Assignment No 6

Title- Setting up AWS Environment: Create a new AWS account, Secure the root user, Create an IAM user to use in the account Set up the AWS CLI, Set up a Cloud 9 environment.
Name: Thorve Avishkar S
Roll No.: 63

Steps:

1. Create a New AWS Account

1. Go to AWS Sign Up
2. Click **Create an AWS Account**.
3. Enter your **email address**, **AWS account name**, and set a **password**.
4. Select your **account type** (Personal or Business).
5. Enter your **billing details** (AWS requires a valid credit/debit card).
6. Complete **identity verification** (enter phone number, receive OTP).
7. Choose a **Support Plan** (Free tier is recommended for learning).
8. Log in to your AWS account using the **root user email and password**.

2. Secure the Root User

1. **Enable MFA (Multi-Factor Authentication)** ○ Sign in as the root user. ○ Go to **IAM → Users →** Select **Root User**. ○ Click **Security Credentials →** Click **Activate MFA**. ○ Choose **Virtual MFA device** (Google Authenticator, Authy, etc.).
    - ○ Scan the QR code with the MFA app and enter the generated codes.
2. **Create Billing Alerts** ○ Open **AWS Billing Dashboard**. ○ Click **Budgets → Create a Budget**. ○ Set up an alert for unexpected charges.
3. **Do NOT use the root user for daily activities**.

3. Create an IAM User

1. Go to **IAM (Identity & Access Management)**.
2. Click **Users → Add users**.
3. Enter a **username** (e.g., admin-user).
4. Select **AWS Management Console access** and **Generate an auto password**.
5. Click **Next: Permissions →** Select **Attach policies directly**.
6. Assign **AdministratorAccess** for full control or **custom permissions** for limited access.
7. Click **Next: Tags →** (Optional) Add tags.
8. Click **Create User** and download the credentials.

4. Set Up AWS CLI

Install AWS CLI

- **Windows**: Download and install from AWS CLI.
- **Linux/macOS**: Run:

  sh
  CopyEdit
  curl "https://awscli.amazonaws.com/AWSCLIV2.pkg" -o "AWSCLIV2.pkg"

  sudo installer -pkg AWSCLIV2.pkg -target / OR

  sh
  CopyEdit sudo apt install awscli -y #

  Ubuntu/Debian OR

  sh
  CopyEdit
  brew install awscli # macOS with Homebrew

Configure AWS CLI

1. Run:

   sh
   CopyEdit
   aws
   configure

2. Enter:

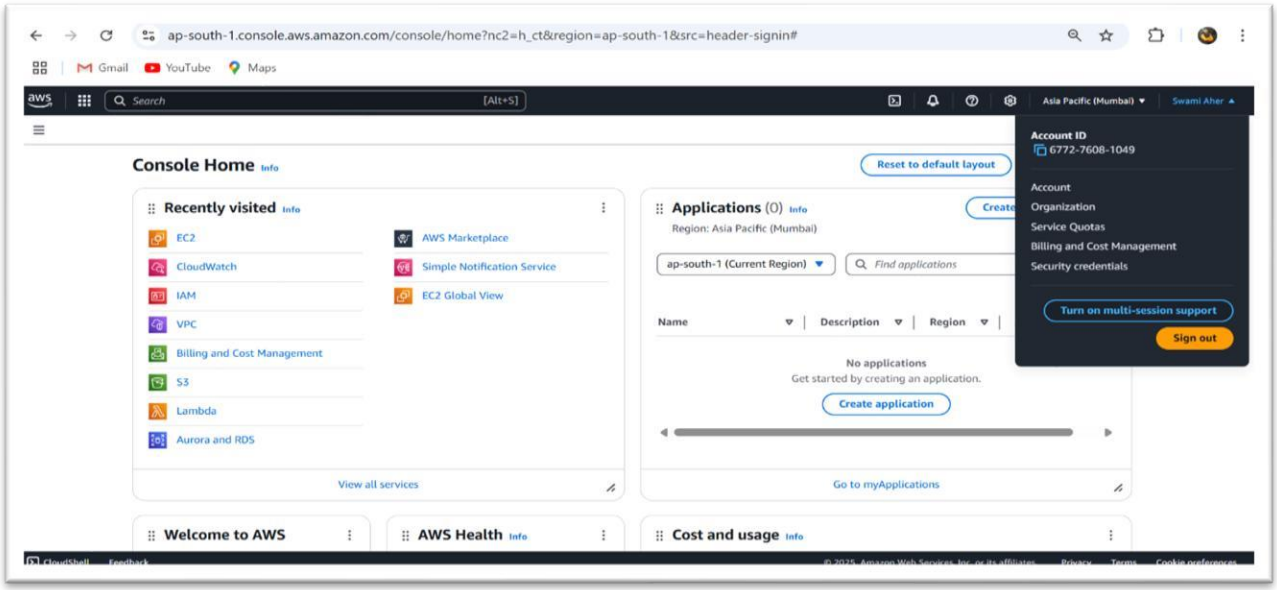
   pgsql
   CopyEdit
   AWS Access Key ID [None]: <Your IAM user Access Key>
   AWS Secret Access Key [None]: <Your IAM user Secret Key>
   Default region name [None]: us-east-1 (or any preferred region)
   Default output format [None]: json (or table/text)

