AirFlow-DBT-Snowflake Integration in Local Machine(Windows)

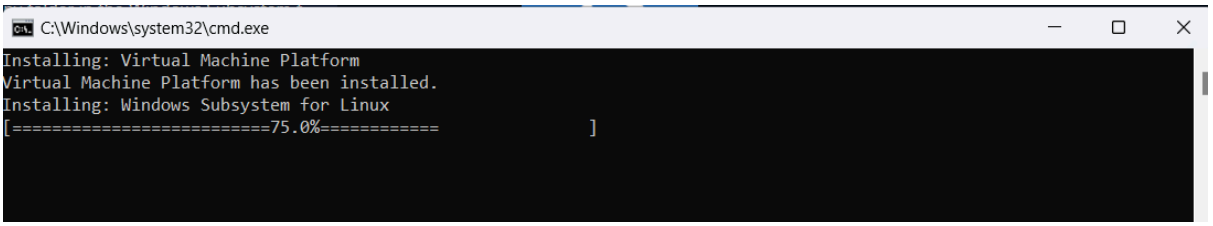
Airflow Setup:

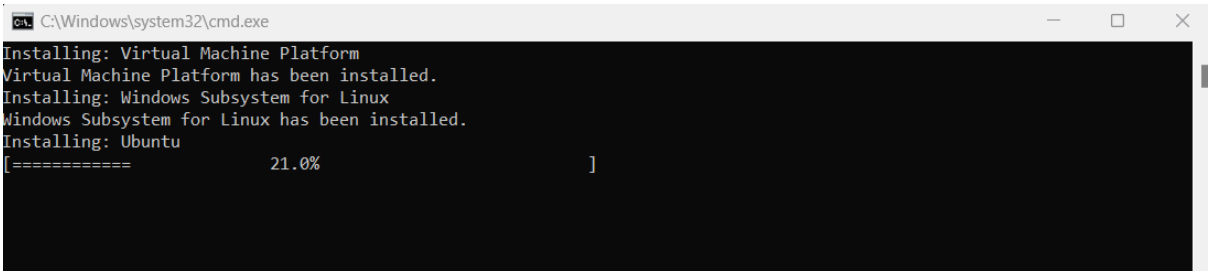
Step1:

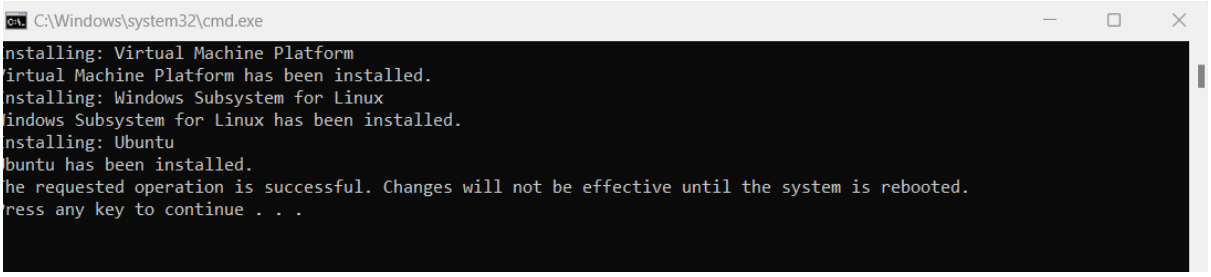
Installation in Windows using docker or WSL:

Installing WSL Windows

```
C:\Users\psara>wsl --install
```







Step2:-

```
Ubuntu is already installed.
Launching Ubuntu...
Installing, this may take a few minutes...
Please create a default UNIX user account. The username does not need to
match your Windows username.
For more information visit: https://aka.ms/wslusers
Enter new UNIX username: shrovan
New password:
Retype new password:
passwd: password updated successfully
Installation successful!
```

Step3: Update linux

```
shrovan@LAPTOP-3U4JI4R2:/mnt/c/Users/psara$ sudo apt update
```

Step4: Install python and pip for creating virtual environment

```
shrovan@LAPTOP-3U4JI4R2:/mnt/c/Users/psara$ sudo apt install python3
python3-pip
```

Step5: Install venv package and Create a python virtual environment

```
shrovan@LAPTOP-3U4JI4R2:/mnt/c/Users/psara$ sudo apt-get install
python3-venv
```

```
shrovan@LAPTOP-3U4JI4R2:~$ mkdir airflow_project
shrovan@LAPTOP-3U4JI4R2:~$ cd airflow_project/
```

```
shrovan@LAPTOP-3U4JI4R2:/mnt/c/Users/psara/shrovandbtairflow$ python3 -m
venv airflow_venv
shrovan@LAPTOP-3U4JI4R2:/mnt/c/Users/psara/shrovandbtairflow$ source
airflow_venv/bin/activate
(airflow_venv)
shrovan@LAPTOP-3U4JI4R2:/mnt/c/Users/psara/shrovandbtairflow$
```

Step6: Install apache airflow in the virtual environemnt

```
(airflow_venv) shrovan@LAPTOP-3U4JI4R2:
AIRFLOW_VERSION=2.10.1
```

```
PYTHON_VERSION="$(python --version | cut -d " " -f 2 | cut -d "." -f
1-2)"
CONTRAINT_URL="https://raw.githubusercontent.com/apache/airflow/constrai
nts-${AIRFLOW_VERSION}/constraints-${PYTHON_VERSION}.txt"

pip install "apache-airflow==${AIRFLOW_VERSION}" --constraint
"${CONTRAINT_URL}"
```

Step7:SET airflow home page and Initialise the airflow database

```
(airflow_venv)
shrovan@LAPTOP-3U4JI4R2:/mnt/c/Users/psara/shrovandbtairflow$ export
AIRFLOW_HOME=~/airflow
```

```
(airflow_venv)
shrovan@LAPTOP-3U4JI4R2:/mnt/c/Users/psara/shrovandbtairflow$ airflow db
init
```

Step8: Start the webserver

```
(airflow_venv)
shrovan@LAPTOP-3U4JI4R2:/mnt/c/Users/psara/shrovandbtairflow$ airflow
webserver --port 8080
```

Step9: Start the scheduler in a new instance:

```
shrovan@LAPTOP-3U4JI4R2:/mnt/c/Users/psara$ cd shrovandbtairflow/
shrovan@LAPTOP-3U4JI4R2:/mnt/c/Users/psara/shrovandbtairflow$ source
airflow_venv/bin/activate
(airflow_venv)
shrovan@LAPTOP-3U4JI4R2:/mnt/c/Users/psara/shrovandbtairflow$ airflow
scheduler
```

Step10:
In a new instance list the user details currently in use for airflow

```
(airflow_venv)
shrovan@LAPTOP-3U4JI4R2:/mnt/c/Users/psara/shrovandbtairflow$ airflow
users list
No data found
```

Step11: Create a new user with Admin role, and set a username and password for the same.

```
(airflow_venv)
shrovan@LAPTOP-3U4JI4R2:/mnt/c/Users/psara/shrovandbtairflow$ airflow
users create --username admin --firstname shrovan --lastname p --role
Admin --email admin@anyname.com
/mnt/c/Users/psara/shrovandbtairflow/airflow_venv/lib/python3.12/site-pa
ckages/flask_limiter/extension.py:333 UserWarning: Using the in-memory
storage for tracking rate limits as no storage was explicitly specified.
This is not recommended for production use. See:
https://flask-limiter.readthedocs.io#configuring-a-storage-backend for
documentation about configuring the storage backend.
[2025-01-22T06:27:07.929+0000] {override.py:965} WARNING - No user yet
created, use flask fab command to do it.
[2025-01-22T06:27:08.553+0000] {workday.py:41} WARNING - Could not
import pandas. Holidays will not be considered.
Password:
Repeat for confirmation:
[2025-01-22T06:27:37.482+0000] {override.py:1597} INFO - Added user
admin
User "admin" created with role "Admin"
```

Step12:
Check the user information for airflow:

```
(airflow_venv)
shrovan@LAPTOP-3U4JI4R2:/mnt/c/Users/psara/shrovandbtairflow$ airflow
users list
id | username | email             | first_name | last_name | roles
===+==========+===================+============+===========+======
1  | admin    | admin@anyname.com | shrovan    | p         | Admin
```

Step13:

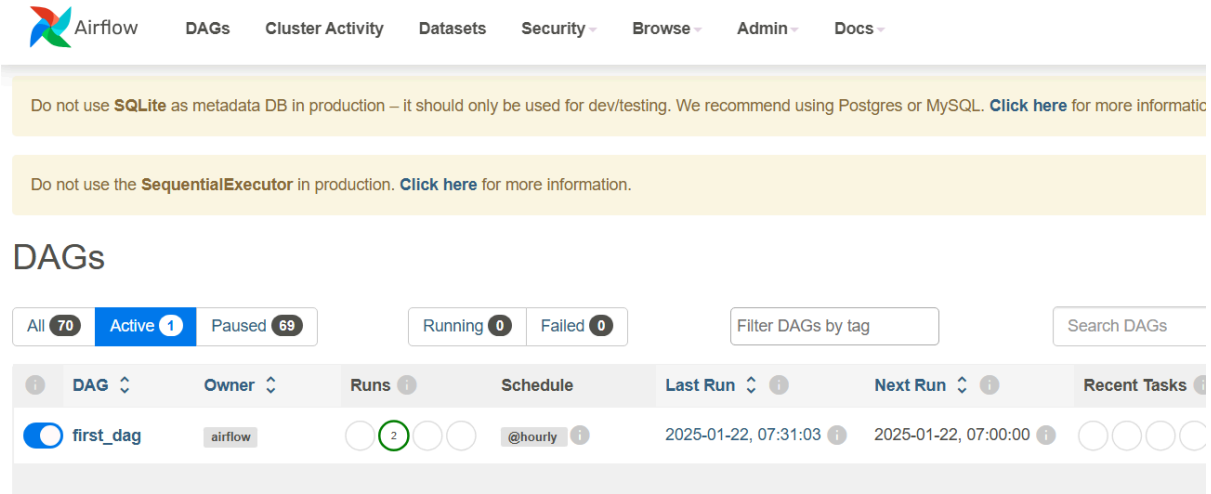
Open the airflow folder where the airflow is installed via vscode and under that folder create a dags folder.

Add a new python script under the DAG, initiate the virtual environment

```
(airflow_venv)
shrovan@LAPTOP-3U4JI4R2:/mnt/c/Users/psara/shrovandbtairflow$ source
/mnt/c/Users/psara/shrovandbtairflow/airflow_venv/bin/activate
```

Step14: Run the Python script

```
(airflow_venv) shrovan@LAPTOP-3U4JI4R2:~/airflow/dags$ python3
hello_world.py
/home/shrovan/airflow/dags/hello_world.py:8 RemovedInAirflow3Warning:
Param `schedule_interval` is deprecated and will be removed in a future
release. Please use `schedule` instead.
```



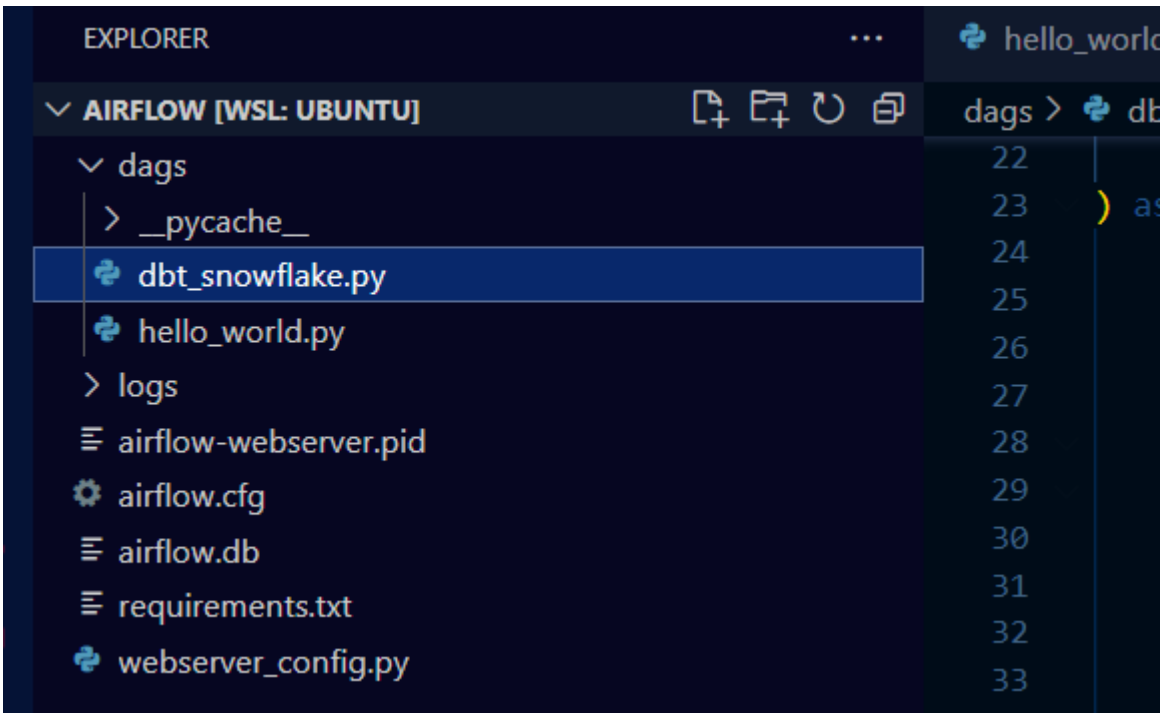
Step15:- Create a requirement.txt folder to install the required packages

```
(airflow_venv) shrovan@LAPTOP-3U4JI4R2:~/airflow$ cat requirements.txt
apache-airflow
dbt-core
dbt-snowflake(airflow_venv) shrovan@LAPTOP-3U4JI4R2:~/airflow$
```

Step16:- Run the requirement.txt folder

```
(airflow_venv) shrovan@LAPTOP-3U4JI4R2:~/airflow$ pip install -r
requirements.txt
```

Step17:- Create a Python script to run a DBT Model from Airflow.




```python
from airflow import DAG
from airflow.operators.bash import BashOperator
from airflow.operators.empty import EmptyOperator
from airflow.utils.task_group import TaskGroup
from datetime import datetime

PROJECT_DIR ='/mnt/c/Users/psara/shrovandbtsnowflake'
PROFILES_DIR='/mnt/c/Users/psara/.dbt'

default_args = {
    'owner': 'airflow',
    'depends_on_past': False,
    'retries': 3,
}

with DAG(
    'dbt_snowflake_job2',
    default_args=default_args,
    description='Airflow job to run dbt-snowflake from airflow',
    schedule_interval='@daily',
    start_date=datetime(2024,1,22),
    catchup=False,
) as dag:
```

```
    start = EmptyOperator(task_id='start_dag')

    with TaskGroup(group_id='dbt_tasks') as dbt_tasks:
        dbt_debug = BashOperator(
            task_id='dbt-debug',
            bash_command=f'dbt debug --profiles-dir {PROFILES_DIR}
--project-dir {PROJECT_DIR}',
        )

        #dbt run task
        dbt_run = BashOperator(
            task_id='dbt-run',
            #bash_command=f'dbt run --profiles-dir {PROFILES_DIR}
--project-dit {PROJECT_DIR}'
            bash_command=f'dbt run --profiles-dir {PROFILES_DIR} --project-dir
{PROJECT_DIR} --select staging',
        )

        dbt_debug >> dbt_run

    end = EmptyOperator(task_id='end_dag')

    #Task Dependencies
    start>>dbt_tasks>>end
```

Step 18: Execute the Script and check the task in Airflow.