Lab Exercise 10- Creating an AWS RDS Instance in Terraform

Objective:

Learn how to use Terraform to create an AWS RDS instance.

Prerequisites:

- Terraform installed on your machine.
- AWS CLI configured with the necessary credentials.

Steps:

1. Create a Terraform Directory:

```
mkdir terraform-rds
cd terraform-rds
```

2. Create Terraform Configuration Files:

Create a file named main.tf:

main.tf

```
provider "aws" {
  region = "us-east-1"
}

resource "aws_db_instance" "My-RDS" {
  allocated_storage = 10
  db_name = "upesdb"
  engine = "mysql"
```

```
engine_version = "5.7"
instance_class = "db.t2.micro"
username = "admin"
password = "Hitesh111"
parameter_group_name = "default.mysql5.7"
skip_final_snapshot = true
}
```

- Replace "YourPassword123" with a secure password and "your-security-group-id" with your actual security group ID.
- In this configuration, we define an AWS RDS instance with specific settings, such as engine type, instance class, and security group.

3. Initialize and Apply:

• Run the following Terraform commands to initialize and apply the configuration:

terraform init terraform apply

• Terraform will prompt you to confirm the creation of the RDS instance. Type yes and press Enter.

4. Verify RDS Instance in AWS Console:

- Log in to the AWS Management Console and navigate to the RDS service.
- Verify that the specified RDS instance with the specified settings has been created.

5. Update RDS Configuration:

- If you want to modify the RDS instance configuration, update the main.tf file with the desired changes.
- Rerun the terraform apply command to apply the changes:

terraform apply

6. Clean Up:

After testing, you can clean up the RDS instance:

terraform destroy

Confirm the destruction by typing yes.

7. Conclusion:

This lab exercise demonstrates how to use Terraform to create an AWS RDS instance. You learned how to define RDS settings, initialize and apply the Terraform configuration, and verify the creation of the RDS instance in the AWS Management Console. Experiment with different RDS settings in the main.tf file to observe how

```
main.tf
               rds.tf
rds.tf
      provider "aws" {
region = "ap-south-1"
      access_key = "AKIAWCHJEOQYJV3PQHM2"
      secret_key = "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"
  4
  5
       resource "aws_db_instance" "My-RDS" {
  8
        allocated_storage
                               = 10
                                  = "raghavdb"
  9
         identifier
         engine
                               = "mysql"
 10
         engine_version
 11
                               = "db.t3.micro"
         instance_class
 12
                               = "raghavdb"
         username
         password
                              = "raghav123"
 14
         parameter_group_name = "default.mysql5.7"
 15
 16
         skip_final_snapshot = true
         publicly_accessible = true
 17
         tags = {
 18
         Name = "Myrdsdb"
 19
 20
 21
```

```
rds.tf
🍸 main.tf
🏋 main.tf
       terraform {
       required providers {
  2
       aws = {
  3
       source = "hashicorp/aws"
  4
       version = "5.31.0"
  5
  6
       }
  7
       }
  8
  9
 10
```

```
PS C:\Users\anu39\Terraform-Script> terraform init

Initializing the backend...

Initializing provider plugins...
- Finding hashicorp/aws versions matching "5.31.0"...
- Installing hashicorp/aws v5.31.0...
- Installed hashicorp/aws v5.31.0 (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.
```