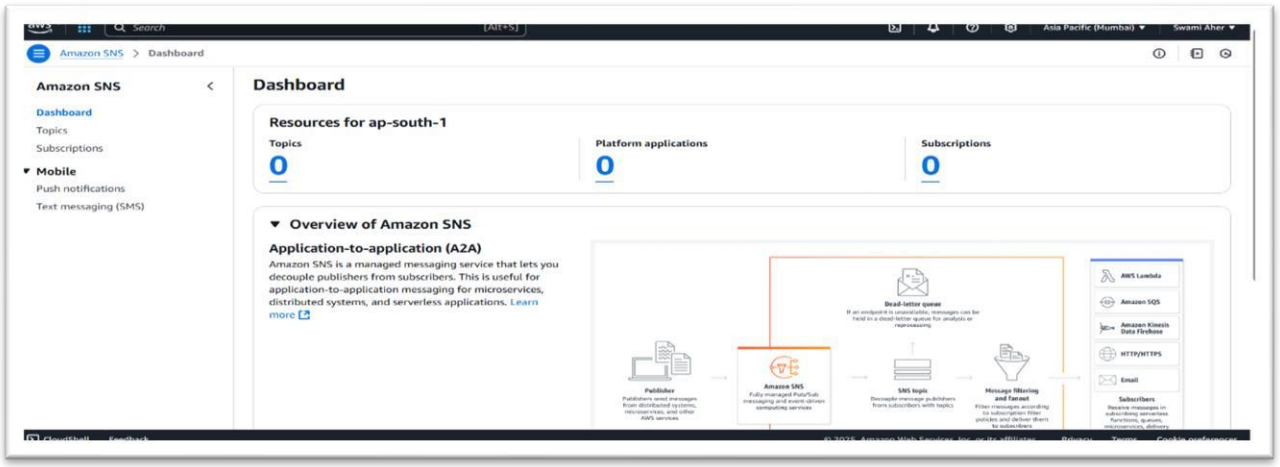
3. Test the setup:
   sh
   CopyEdit
   aws s3 ls

