System Requirements Specification Index

For

Snowflake web server log analysis using staging & custom functions

Version 2.0

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Problem Statement : snowflake webserver log analysis

Description : Use relevant methods operations toperform specified activities which are given in the instructions.

TechSolutions Inc. is a rapidly growing tech company that offers a suite of web-based applications to its global customer base. As the user base expanded, the volume of web server logs increased, making it challenging to monitor and analyze server performance and user activities.

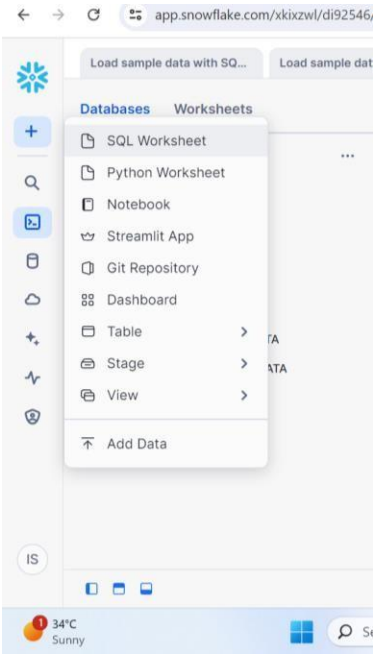
Objective

TechSolutions Inc. aimed to implement a scalable solution to store, manage, and analyze web server log data to gain insights into user behavior, identify and troubleshoot errors, and optimize server performance.

Implementation

TechSolutions Inc. chose Snowflake for its scalable data warehousing capabilities and ease of handling time-series data. The following steps were taken:

- Steps to login in the snowflake account
- Use the credential given to you though your host



- Click on the sql worksheet to open the query editor

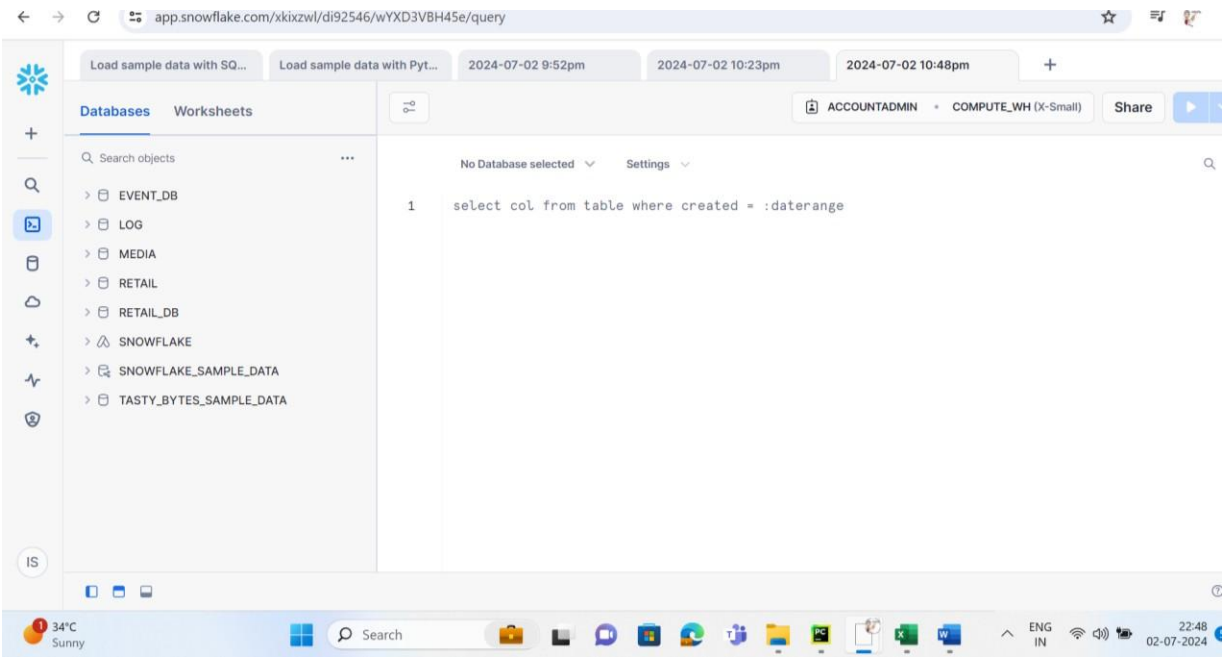
Sample data log

Timestamp	Log Level	Message	User ID	Session ID
2024-06-30 08:00:00	INFO	User logged in	alice123	session001
2024-06-30 08:05:00	ERROR	Failed to load page	alice123	session001
2024-06-30 08:10:00	INFO	User logged out	alice123	session001
2024-07-01 09:00:00	INFO	User logged in	bob_smith	session002
2024-07-01 09:15:00	WARN	Slow response time	bob_smith	session002
2024-07-01 09:20:00	ERROR	Page not found	bob_smith	session002
2024-07-02 10:00:00	INFO	User logged in	charlie_007	session003
2024-07-02 10:30:00	INFO	Page loaded successfully	charlie_007	session003
2024-07-02 11:00:00	ERROR	Database connection failed	charlie_007	session003
2024-07-02 11:15:00	INFO	User logged out	charlie_007	session003
2024-07-02 12:00:00	INFO	User logged in	diana_king	session004
2024-07-02 12:10:00	INFO	Page loaded successfully	diana_king	session004
2024-07-02 12:20:00	WARN	High memory usage	diana_king	session004
2024-07-02 12:30:00	ERROR	Service unavailable	diana_king	session004
2024-07-02 12:45:00	INFO	User logged out	diana_king	session004
2024-07-02 13:00:00	INFO	User logged in	eve_nash	session005
2024-07-02 13:05:00	INFO	Page loaded successfully	eve_nash	session005
2024-07-02 13:15:00	INFO	User logged out	eve_nash	session005
2024-07-03 14:00:00	INFO	User logged in	franklin_92	session006
2024-07-03 14:05:00	ERROR	Login failed	franklin_92	session006
2024-07-03 14:15:00	INFO	User logged out	franklin_92	session006
2024-07-04 15:00:00	INFO	User logged in	george_t	session007
2024-07-04 15:10:00	INFO	Page loaded successfully	george_t	session007
2024-07-04 15:20:00	WARN	Unexpected input	george_t	session007
2024-07-04 15:30:00	ERROR	Session timeout	george_t	session007

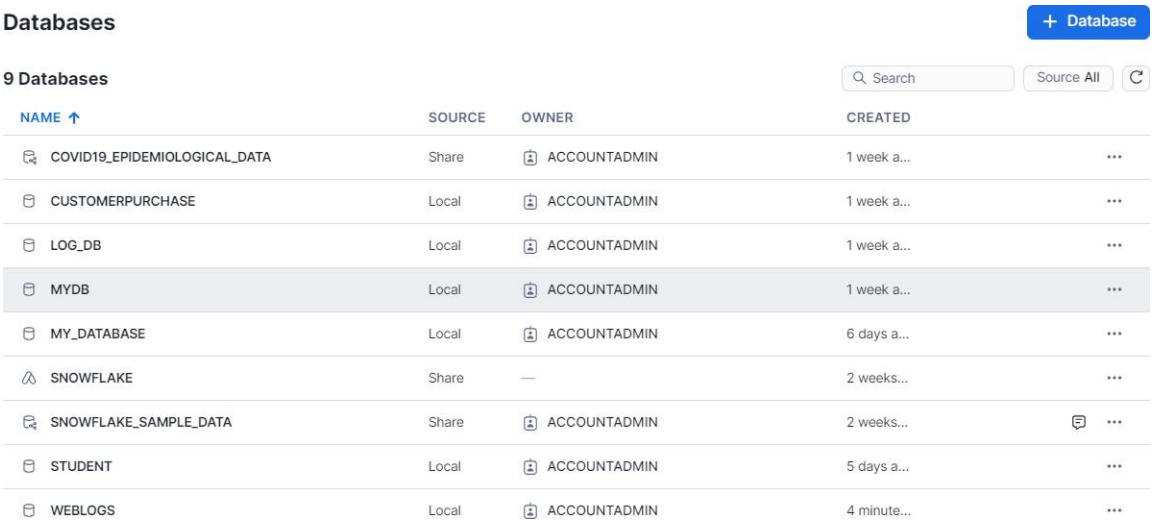
2024-07-04 15:45:00	INFO	User logged out	george_t	session007
2024-07-05 16:00:00	INFO	User logged in	hannah_b	session008
2024-07-05 16:05:00	INFO	Page loaded successfully	hannah_b	session008
2024-07-05 16:15:00	ERROR	Payment failed	hannah_b	session008
2024-07-05 16:30:00	INFO	User logged out	hannah_b	session008

Task A STAGING IN SNOWFLAKE

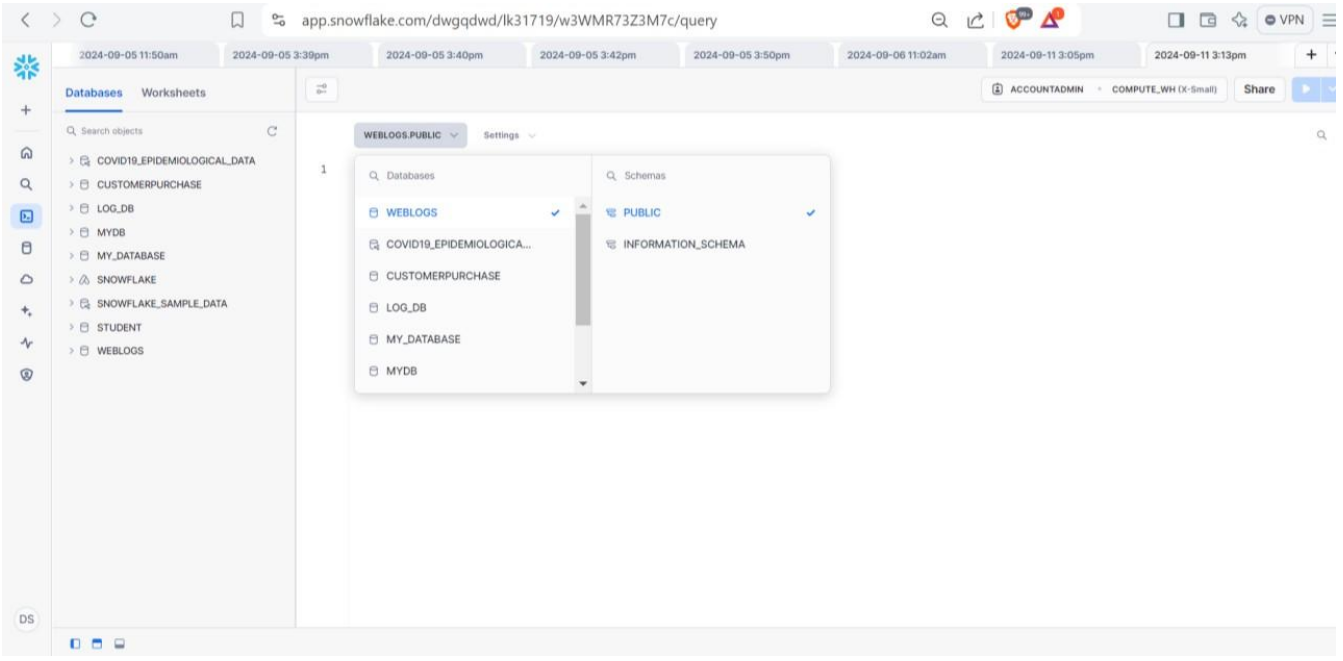
1. Create a custom user stage with the database
2. Install vs code and add snowflake extension connect to the snowflake account from vscode
3. Create a new table to store the table
4. Load the stage data in the table
5. Query the weblog table to view data have been imported successfully

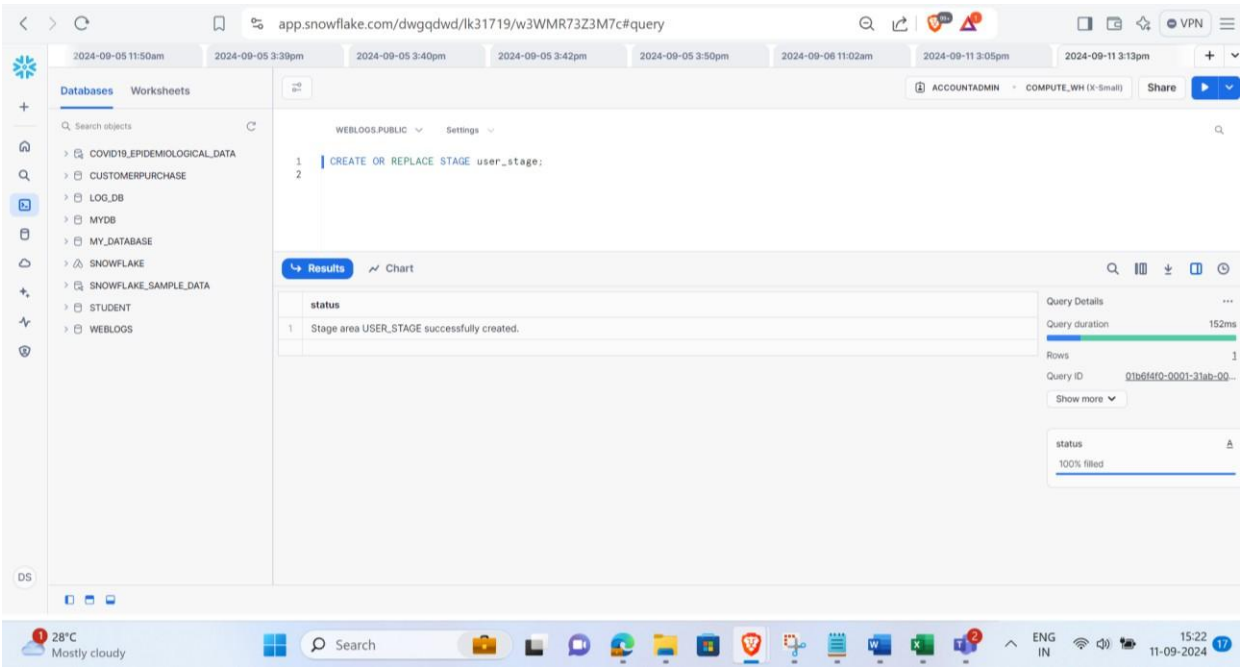


- Click on the database icon on the left side in the console

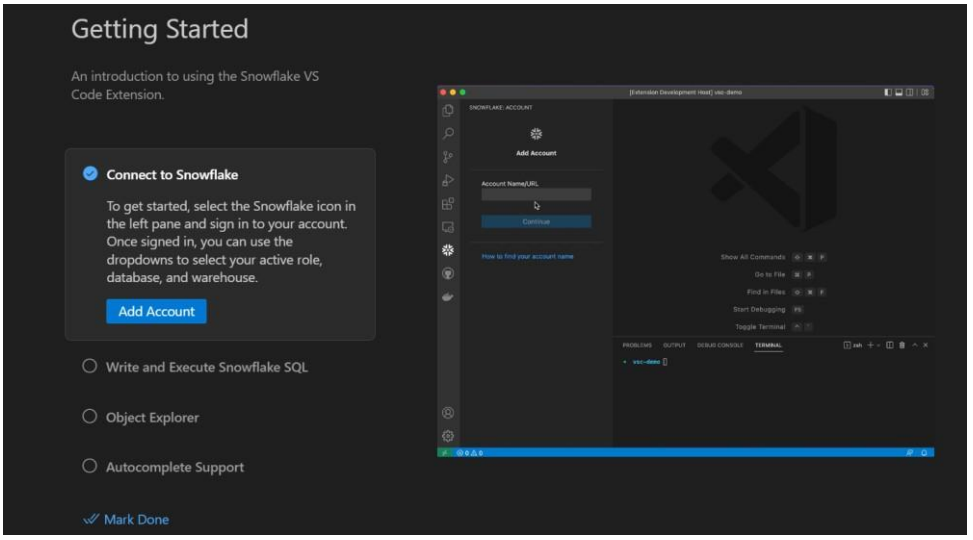


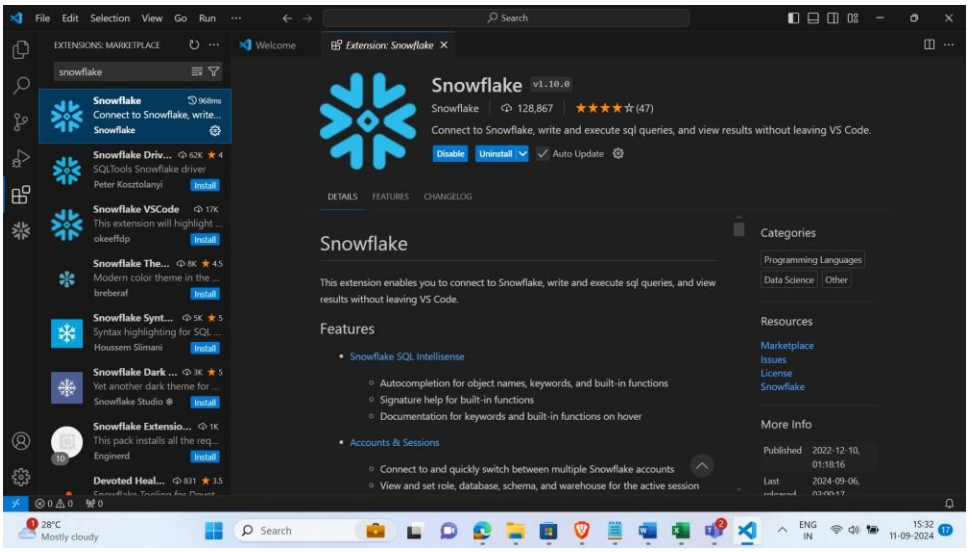
- Create a database give it name weblogs
- Now click on Create - >Sql worksheet
- Select the database like show in the image we have created weblogs
- Select the same database name and schema name .



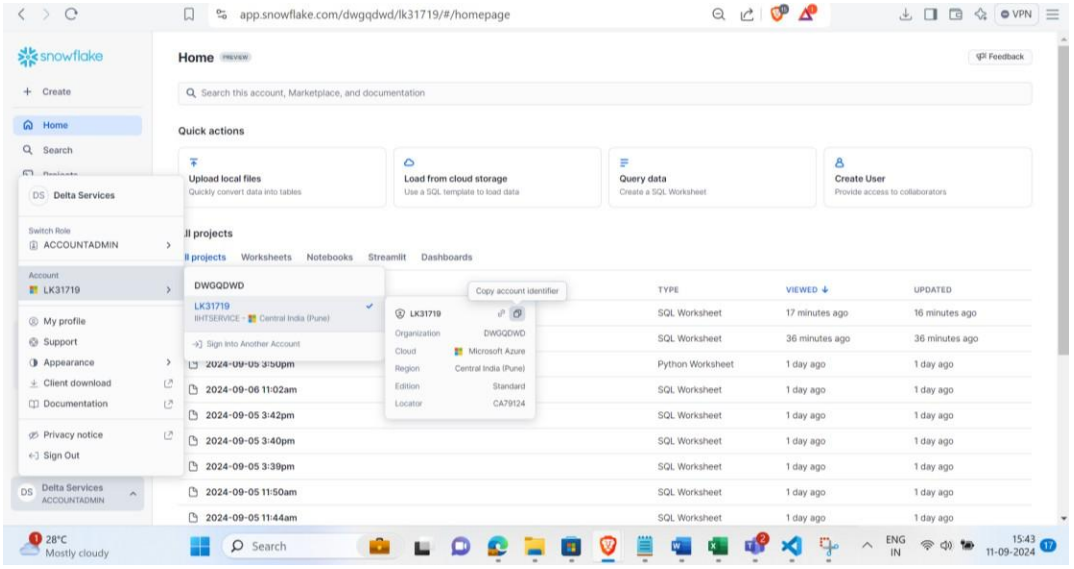


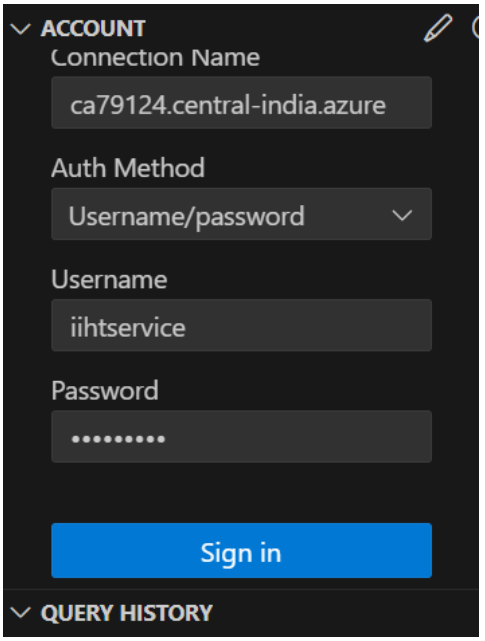
- Open VS code go to extensions search for snowflake and install .





- Click on the install button
- You need to get the account ID from the snowflake console





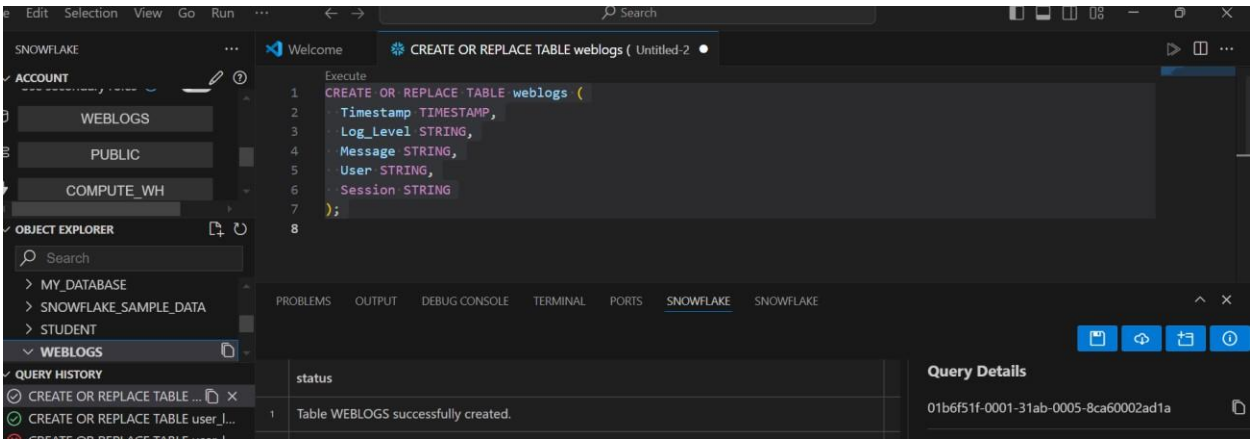
- Authenticate to the snowflake account

- Create the staging environment you can use the same structure from the screenshot you must get the similar output .

```
PS C:\Users\Vignesh> snowsql -a ca79124.central-india.azure -u iihtservice -q "
 >> USE DATABASE weblogs;
 >> USE SCHEMA public;
 >> PUT 'file://D:/important/project documents/snowflake/advanced/weblogs.csv' @user_stage;"
 >>
Password:
* SnowSQL * v1.3.0
Type SQL statements or !help
```

```
1 Row(s) produced. Time Elapsed: 0.087s
+-------------+---------------+-------------+-------------+--------------------+--------------------+----------+---------+
| source      | target        | source_size | target_size | source_compression | target_compression | status   | message |
|-------------+---------------+-------------+-------------+--------------------+--------------------+----------+---------|
| weblogs.csv | weblogs.csv.gz |        1910 |         496 | NONE               | GZIP               | UPLOADED |         |
+-------------+---------------+-------------+-------------+--------------------+--------------------+----------+---------+
1 Row(s) produced. Time Elapsed: 2.032s
Goodbye!
```

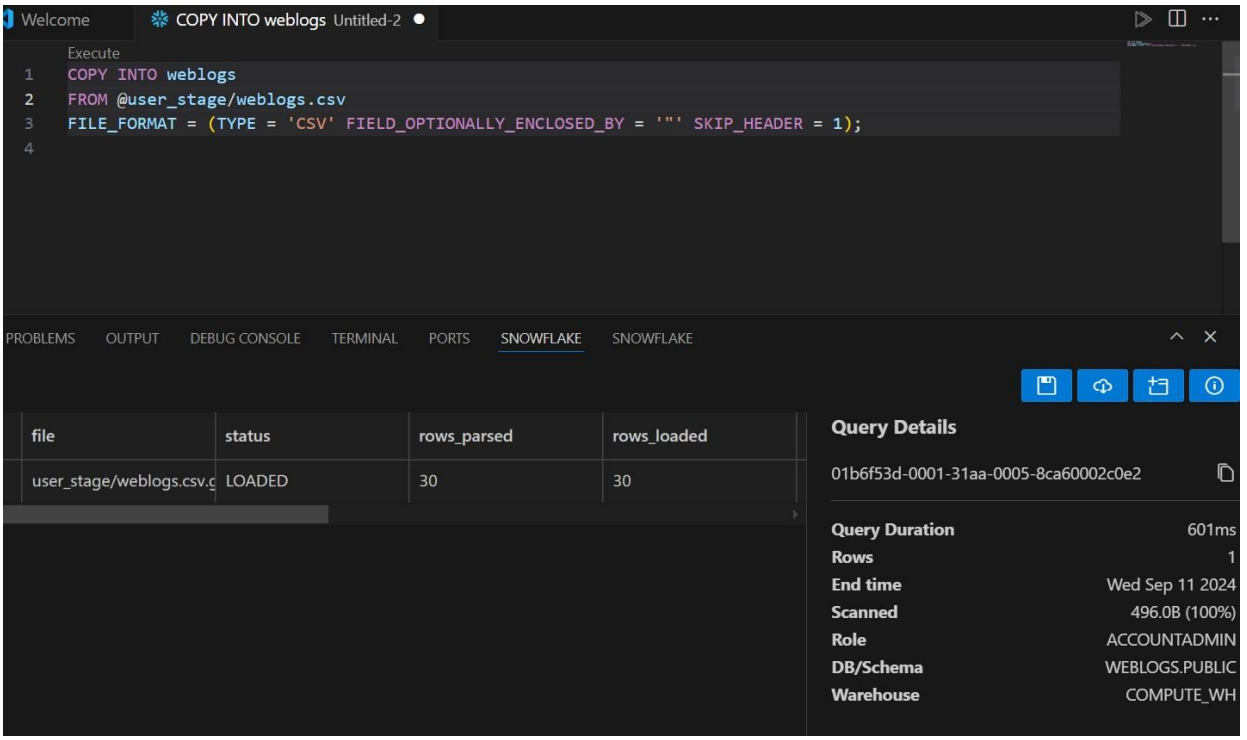
- Creating the table for data to be imported to the table
-



- Create the userstage using the following query

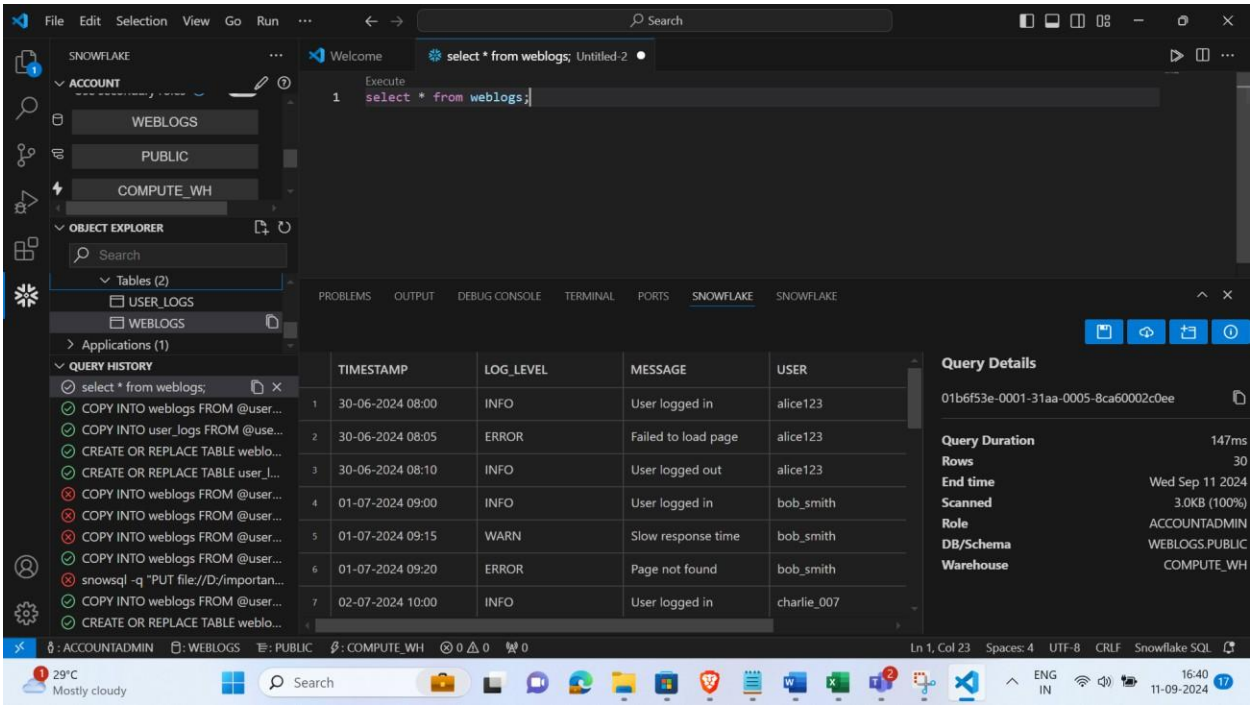
Sql code CREATE OR REPLACE STAGE user_stage;

- Create the table by selecting the weblogs database .



Query the database

- SELECT * FROM weblogs;



- Once you have imported the table check for respective rows and columns are imported correctly.

Task B Perform operation with the table

1 Retrieve all logs for a specific user? “'hannah_b'”
2 Count the number of errors in the logs
3 Retrieve logs within a specific time range
4 Group logs by log level
5 Find the most recent log entry for each user

Task C Perform UDF function stored procedure

1. Connect to Snowpark with database created.
2. Create a categorize_log_level UDF function “Critical," "Warning," or "Normal” and print the results
3. Create and register the filter_and_categorize_logs stored procedure
4. Test the Stored Procedure
5 .Check the stored procedure for the user “hannah_b”
6 Execute and Validate the stored procedure for hannah_b_categorized_logs .

Note please create the categorize_log_level function with the same name

To Connect to Snowpark you can use any editor (template to connect to snowflake)

```
from snowflake.snowpark import Session

session = Session.builder.configs({
"account": "<your_account>",
"user": "<your_username>",
"password": "<your_password>",
"role": "<your_role>",
"warehouse": "<your_warehouse>",
"database": "<your_database>",
"schema": "<your_schema>"
}).create()
```

Execution Steps to Follow:

1. Open the snowflake console
2. Import the dataset from the document
3. Perform all the query respective to the question provided
4. Take screenshots of the query execution
5. Upload the code to the Github

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