PS C:\Users\anu39\Terraform-Script> terraform validate Success! The configuration is valid.

```
PS C:\Users\anu39\Terraform-Script> 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:
       # aws_db_instance.My-RDS will be created
+ resource "aws_db_instance" "My-RDS" {
+ address
+ allocated_storage
+ apply_immediately
                             engine_ve-
hosted_zone_id
id
identifier
identifier_prefix
instance_class
iops id ble_time
                                                                                                                                                                                                                = "db.t3.micro"
= (known after apply)
                                  Instance_class
iops
kms_key_id
latest_restorable_time
license_model
listener_endpoint
maintenance_window
                                    master_user_secret

master_user_secret kms_key_id
monitoring_interval
monitoring_role_arn

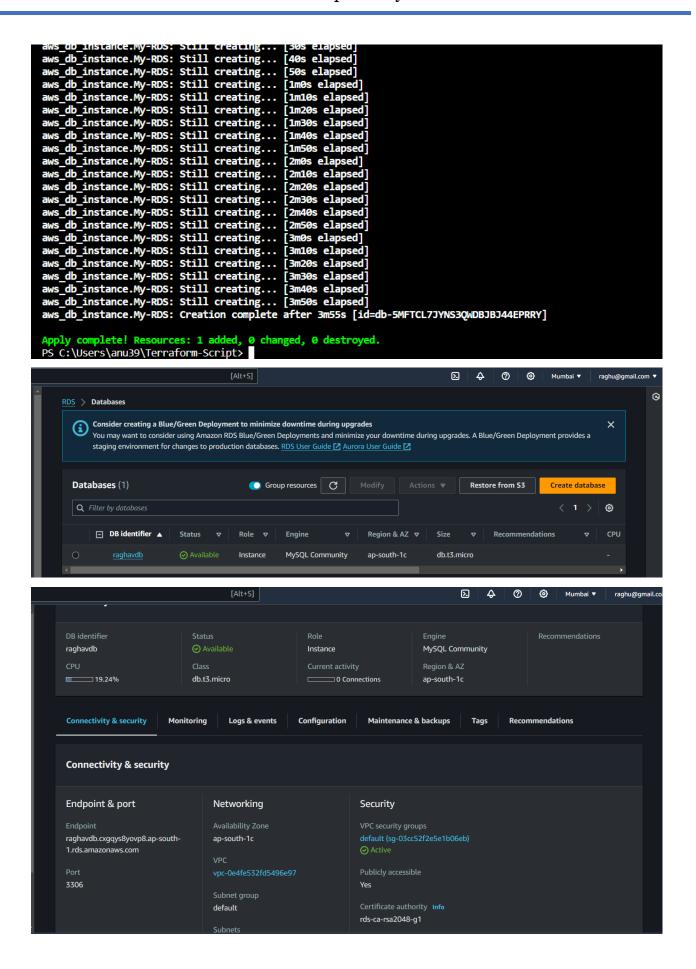
multi_az
nchar_character_set_name
poption_group_name
parameter_group_name
parameter_group_name
performance_insights_enabled
performance_insights_retention_period
poption_group_came
performance_insights_retention_period
performance_insights_retention_period
popticas
resource_id
replicas
resource_id
replicas
resource_id
skip_final_snapshot
status
storage_type
status
+ "Name" = "Myrdsdb"
}
telencom_after apply)

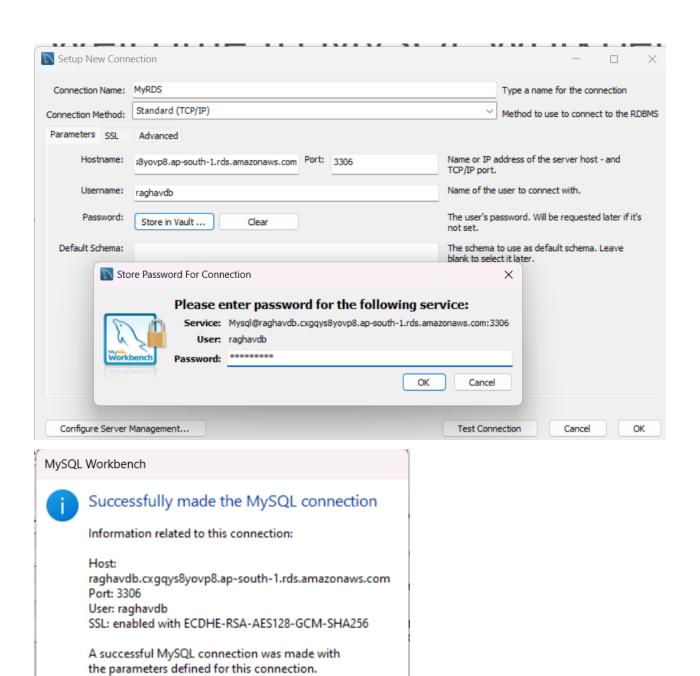
| (known after apply)
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| (known after apply)
| (known after apply)
| (known after apply)
| 
                                      }
tags_all
+ "Name" = "Myrdsdb"
                               }
+ timezone
                               + timezone
+ username
+ vpc_security_group_ids
                                                                                                                                                                                                                   = (known after apply)
= "raghavdb"
= (known after apply)
    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

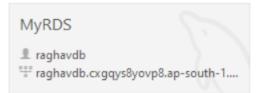
```
PS C:\Users\anu39\Terraform-Script> terraform apply
Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
Terraform will perform the following actions:
   = (known after apply)
                allocated_storage
apply_immediately
arn
                                                                                                       = 10
= false
                                                                                                            (known after apply)
                arn
auto_minor_version_upgrade
availability_zone
backup_retention_period
backup_target
backup_window
ca_cert_identifier
character_set_name
copy_tags_to_snapshot
db_name
dh_subnet_group_name
                                                                                                          (known after apply)
= false
= (known after apply)
                db_subnet_group_name
delete_automated_backups
                endpoint
engine
engine_version
                                                                                                       = (known after apply)
= "mysql"
= "5.7"
                                                                                                      = "5.7"
= (known after apply)
= (known after apply)
= (known after apply)
= "raghavdb"
                engine_version_actual
hosted_zone_id
                 id
identifier
                                                                                                      = ragnavdo
= (known after apply)
= "db.t3.micro"
                 identifier_prefix
instance_class
                instance_chassions
iops
kms key_id
latest_restorable_time
license_model
listener_endpoint
                                                                                                      = ub.ts.micro
= (known after apply)
```