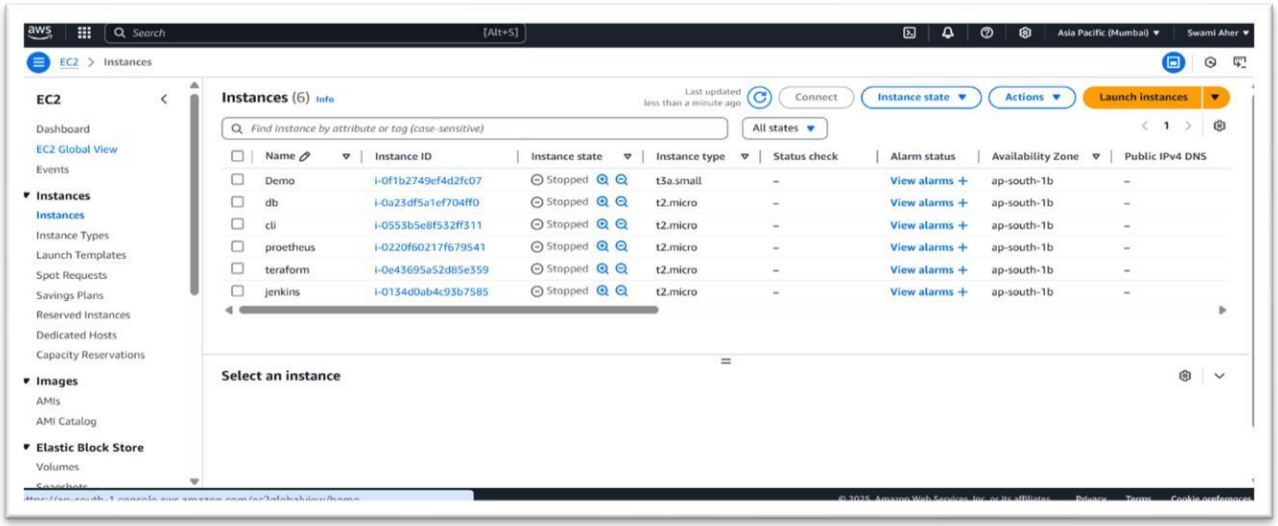
5. Set Up AWS Cloud9 (Cloud IDE)

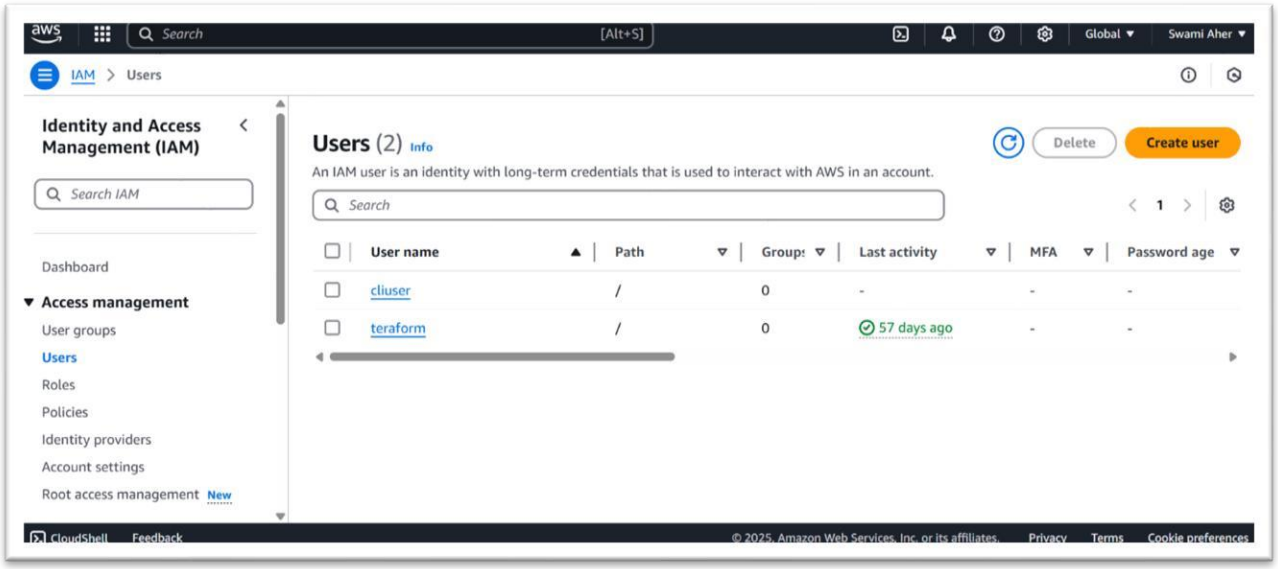
1. Go to **AWS Console → Cloud9**.
2. Click **Create environment**.
3. Enter a name (e.g., MyDevEnvironment).
4. Choose **"Create a new EC2 instance for environment"**.
5. Select **Instance type** (default t2.micro is free-tier).
6. Choose **Networking** (default settings are fine).
7. Click **Next → Create Environment**.
8. Wait for the environment to be provisioned.

