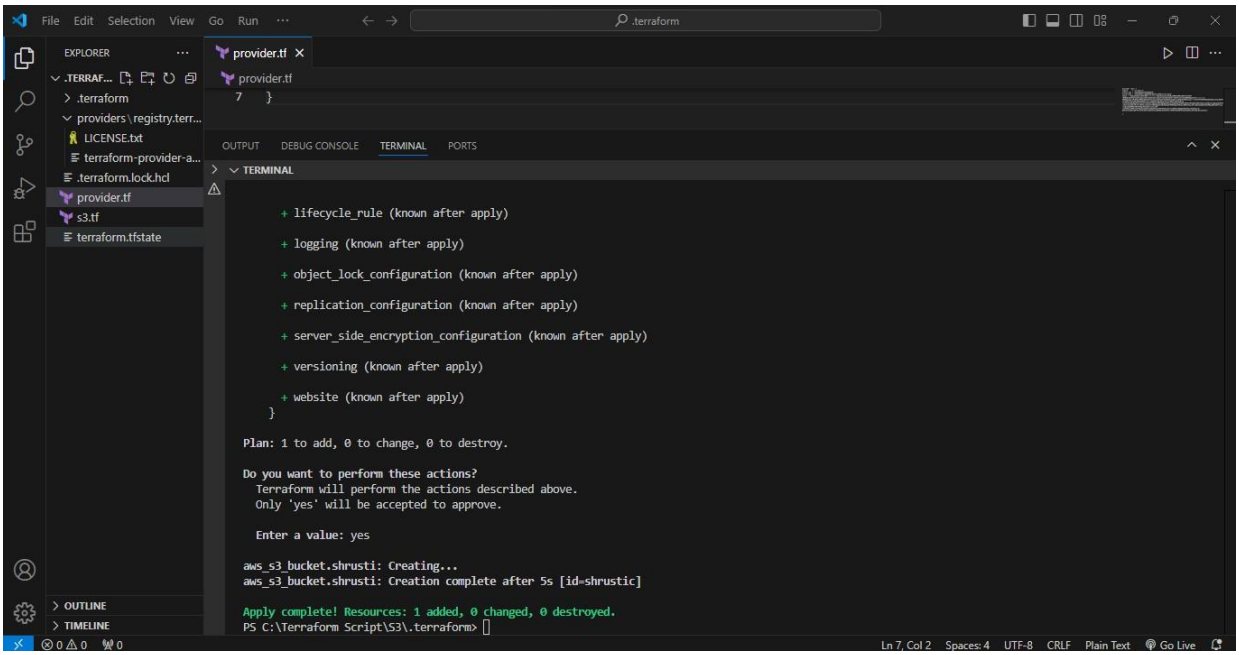
```
C:\Terraform_Scripts\S3>terraform init

Initializing the backend...

Initializing provider plugins...
- Finding latest version of hashicorp/aws...
- Installing hashicorp/aws v4.25.0...
- Installed hashicorp/aws v4.25.0 (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!

You may now begin working with Terraform. Try running "terraform plan" to see
any changes that are required for your infrastructure. All Terraform commands
should now work.

If you ever set or change modules or backend configuration for Terraform,
rerun this command to reinitialize your working directory. If you forget, other
commands will detect it and remind you to do so if necessary.

C:\Terraform_Scripts\S3>_
```

2. Terraform plan

```
PS C:\Users\Hp\OneDrive\Documents\terraform-aws-s3-sqs-lambda> terraform plan
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS                    powershell

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_s3_bucket.shrusti will be created
  + resource "aws_s3_bucket" "shrusti" {
      + acceleration_status         = (known after apply)
      + acl                         = (known after apply)
      + arn                         = (known after apply)
      + bucket                      = "shrustic"
      + bucket_domain_name          = (known after apply)
      + bucket_prefix               = (known after apply)
      + bucket_regional_domain_name = (known after apply)
      + force_destroy               = false
      + hosted_zone_id              = (known after apply)
      + id                          = (known after apply)
      + object_lock_enabled         = (known after apply)
      + policy                      = (known after apply)
      + region                      = (known after apply)
      + request_payer               = (known after apply)
      + tags                        = {
          + "Environment" = "Dev"
          + "Name"        = "My bucket"
        }
      + tags_all                    = {
          + "Environment" = "Dev"
          + "Name"        = "My bucket"
        }
```

3. Terraform apply



Folder structure of main.tf file

s3.tf

```
resource "aws_s3_bucket" "shrustic" {
    bucket = "shrustic"

    tags = {
        Name        = "My Bucket"
        Environment = "Dev"
    }
}
```

Welcome | s3.tf | provider.tf

provider.tf

```
provider "aws" {
access_key= "ASIASN2K4A7OOR75NLWJ"
secret_key="ycT+D4TLr8GwjCVnpwrPUmzQogPoqXeNU4EIQBDK"
region "ap-south-1"
}
```

Conclusion:

In this experiment, we successfully deployed an AWS infrastructure using Terraform, integrating essential services such as Amazon S3, SQS, and Lambda. By leveraging Terraform's infrastructure as code capabilities, we were able to automate the provisioning and configuration of cloud resources, ensuring consistency and reproducibility in our deployments.