PROJECT : DLD Dashboard: Visualizing Dubai's Dynamic Property Market

Objective:

The objective of this assignment was to implement an automated method for fetching public data from the Dubai Land Department (DLD) online sources, store the data in a database or datalake, and create a dashboard in Power BI to highlight key insights and metrics from the data.

Approach & Technologies Used:

- Data Ingestion: I developed a Python script to automatically fetch the DLD real estate transaction data from their website and the Dubai Pulse historical data source on a scheduled basis. This script runs as an AWS Glue ETL job.
- Data Storage: The fetched data is stored in an Amazon S3 data lake. AWS Glue crawlers are used to discover the schema and make the data queryable via Amazon Athena. Key data is also loaded into an Amazon Redshift data warehouse using Glue ETL jobs for the Power BI dashboards.
- Data Analysis & Visualization: I created a Power BI dashboard connected to the Redshift data warehouse to highlight key insights from the DLD data The dashboard includes:
    - Transactions by area (value, count, type, subtype)
    - Most transacted property types and subtypes
    - Market growth over time
    - Property feature statistics by area (size, rooms, parking, price per sq m)

DATASET::

Transactions.csv - (date: : from : 01-01-2024 to: 26-04-2024) data

Architecture::

Dataset → Amazon S3 -> **Amazon Athena** -> **Amazon Glue (ETL JOB)** -> **Amazon Redshift** -> **PowerBI**

DIMENSIONAL MODEL:

Fact Table:

Fact_transactions:

transaction_id (PK)

procedure_id (FK to Procedure dim)

property_id (FK to Property dim)

area_id (FK to Area dim)

transaction_date_id (FK to Date dim)

actual_worth

meter_sale_price

rent_value

meter_rent_price

no_of_parties_role_1

no_of_parties_role_2

no_of_parties_role_3

Dimension Tables:

Dim_Procedure

procedure_id (PK)

trans_group_id

trans_group_en

procedure_name_en

Dim_Property:

property_id (PK)

property_type_id

property_type_en

property_sub_type_id

property_sub_type_en

property_usage_en

reg_type_id

reg_type_en

building_name_en

project_number

project_name_en

master_project_en

nearest_landmark_en

nearest_metro_en

nearest_mall_en

rooms_en

has_parking

procedure_area

Dim_Area:

area_id (PK)

area_name_en

Date

Dim_Date:

date_id (PK)