Output:




Amazon SNS > Dashboard
Amazon SNS
Dashboard
Topics
Subscriptions
Mobile
Push notifications
Text messaging (SMS)
Dashboard
Resources for ap-south-1
Topics
0
Platform applications
0
Subscriptions
0
Overview of Amazon SNS
Application-to-application (A2A)
Amazon SNS is a managed messaging service that lets you decouple publishers from subscribers. This is useful for application-to-application messaging for microservices, distributed systems, and serverless applications. Learn more
Publisher
Amazon SNS
SNS topic
Message filtering and fanout
Dead-letter queue
AWS Lambda
Amazon SQS
Amazon Kinesis Data Firehose
HTTP/HTTPS
Email
Subscribers


EC2 > Instances
EC2
Dashboard
EC2 Global View
Events
Instances
Instances
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances
Dedicated Hosts
Capacity Reservations
Images
AMIs
AMI Catalog
Elastic Block Store
Volumes
Instances (6) Info
Last updated less than a minute ago
Connect
Instance state
Actions
Launch instances
Find instance by attribute or tag (case-sensitive)
All states
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
Availability Zone
Public IPv4 DNS
Demo i-0f1b2749ef4d2fc07 Stopped t3a.small – View alarms + ap-south-1b –
db i-0a23df5a1ef704ff0 Stopped t2.micro – View alarms + ap-south-1b –
cli i-0553b5e8f532ff311 Stopped t2.micro – View alarms + ap-south-1b –
proetheus i-0220f60217f679541 Stopped t2.micro – View alarms + ap-south-1b –
teraform i-0e43695a52d85e359 Stopped t2.micro – View alarms + ap-south-1b –
jenkins i-0134d0ab4c93b7585 Stopped t2.micro – View alarms + ap-south-1b –
Select an instance


IAM > Users
Identity and Access Management (IAM)
Search IAM
Dashboard
Access management
User groups
Users
Roles
Policies
Identity providers
Account settings
Root access management New
Users (2) Info
An IAM user is an identity with long-term credentials that is used to interact with AWS in an account.
Delete
Create user
Search
User name
Path
Groups
Last activity
MFA
Password age
cliuser / 0 - - -
teraform / 0 57 days ago - -
CloudShell
Feedback
© 2025, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences

Assignment No 7

Title- Setup, Create and visualize data in an Amazon Relational Database (Amazon RDS) MS SQL Express server using Amazon Quick Sight
Name: Thorve Avishkar S
Roll No.: 63

Steps:

1. Set Up an Amazon RDS SQL Server (MS SQL Express)

Step 1: Create an RDS Instance

1. **Login to AWS Console** → Open Amazon RDS.
2. Click **Create Database**.
3. **Select Engine**:
   - Choose **Microsoft SQL Server**.
   - Select **SQL Server Express** (free-tier eligible).
4. **Configure Settings**:
   - **DB instance identifier**: my-sql-express ○ **Master username**: admin ○ **Master password**: YourStrongPassword!
5. **Instance Settings**:
   - DB instance class: db.t3.micro (Free-tier eligible).
   - Storage: 20 GiB (Auto-scaling optional). ○ **VPC**: Select the default VPC (or create a new one).
   - **Public Access**: **Enable** (to connect externally).
6. **Additional Configurations**:
   - Parameter group: Leave default. ○ Backup retention: Set as needed.
   - Enable **IAM DB authentication** (optional).
7. Click **Create Database** and wait for it to be available.

Step 2: Allow Access to RDS

1. **Modify Security Group**:
   - Open **EC2 Dashboard** → Security Groups. ○ Find the security group attached to your RDS instance.
   - Click **Inbound Rules → Edit Inbound Rules**.
   - Add Rule:
     - Type: **MS SQL (TCP/1463)**
     - Source: **Your IP** (My IP option) or **0.0.0.0/0** (public, not recommended).
   - Click **Save Rules**.