```
(known after apply)
(known after apply)
           + master user secret
          + master_user_secret_kms_key_id
+ monitoring_interval
                                                                                     (known after apply)
"default.mysql5.7"
           + monitoring_role_arn
           + multi az
           + nchar_character_set_name
           + network_type
           + option_group_name
           + parameter_group_name
                                                                                 = (sensitive value)
= false
           + password
          + performance_insights_enabled = 
+ performance_insights_kms_key_id = 
+ performance_insights_retention_period =
                                                                                 = (known after apply)
= (known after apply)
= (known after apply)
           + publicly_accessible
                                                                                     true
                                                                                 = (known after apply)
= (known after apply)
= (known after apply)
           + replica_mode
          + replicas
+ resource_id
           + skip_final_snapshot
                                                                                     true
                                                                                = (known after apply)
= (known after apply)
= (known after apply)
= (known after apply)
           + snapshot_identifier
           + status
           + storage_throughput
           + storage_type
          + tags
+ "Name" = "Myrdsdb"
             tags_all
                                                                                 = {
                      "Name" = "Myrdsdb"
          }
+ timezone
                                                                                = (known after apply)
= "raghaydb"
          + username
           + vpc_security_group_ids
                                                                                 = (known after apply)
Plan: 1 to add, 0 to change, 0 to destroy.
aws_db_instance.My-RDS: Creating...
aws_db_instance.My-RDS: Still creating... [10s elapsed]
aws_db_instance.My-RDS: Still creating... [20s elapsed]
```

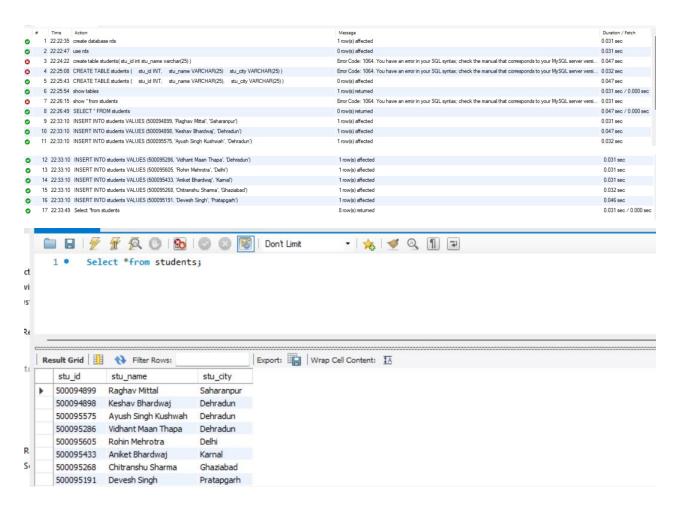


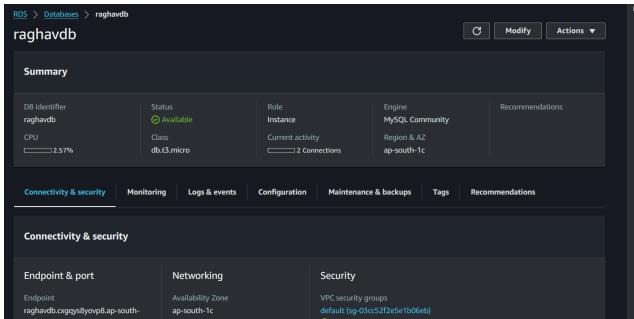


OK



Prepared by: Dr. Hitesh Kumar Sharma





```
ws_db_instance.My-RDS: Refreshing state... [id=db-5MFTCL7JYNS3QWDBJBJ44EPRRY]
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_db_instance.My-RDS will be destroy
resource "aws_db_instance" "My-RDS" {
             address
allocated_storage
apply_immediately
                                                                                         "raghavdb.cxgqys8yovp8.ap-south-1.rds.amazonaws.com" -> null
              appy_immediately
arn
auto_minor_version_upgrade
availability_zone
backup_retention_period
backup_target
backup_window
ca_cert_identifier
conv_tags_to_snashot
                                                                                          "arn:aws:rds:ap-south-1:417100756016:db:raghavdb" -> null
                                                                                         true -> null
"ap-south-1c" -> null
                                                                                        0 -> null
"region" -> null
"22:47-23:17" -> null
"rds-ca-rsa2048-g1" -:
             ca_cert_identifier
copy_tags_to_snapshot
customer_owned_ip_enabled
db_subnet_group_name
delete_automated_backups
deletion_protection
enabled_cloudwatch_logs_exports
endpoint
                                                                                        "aase -> null
"default" -> null
true -> null
false -> null
[] -> null
"raghavdb.cxgqys8yovp8.ap-south-1.rds.amazonaws.com:3306" -> null
"5.7" -> null
                                                                                         false -> null
false -> null
"default" ->
              enuponne
engine_version
engine_version_actual
hosted_zone_id
iam_database_authentication_enabled
id___identifier
                                                                                          "5.7.44" -> null
"Z2VFMSZA74J7XZ"
                                                                                        "ZZYMSZA/4J7XZ
false -> null
"db-SMFTCLZJYNS3QMDBJBJ44EPRRY" -> null
"raghavdb" -> null
"db.t3.micro" -> null
              id
identifier
instance_class
                                                                                       license_model
              listener_endpoint
maintenance_window
master_user_secret
```