full_date

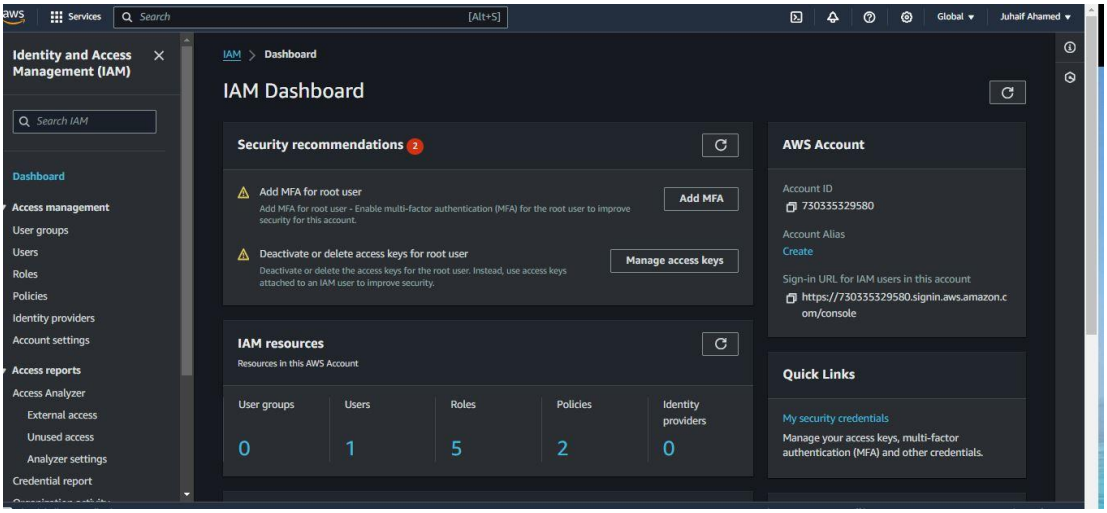
year

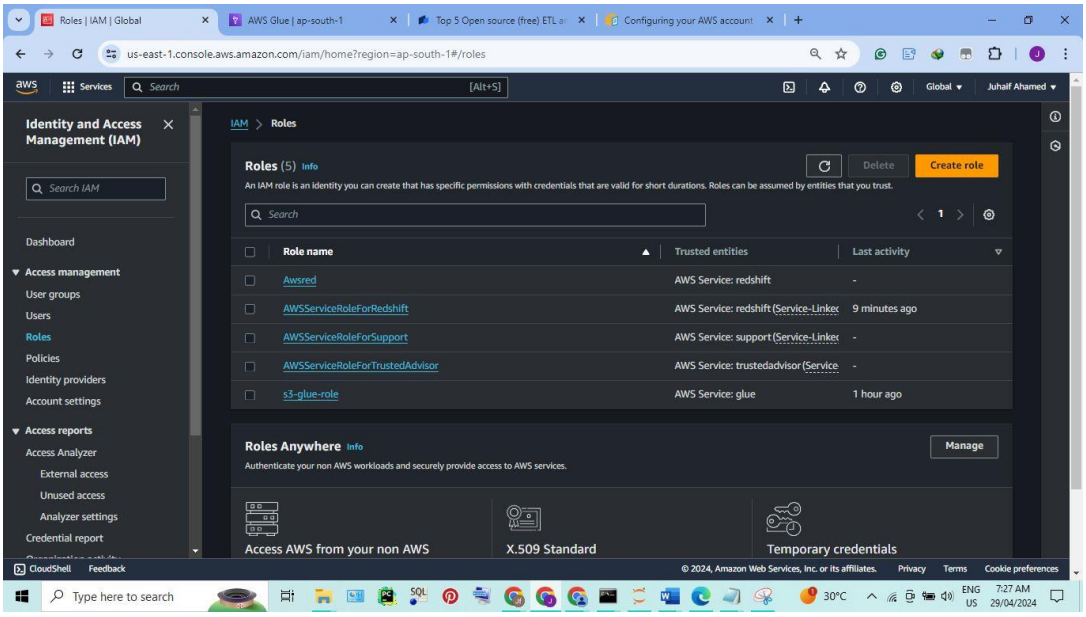
quarter

month

day

IAM:


Identity and Access Management (IAM)
IAM > Dashboard
IAM Dashboard
Security recommendations 2
Add MFA for root user
Add MFA for root user - Enable multi-factor authentication (MFA) for the root user to improve security for this account.
Add MFA
Deactivate or delete access keys for root user
Deactivate or delete the access keys for the root user. Instead, use access keys attached to an IAM user to improve security.
Manage access keys
IAM resources
Resources in this AWS Account
User groups 0
Users 1
Roles 5
Policies 2
Identity providers 0
AWS Account
Account ID 730335329580
Account Alias
Create
Sign-in URL for IAM users in this account
https://730335329580.signin.aws.amazon.com/console
Quick Links
My security credentials
Manage your access keys, multi-factor authentication (MFA) and other credentials.


us-east-1.console.aws.amazon.com/iam/home?region=ap-south-1#/roles
Identity and Access Management (IAM)
IAM > Roles
Roles (5) Info
An IAM role is an identity you can create that has specific permissions with credentials that are valid for short durations. Roles can be assumed by entities that you trust.
Delete
Create role
Role name
Trusted entities
Last activity
Awsred
AWS Service: redshift
AWSServiceRoleForRedshift
AWS Service: redshift (Service-Linke
9 minutes ago
AWSServiceRoleForSupport
AWS Service: support (Service-Linke
AWSServiceRoleForTrustedAdvisor
AWS Service: trustedadvisor (Service
s3-glue-role
AWS Service: glue
1 hour ago
Roles Anywhere Info
Authenticate your non AWS workloads and securely provide access to AWS services.
Manage
Access AWS from your non AWS
X.509 Standard
Temporary credentials
CloudShell
Feedback
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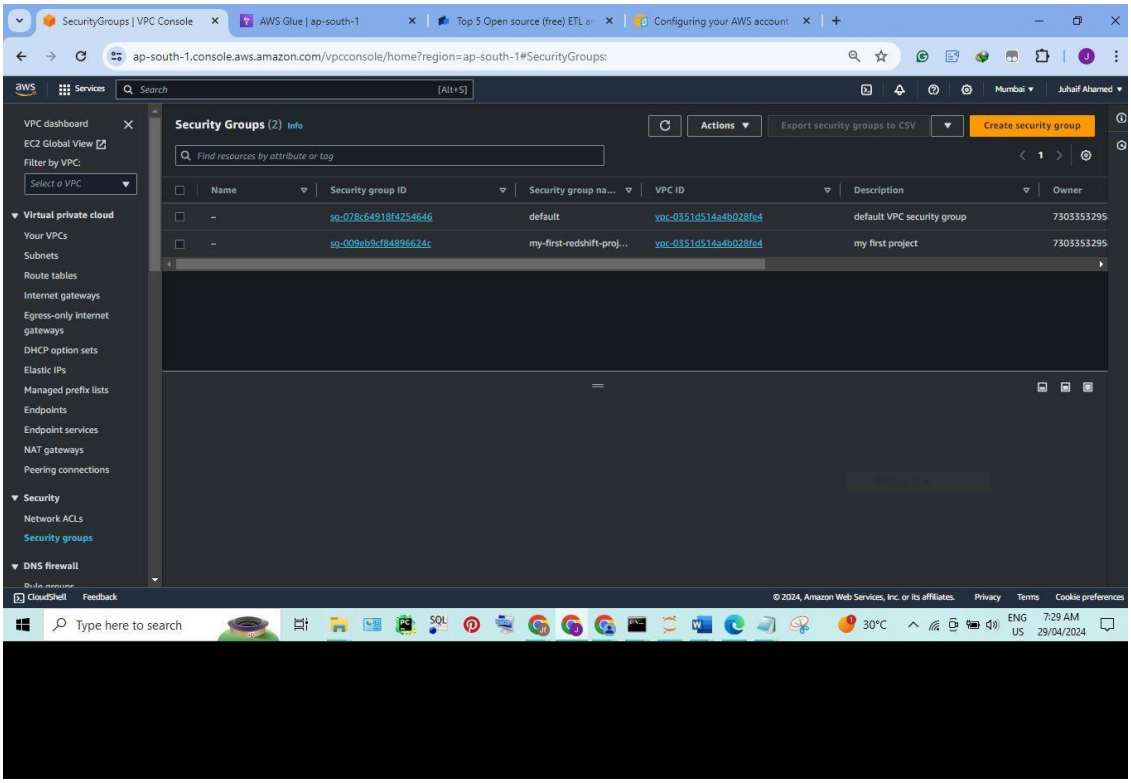
VPC:


SecurityGroups | VPC Console
AWS Glue | ap-south-1
Top 5 Open source (free) ETL
Configuring your AWS account
ap-south-1.console.aws.amazon.com/vpcconsole/home?region=ap-south-1#SecurityGroups:
Services
Search
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VPC dashboard
EC2 Global View
Filter by VPC:
Select a VPC
Virtual private cloud
Your VPCs
Subnets
Route tables
Internet gateways
Egress-only internet gateways
DHCP option sets
Elastic IPs
Managed prefix lists
Endpoints
Endpoint services
NAT gateways
Peering connections
Security
Network ACLs
Security groups
DNS firewall
Security Groups (2) Info
Actions
Export security groups to CSV
Create security group
Find resources by attribute or tag
Name
Security group ID
Security group na...
VPC ID
Description
Owner
sg-078c64918f4254646
default
vpc-0351d514a4b028fe4
default VPC security group
sg-009eb9cf84896624c
my-first-redshift-proj...
my first project
CloudShell
Feedback
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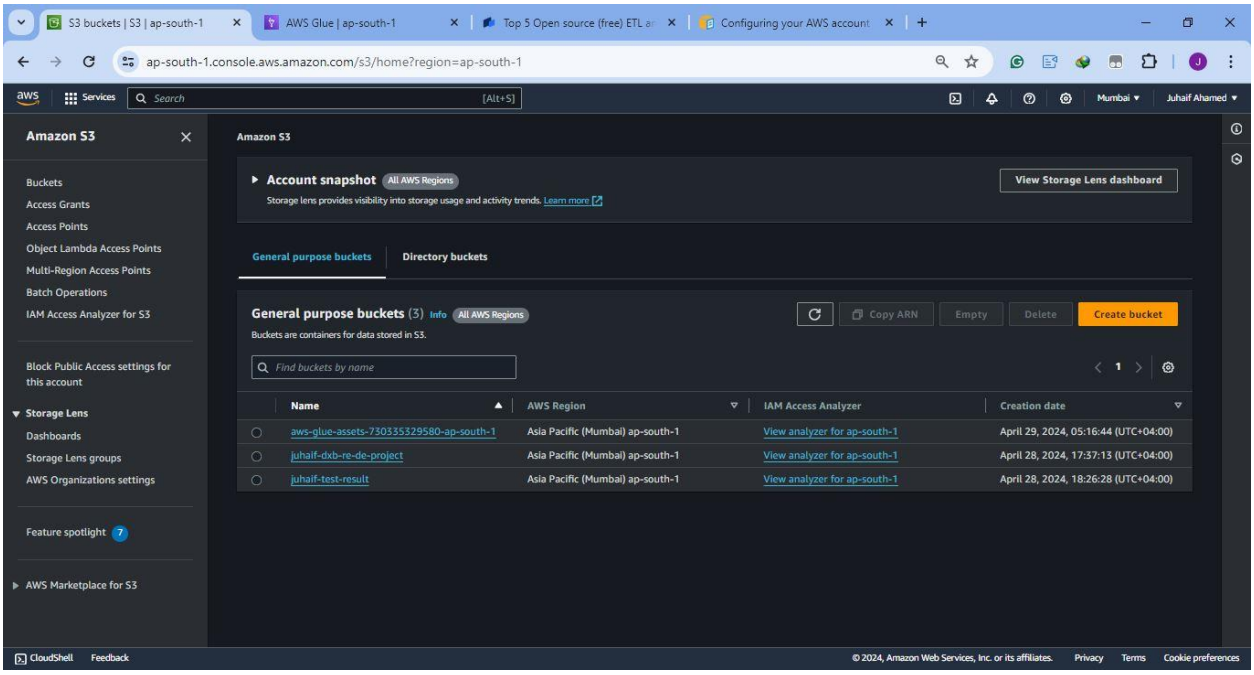
ENG
US
7:29 AM
29/04/2024

S3:


S3 buckets | S3 | ap-south-1
AWS Glue | ap-south-1
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Configuring your AWS account
ap-south-1.console.aws.amazon.com/s3/home?region=ap-south-1
Services
Search
[Alt+S]
Mumbai
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Amazon S3
Buckets
Access Grants
Access Points
Object Lambda Access Points
Multi-Region Access Points
Batch Operations
IAM Access Analyzer for S3
Block Public Access settings for this account
Storage Lens
Dashboards
Storage Lens groups
AWS Organizations settings
Feature spotlight
AWS Marketplace for S3
Amazon S3
Account snapshot
All AWS Regions
Storage lens provides visibility into storage usage and activity trends. Learn more
View Storage Lens dashboard
General purpose buckets
Directory buckets
General purpose buckets (3) Info
All AWS Regions
Buckets are containers for data stored in S3.
Copy ARN
Empty
Delete
Create bucket
Find buckets by name
Name
AWS Region
IAM Access Analyzer
Creation date
aws-glue-assets-730335329580-ap-south-1
Asia Pacific (Mumbai) ap-south-1
View analyzer for ap-south-1
April 29, 2024, 05:16:44 (UTC+04:00)
juhaif-dxb-re-de-project
April 28, 2024, 17:37:13 (UTC+04:00)
juhaif-test-result
April 28, 2024, 18:26:28 (UTC+04:00)
CloudShell
Feedback
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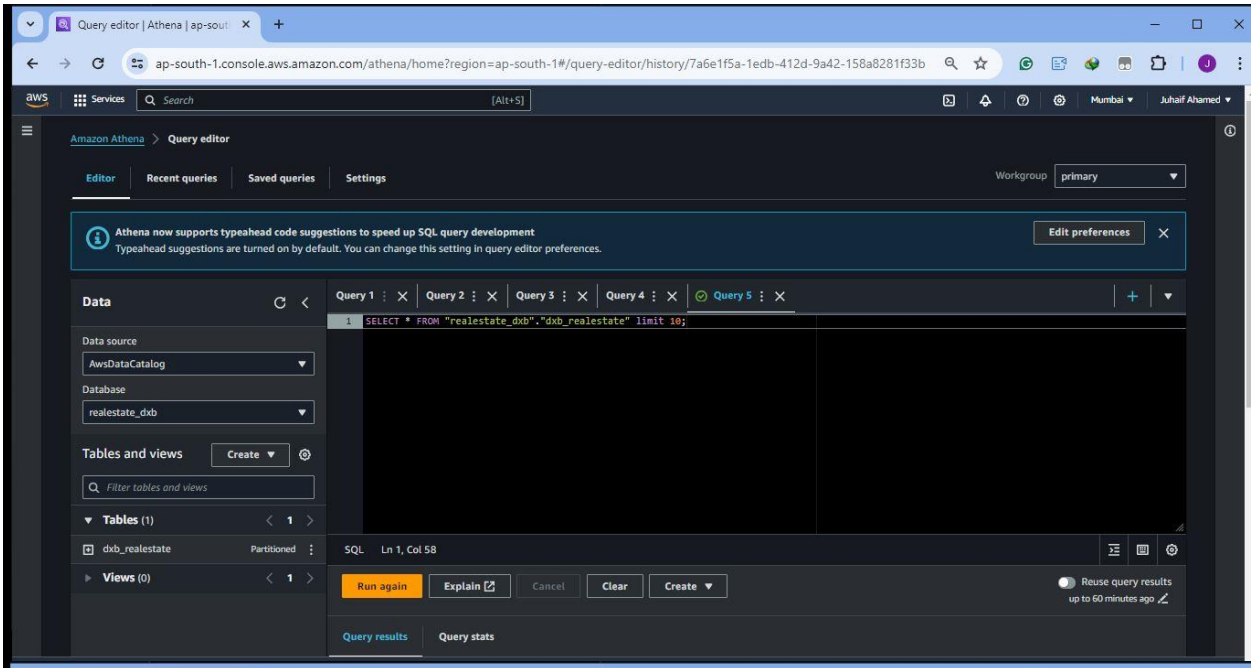
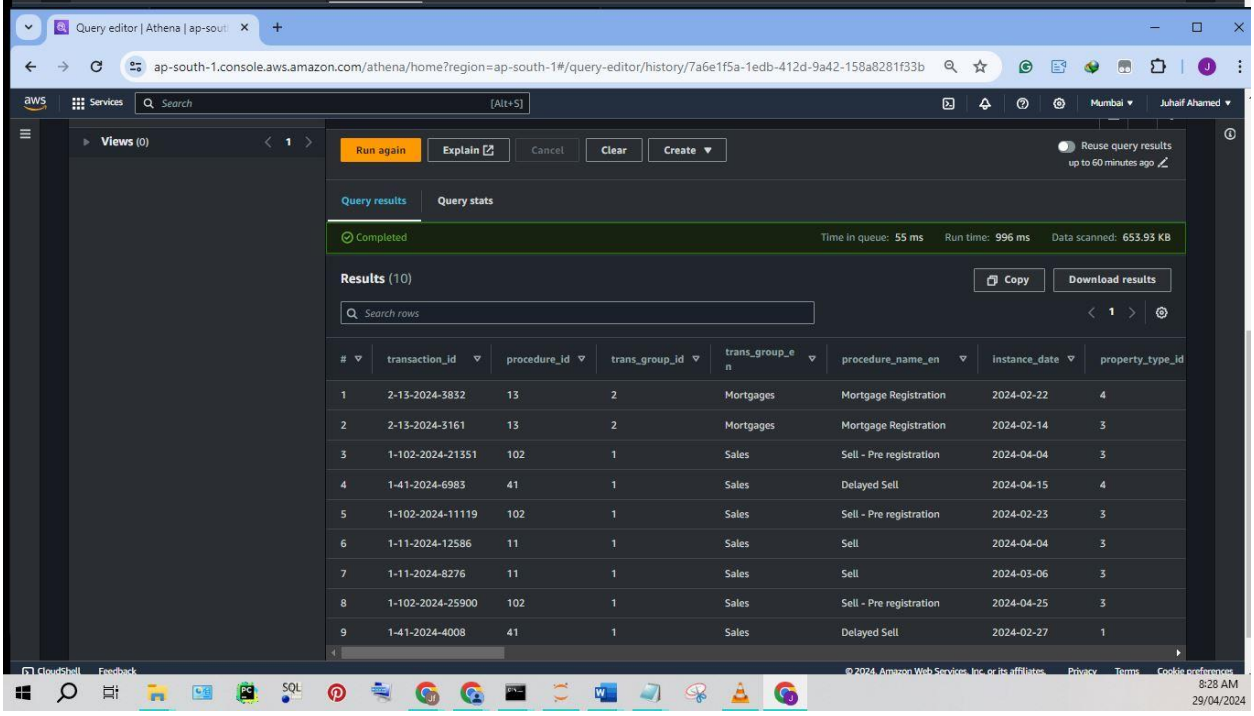
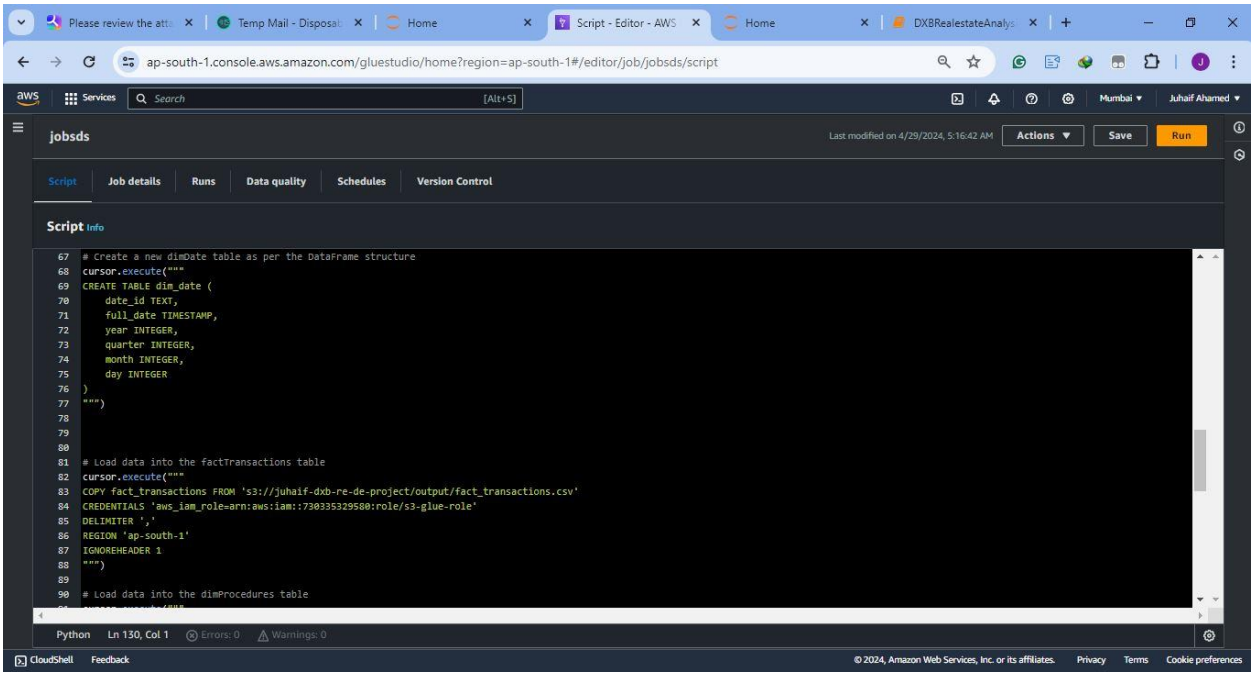
ATHENA:

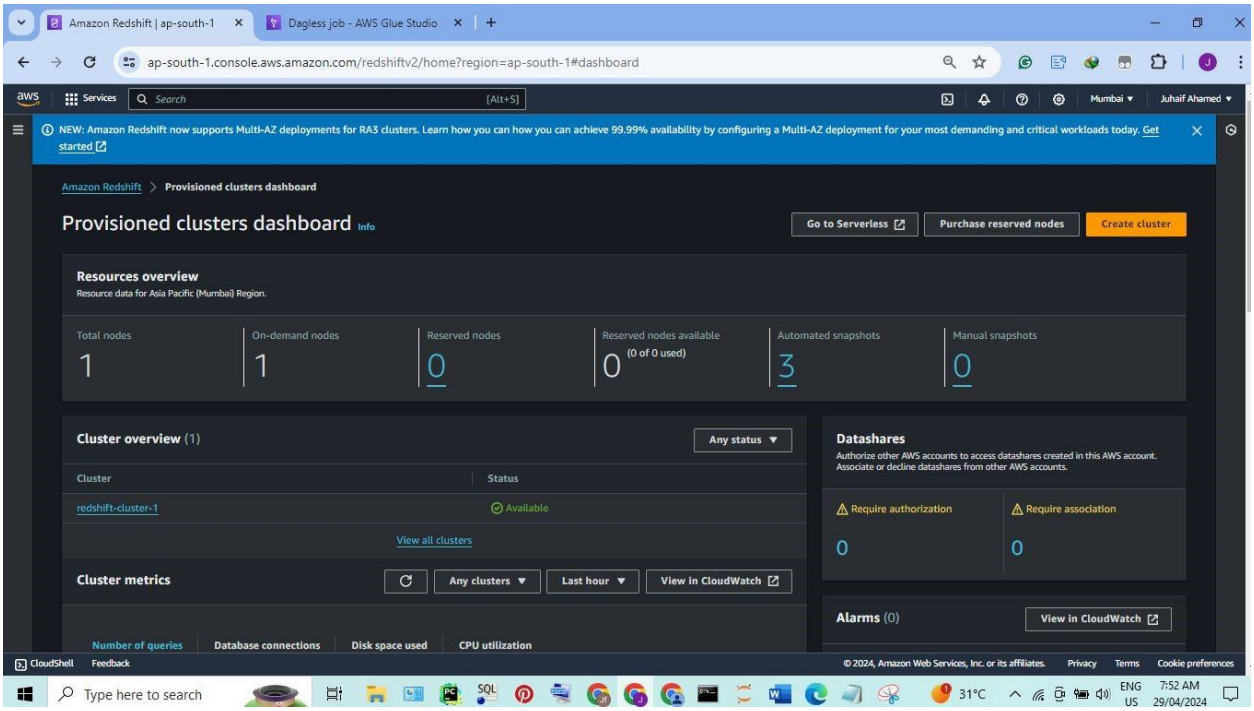

Query editor | Athena | ap-south-1
ap-south-1.console.aws.amazon.com/athena/home?region=ap-south-1#/query-editor/history/7a6e1f5a-1edb-412d-9a42-158a8281f33b
Amazon Athena > Query editor
Editor
Recent queries
Saved queries
Settings
Workgroup primary
Athena now supports typeahead code suggestions to speed up SQL query development
Typeahead suggestions are turned on by default. You can change this setting in query editor preferences.
Edit preferences
Data
Data source
AwsDataCatalog
Database
realestate_dxb
Tables and views
Create
Filter tables and views
Tables (1)
dxb_realestate
Partitioned
Views (0)
Query 1
Query 2
Query 3
Query 4
Query 5
SELECT * FROM "realestate_dxb"."dxb_realestate" limit 10;
SQL Ln 1, Col 58
Run again
Explain
Cancel
Clear
Create
Reuse query results
up to 60 minutes ago
Query results
Query stats

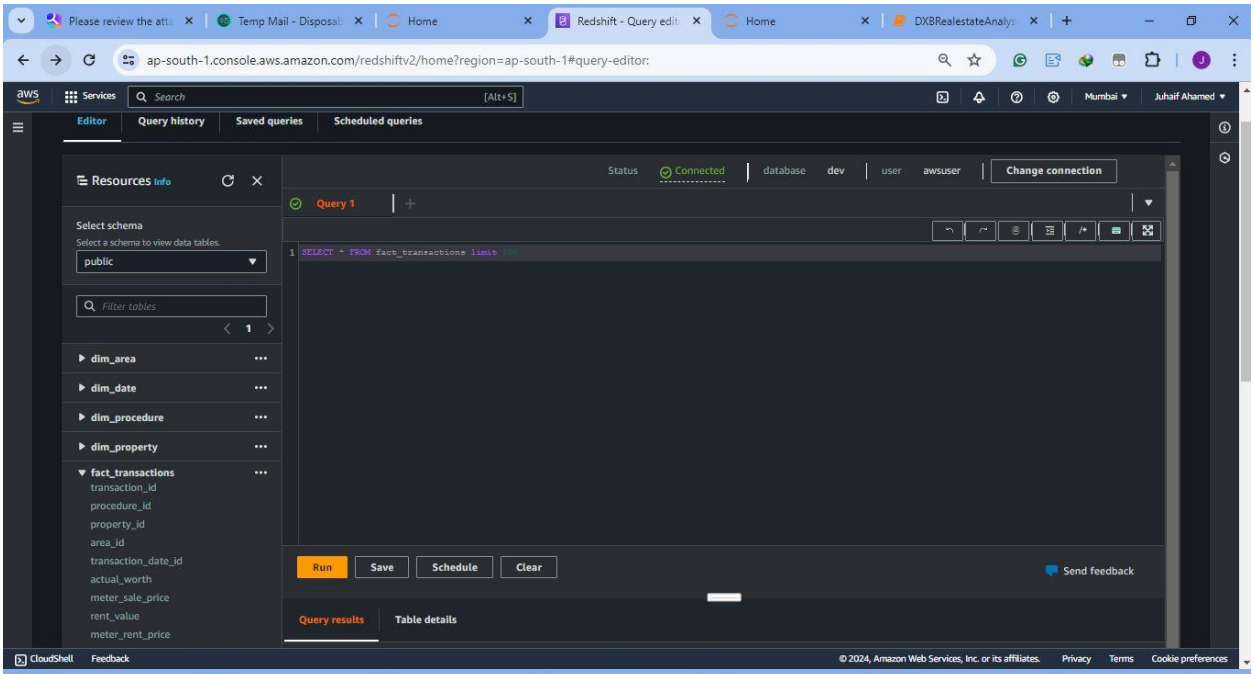

Completed
Time in queue: 55 ms
Run time: 996 ms
Data scanned: 653.93 KB
Results (10)
Copy
Download results
Search rows
transaction_id procedure_id trans_group_id trans_group_en procedure_name_en instance_date property_type_id
1 2-13-2024-3832 13 2 Mortgages Mortgage Registration 2024-02-22 4
2 2-13-2024-3161 13 2 Mortgages Mortgage Registration 2024-02-14 3
3 1-102-2024-21351 102 1 Sales Sell - Pre registration 2024-04-04 3
4 1-41-2024-6983 41 1 Sales Delayed Sell 2024-04-15 4
5 1-102-2024-11119 102 1 Sales Sell - Pre registration 2024-02-23 3
6 1-11-2024-12586 11 1 Sales Sell 2024-04-04 3
7 1-11-2024-8276 11 1 Sales Sell 2024-03-06 3
8 1-102-2024-25900 102 1 Sales Sell - Pre registration 2024-04-25 3
9 1-41-2024-4008 41 1 Sales Delayed Sell 2024-02-27 1

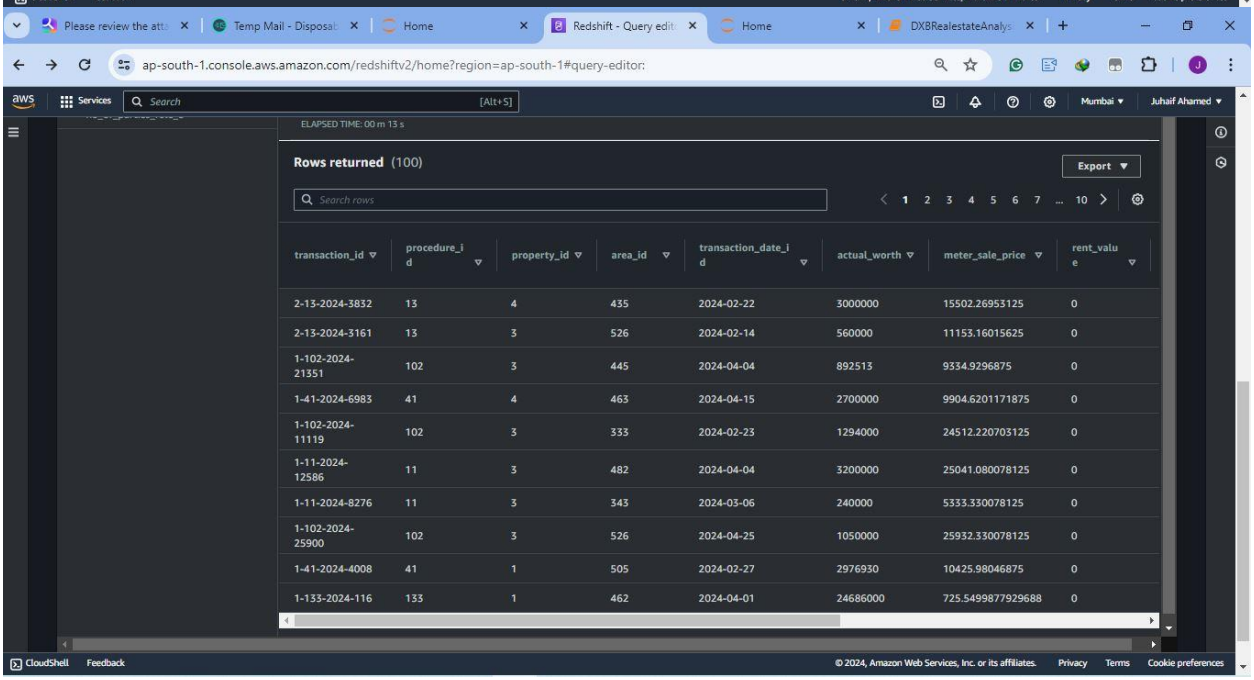
GLUE ETL PYTHON JOB:



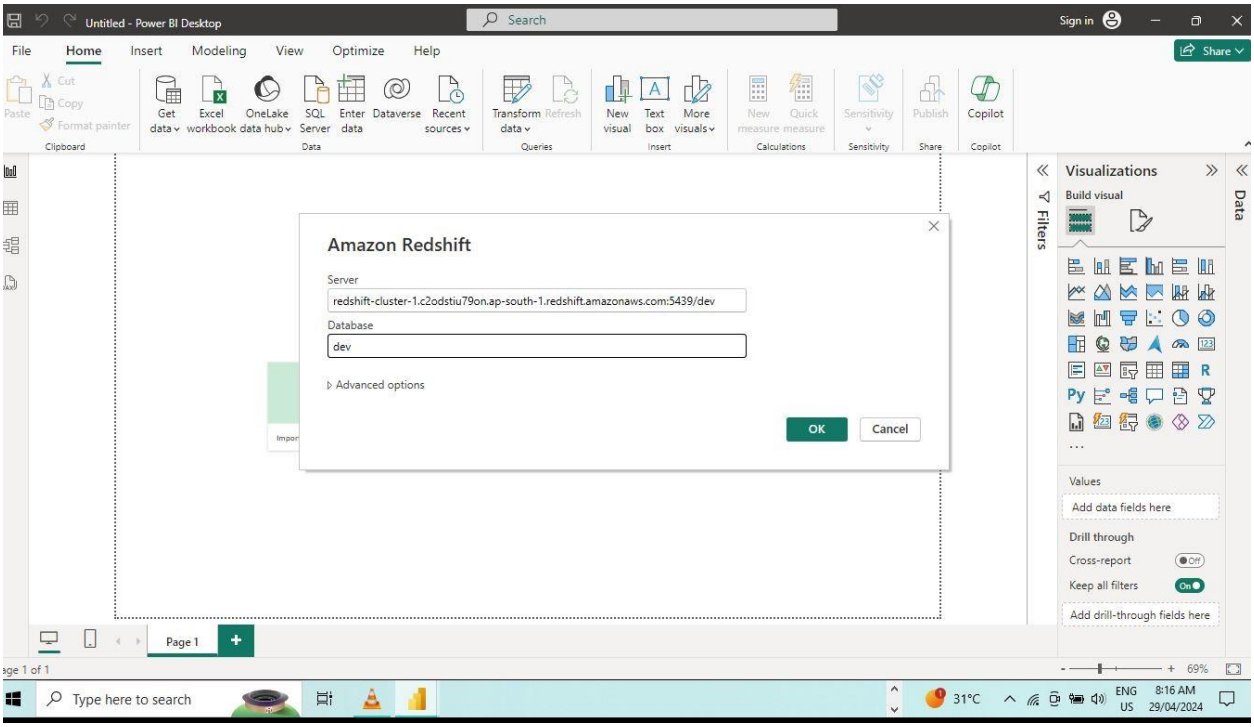
RED SHIFT:



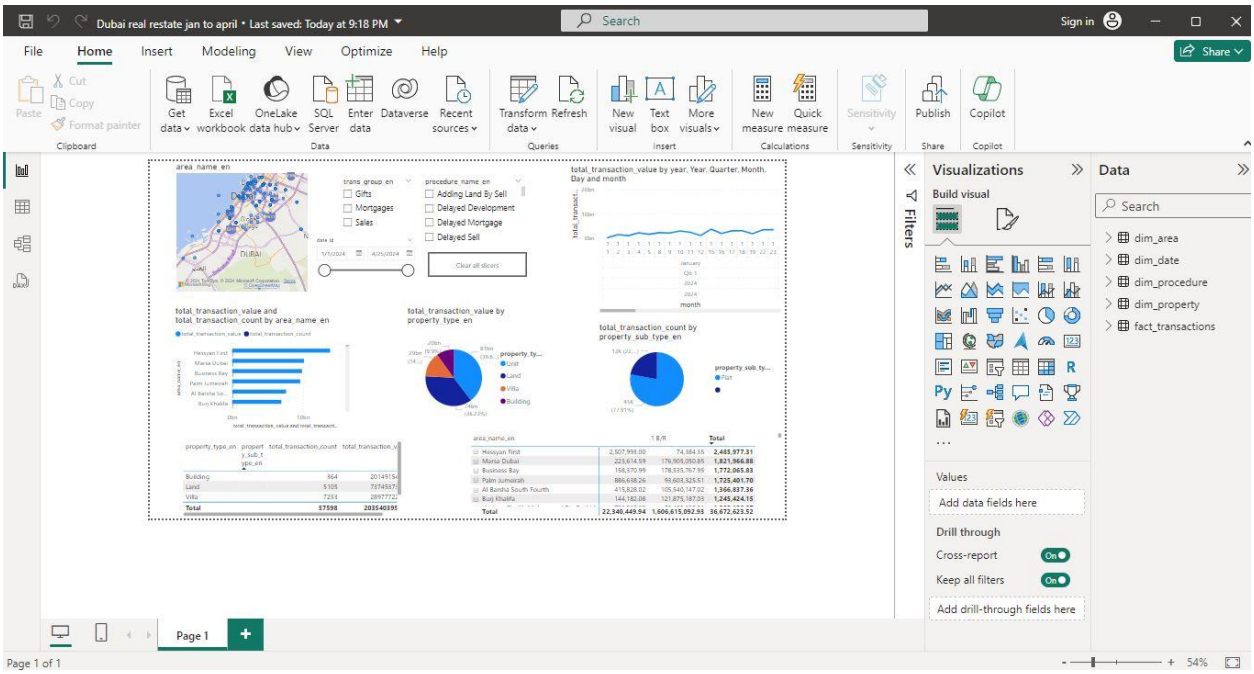


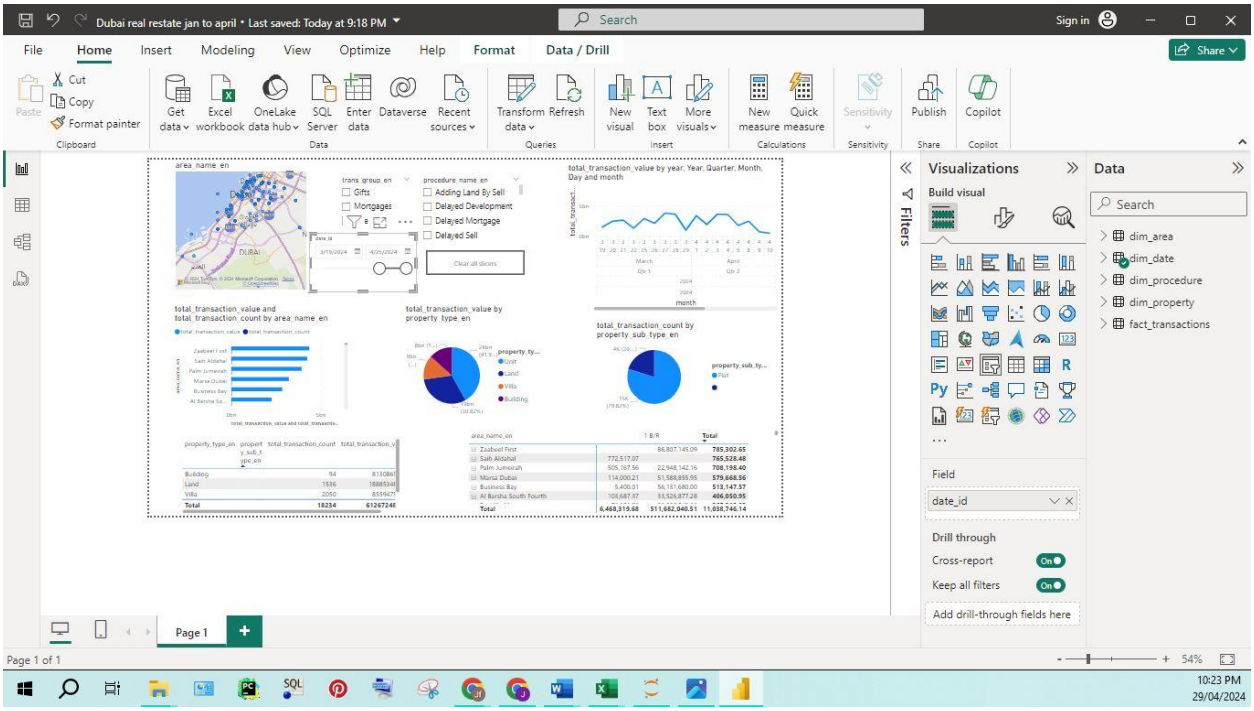


REDSHIFT TO POWER BI CONNECTION:



POWER BI DASHBOARD:




Dubai real restate jan to april • Last saved: Today at 9:18 PM
Search
Sign in
File
Home
Insert
Modeling
View
Optimize
Help
Format
Data / Drill
Share
Cut
Copy
Format painter
Paste
Get data
Excel workbook
OneLake data hub
SQL Server
Enter data
Dataverse
Recent sources
Transform data
Refresh
New visual
Text box
More visuals
New measure
Quick measure
Sensitivity
Publish
Copilot
Clipboard
Data
Queries
Insert
Calculations
Sensitivity
Share
Copilot
area_name_en
trans_group_en
Gifts
Mortgages
procedure_name_en
Adding Land By Sell
Delayed Development
Delayed Mortgage
Delayed Sell
Clear all slicers
total_transaction_value by year, Year, Quarter, Month, Day and month
total_transaction_value and total_transaction_count by area_name_en
total_transaction_value by property_type_en
total_transaction_count by property_sub_type_en
property_type_en
property_sub_type_en
Unit
Land
Villa
Building
Flat
Visualizations
Build visual
Filters
Field
date_id
Drill through
Cross-report
On
Keep all filters
On
Add drill-through fields here
Data
Search
dim_area
dim_date
dim_procedure
dim_property
fact_transactions
Page 1
Page 1 of 1
54%
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29/04/2024