Step 3: Connect to SQL Server Using SSMS or SQLCMD

1. Open **Microsoft SQL Server Management Studio (SSMS)**.
2. Use **RDS Endpoint** as the server name.

- Format: my-sql-express.xxxxxxx.us-east-1.rds.amazonaws.com
- Login: **admin** ○ Password: **YourStrongPassword!**

3. Click **Connect**.
4. Run the following SQL commands to create a sample database and table:

```
sql
CopyEdit
CREATE DATABASE SalesDB;
USE SalesDB;

CREATE TABLE Sales (
   ID INT IDENTITY(1,1) PRIMARY KEY,
   ProductName VARCHAR(255),
   SalesAmount DECIMAL(10,2),
   SaleDate DATE
);

INSERT INTO Sales (ProductName, SalesAmount, SaleDate)
VALUES
   ('Laptop', 1200.50, '2025-03-18'),
   ('Mouse', 25.00, '2025-03-17'),
('Keyboard', 45.99, '2025-03-16');
```

5. Verify data:

```
sql
CopyEdit
SELECT * FROM Sales;
```

2. Connect Amazon QuickSight to RDS Step 1: Enable QuickSight Access to RDS

1. Open Amazon QuickSight.
2. Go to **Manage QuickSight** (top right).
3. Select **Security & Permissions**.
4. Click **Manage VPC Connections → Add a VPC Connection**.
5. Choose the **VPC where your RDS instance is deployed**.
6. Click **Save**.

Step 2: Connect QuickSight to SQL Server

1. Open QuickSight → Click **Datasets**.
2. Click **New Dataset** → Select **Microsoft SQL Server**.
3. **Enter Connection Details**:
   - **Data source name**: SQLExpressRDS
   - **Host**: my-sql-express.xxxxxxx.us-east-1.rds.amazonaws.com
   - **Port**: 1463 ○ **Database name**: SalesDB ○ **Username**: admin ○ **Password**: YourStrongPassword!
4. Click **Validate Connection** → If successful, click **Create Data Source**.

3. Visualize Data in Amazon QuickSight

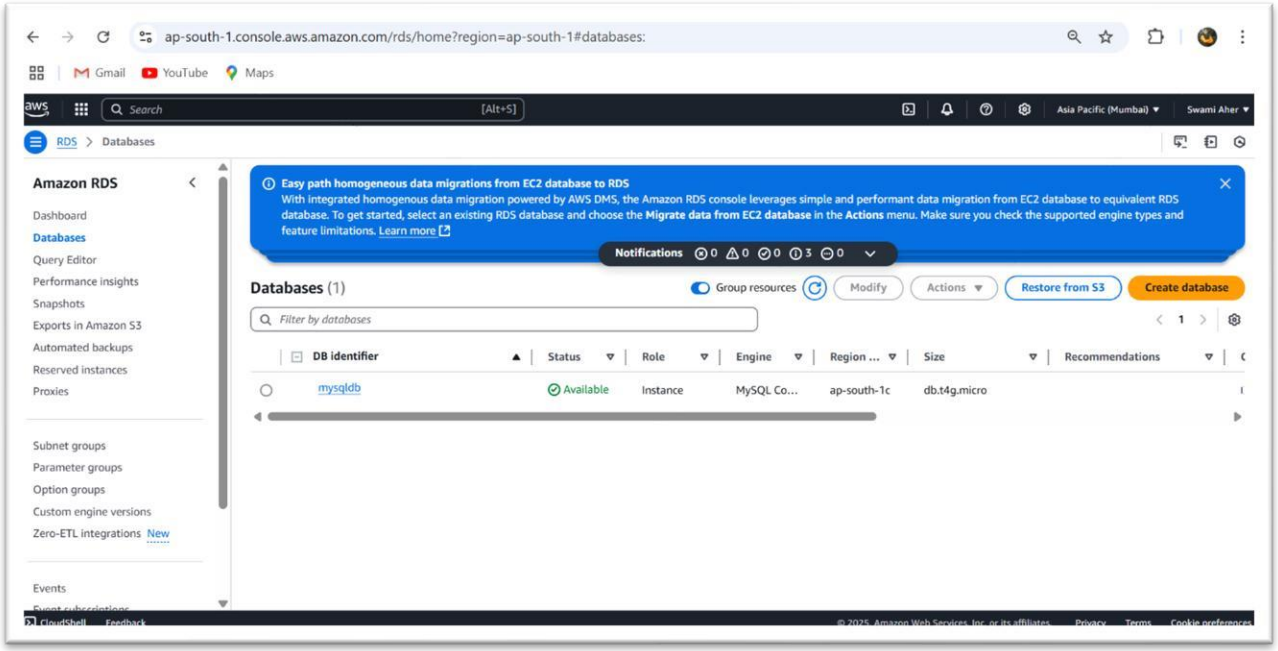
Step 1: Create a QuickSight Analysis

1. Choose **Sales** table → Click **Create Dataset**.
2. Choose **SPICE** (for faster processing) or **Direct Query**.
3. Click **Visualize**.

