Step 1: Install Airflow Locally (Using Virtualenv)

1.1. Create and activate a virtual environment

```
python -m venv airflow_venv
source airflow_venv/bin/activate   # On Windows: airflow_venv\Scripts\activate
```

1.2. Install Airflow (with local executor + SQLite for dev)

```
AIRFLOW_VERSION=2.9.1
PYTHON_VERSION="$(python --version | cut -d " " -f 2 | cut -d "." -f 1,2)"
CONSTRAINT_URL="https://raw.githubusercontent.com/apache/airflow/constraints-${AIRFLOW_V


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

Step 2: Initialize Airflow

```
export AIRFLOW_HOME=~/airflow
airflow db init
```

Create a user to access the UI:

```
airflow users create \
    --username admin \
    --firstname Firstname \
    --lastname Lastname \
    --role Admin \
    --email admin@example.com
```

Step 3: Start Airflow UI and Scheduler

```
airflow webserver --port 8080
# In another terminal
airflow scheduler
```

Then go to http://localhost:8080 and log in.

Step 4: Create a Simple DAG

Save the following file as:

```
~/airflow/dags/hello_dag.py
```

```
from airflow import DAG
from airflow.operators.python import PythonOperator
from datetime import datetime
```

```python
def say_hello():
    print("Hello from Airflow!")

with DAG(
    dag_id="hello_world_dag",
    start_date=datetime(2023, 1, 1),
    schedule_interval="@daily",  # Runs daily
    catchup=False,
    tags=["example"]
) as dag:

    hello_task = PythonOperator(
        task_id="say_hello_task",
        python_callable=say_hello
    )
```

Then refresh the UI — you'll see `hello_world_dag` listed.

Click "Trigger DAG" to run it.