```
master_user_secret
max_allocated_storage
                                                                                                                                                                                                                                                                 = [] -> null
= 0 -> null
= 0 -> null
                                             monitoring_interval
                                            monitoring_interval = 0 -> null
multi_az = false -> null
entwork_type = "IPV4" -> null
option_group_name = "default:mysql-5-7" -> null
parameter_group_name = "default.mysql5-7" -> null
entwork_type = "IPV4" -> null
entwork_type = "IPV4" -> null
entwork_type = "Galault.mysql5-7" -> null
entwork_type = "IPV4" -> null
entwork_type 
                                             port publicly_accessible
                                                                                                                                                                                                                                                                  = 3306 -> null
                                                                                                                                                                                                                                                                             true -> null
                                                                                                                                                                                                                                                                             [] -> null
"db-5MFTCL7JYNS3QWDBJBJ44EPRRY" -> null
                                               replicas
                                               resource_id
                                                                                                                                                                                                                                                                            true -> null
"available" -> null
                                               skip_final_snapshot
                                               status
                                                                                                                                                                                                                                                                = false -> null
= 0 -> null
= "gp2" -> null
= {
                                               storage_encrypted
                                               storage_throughput
                                               storage_type
                                             tags
- "Name" = "Myrdsdb"
                                               } -> null
                                             tags_all
- "Name" = "Myrdsdb"
                                                                                                                                                                                                                                                                  = {
                                               } -> null
                                                                                                                                                                                                                                                                 = "raghavdb" -> null
                                               username
                                             vpc_security_group_ids
- "sg-03cc52f2e5e1b06eb",
                                               ] -> null
Plan: 0 to add, 0 to change, 1 to destroy.

aws_db_instance.My-RDS: Destroying... [id=db-5MFTCL7JYNS3QMDBJBJ44EPRRY]

aws_db_instance.My-RDS: Still destroying... [id=db-5MFTCL7JYNS3QWDBJBJ44EPRRY, 10s elapsed]

aws_db_instance.My-RDS: Still destroying... [id=db-5MFTCL7JYNS3QWDBJBJ44EPRRY, 20s elapsed]

aws_db_instance.My-RDS: Still destroying... [id=db-5MFTCL7JYNS3QWDBJBJ44EPRRY, 30s elapsed]

aws_db_instance.My-RDS: Still destroying... [id=db-5MFTCL7JYNS3QWDBJBJ44EPRRY, 40s elapsed]

aws_db_instance.My-RDS: Still destroying... [id=db-5MFTCL7JYNS3QWDBJBJ44EPRRY, 50s elapsed]
```

```
Plan: 0 to add, 0 to change, 1 to destroy.

aws_db_instance.My-RDS: bestroying... [id=db-SMFTCL77YNS3QMDBJB344EPRRY]

aws_db_instance.My-RDS: still destroying... [id=db-SMFTCL77YNS3QMDBJB344EPRRY, 10s_elapsed]

aws_db_instance.My-RDS: still destroying... [id=db-SMFTCL77YNS3QMDBJB344EPRRY, 20s_elapsed]

aws_db_instance.My-RDS: still destroying... [id=db-SMFTCL77YNS3QMDBJB344EPRRY, 30s_elapsed]

aws_db_instance.My-RDS: still destroying... [id=db-SMFTCL77YNS3QMDBJB344EPRRY, 30s_elapsed]

aws_db_instance.My-RDS: still destroying... [id=db-SMFTCL77YNS3QMDBJB344EPRRY, 30s_elapsed]

aws_db_instance.My-RDS: still destroying... [id=db-SMFTCL77YNS3QMDBJB344EPRRY, imm0s_elapsed]

aws_db_instance.My-RDS: still destroying... [id=db-SMFTCL77YNS3QMDBJB34EPRRY, imm0s_elapsed]

aws_db_instance.My-RDS: still destroyin
```