Step 2: Create a Bar Chart

1. Click **Add Visual**.
2. Select **Bar Chart**.
3. Drag **ProductName** to the **X-axis**.
4. Drag **SalesAmount** to the **Y-axis**.
5. Set **Filters** if needed.

Output:



Assignment No 8

Title- Setup, Create and connect your Word Press site to an object storage bucket using Light sail service.
Name: Thorve Avishkar S
Roll No.: 63

Steps:

1. Set Up a WordPress Instance in AWS Lightsail

Step 1: Create a Lightsail Instance

1. **Sign in to AWS** → Open AWS Lightsail.
2. Click **Create instance**.
3. Choose **Instance location** (region closest to your audience).
4. Select **Linux/Unix** as the platform.
5. Under **Blueprint**, select **WordPress**.
6. Choose an **Instance Plan**:
   - Free-tier: **$3.50/month** (512MB RAM, 1vCPU, 20GB SSD).
   - Higher tiers for better performance.
7. Enter an **instance name** (e.g., my-wordpress-site).
8. Click **Create Instance** and wait for provisioning.

Step 2: Get the WordPress Admin Password

1. Once the instance is running, click on it.
2. Click **Connect using SSH**.
3. Run the following command to get the WordPress admin password:

   ```
   sh
   CopyEdit
   cat bitnami_application_password
   ```

4. Copy the password.

Step 3: Access the WordPress Site

1. Open your browser and go to:

   ```
   arduino CopyEdit
   http://<Lightsail_Public_IP>/wp-admin
   ```

2. Log in with:
   - **Username**: user

- **Password**: (paste the copied password)

3. WordPress Dashboard should now be accessible.

2. Set Up an Object Storage Bucket in Lightsail

Step 1: Create a Lightsail Object Storage Bucket

1. Open **AWS Lightsail** → Click **Storage**.
2. Click **Create a bucket**.
3. Select a **Region** (same as your instance).
4. Choose a **Bucket Name** (e.g., my-wp-media).
5. Choose **Public or Private** (Public for direct access, Private for secure access).
6. Select a storage plan (e.g., **5GB Free-Tier**).
7. Click **Create bucket**.

Step 2: Create an Access Key for WordPress

1. Open the **Bucket settings**.
2. Click **Access Keys** → **Create New Access Key**.
3. Copy:
   - **Access Key ID** ○ **Secret Access Key**

3. Connect WordPress to the Lightsail Object Storage Bucket

Step 1: Install & Configure WP Offload Media Plugin

1. In WordPress, go to **Plugins** → **Add New**.
2. Search for **WP Offload Media Lite**.
3. Click **Install Now**, then **Activate**.

Step 2: Configure the Plugin

1. In WordPress, go to **Settings** → **Offload Media**.
2. Click **Set Up Storage Provider**.
3. Select **Amazon S3 Compatible Storage**.
4. Enter:
   - **Access Key ID**: (from Lightsail) ○ **Secret Access Key**: (from Lightsail) ○ **Bucket Name**: my-wp-media
   - **Endpoint**: https://s3.<your-region>.amazonaws.com
5. Click **Save Changes**.

Step 3: Enable Media Uploads to the Bucket

1. In **Offload Media Settings**, enable:
    - **"Automatically offload new media to bucket"**. ○ **"Remove from local server after offload"** (optional).
2. Upload an image in **Media Library** → It should now be stored in Lightsail Object Storage.

4. (Optional) Point a Custom Domain to WordPress

Step 1: Create a Lightsail Static IP

1. In **Lightsail**, go to your instance.
2. Click **Networking → Attach Static IP**.
3. Choose your instance and click **Create**.

Step 2: Update DNS Settings

1. Register a domain in **Route 53** (or any domain provider like Namecheap, GoDaddy).
2. Add an **A record** pointing to your **Static IP**.
3. Wait for DNS propagation.

Output: