

Hands-on Lab: Getting started with Apache Airflow

Estimated time needed: **20** minutes

Objectives

After completing this lab you will be able to:

- Start Apache Airflow.
- Open the Airflow UI in a browser.
- List all the DAGs.
- List the tasks in a DAG.
- Explore a DAG in the UI.

About Skills Network Cloud IDE

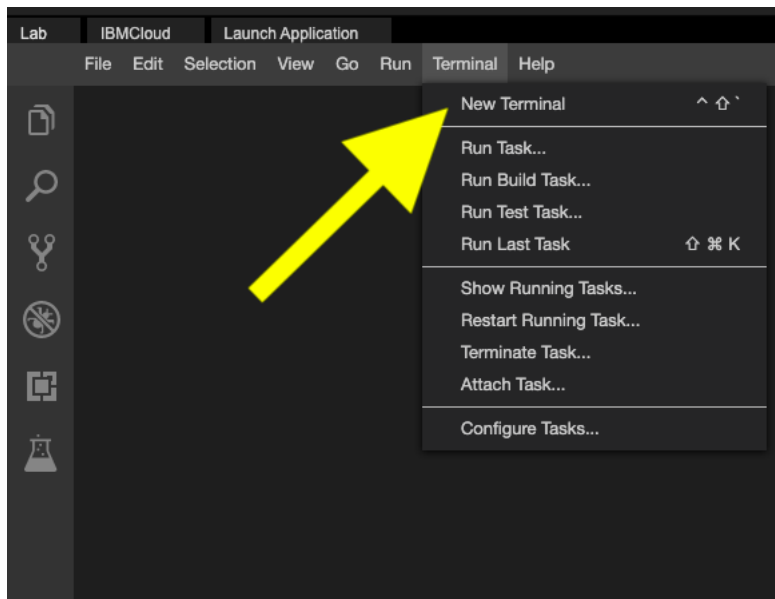
Skills Network Cloud IDE (based on Theia and Docker) provides an environment for hands on labs for course and project related labs. Theia is an open source IDE (Integrated Development Environment), that can be run on desktop or on the cloud. To complete this lab, we will be using the Cloud IDE based on Theia running in a Docker container.

Important Notice about this lab environment

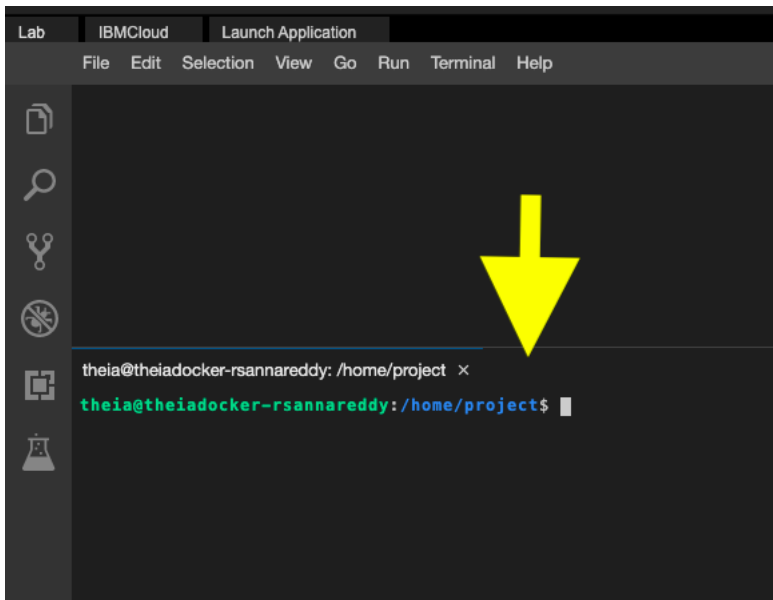
Please be aware that sessions for this lab environment are not persistent. A new environment is created for you every time you connect to this lab. Any data you may have saved in an earlier session will get lost. To avoid losing your data, please plan to complete these labs in a single session.

Exercise 1 - Start Apache Airflow

Open a new terminal by clicking on the menu bar and selecting **Terminal->New Terminal**, as shown in the image below.



This will open a new terminal at the bottom of the screen as in the image below.



Run the commands below on the newly opened terminal. (You can copy the code by clicking on the little copy button on the bottom right of the codeblock below and paste it wherever you wish.)

Run the command below in the terminal to start Apache Airflow.

1. 1
1. start_airflow

Copied!

Please be patient, it may take upto 5 minutes for airflow to get started.

When airflow starts successfully, you should see an output similar to the one below.

A screenshot of terminal output showing the successful startup of Apache Airflow. The output includes the command 'start_airflow', the message 'Starting your airflow services....', and the status 'Airflow started, waiting for all services to be ready....'. It then displays the Airflow server URL and credentials: 'Your airflow server is now ready to use and available with username: airflow password: MTM4ODUtcnNhbm5h'. A green overlay with three labels and arrows points to specific parts of the output: 'UI URL' points to the URL, 'Username' points to 'airflow', and 'Password' points to 'MTM4ODUtcnNhbm5h'. Below this, a 'CommandLine:' section lists several commands for interacting with Airflow.

```
theia@theiadocker-rsannareddy:/home/project$ start_airflow
Starting your airflow services....
This process can take a few minutes.

Airflow started, waiting for all services to be ready....

Your airflow server is now ready to use and available with username: airflow password: MTM4ODUtcnNhbm5h


You can access your Airflow Webserver at: https://rsannareddy-8080.theiadocker-5-labs-prod-th
eiak8s-4-tor01.proxy.cognitiveclass.ai

CommandLine:
• List DAGs: airflow dags list
• List Tasks: airflow tasks list example_bash_operator
• Run an example task: airflow tasks test example_bash_operator runme_1 2015-06-01
theia@theiadocker-rsannareddy:/home/project$
```

Exercise 2 - Open the Airflow Web UI

Copy the Web-UI URL and paste it on a new browser tab. You can also click on the URL by holding the control key (Command key in case of a Mac).

You should land at a page that looks like this:

 Airflow

Security

Browse

Admin

Docs

Skills Network Airflow

All 32


Active 0

Paused 32

Filter DAGs by tag

DAG	Owner	Runs	Schedule	Last Run	Recent Tasks
<div><div><input type="checkbox"/></div><div>example_bash_operator</div><div>exampleexample2</div></div> <div>airflow</div> <div><div></div><div></div><div></div></div> <div>00***</div> <div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>					
<div><div><input type="checkbox"/></div><div>example_branch_datetime_operator_2</div><div>example</div></div> <div>airflow</div> <div><div></div><div></div><div></div></div> <div>@daily</div> <div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>					
<div><div><input type="checkbox"/></div><div>example_branch_dop_operator_v3</div><div>example</div></div> <div>airflow</div> <div><div></div><div></div><div></div></div> <div>*1****</div> <div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>					
<div><div><input type="checkbox"/></div><div>example_branch_labels</div><div></div></div> <div>airflow</div> <div><div></div><div></div><div></div></div> <div>@daily</div> <div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>					
<div><div><input type="checkbox"/></div><div>example_branch_operator</div><div>exampleexample2</div></div> <div>airflow</div> <div><div></div><div></div><div></div></div> <div>@daily</div> <div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>					
<div><div><input type="checkbox"/></div><div>example_complex</div><div>exampleexample2example3</div></div> <div>airflow</div> <div><div></div><div></div><div></div></div> <div>None</div> <div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>					
<div><div><input type="checkbox"/></div><div>example_dag_decorator</div><div>example</div></div> <div>airflow</div> <div><div></div><div></div><div></div></div> <div>None</div> <div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>					
<div><div><input type="checkbox"/></div><div>example_external_task_marker_child</div><div>example2</div></div> <div>airflow</div> <div><div></div><div></div><div></div></div> <div>None</div> <div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>					

You can Unpause/Pause a DAG using the Unpause/Pause toggle button.

 Airflow

Security

Browse

Admin

Docs

Skills Network Airflow

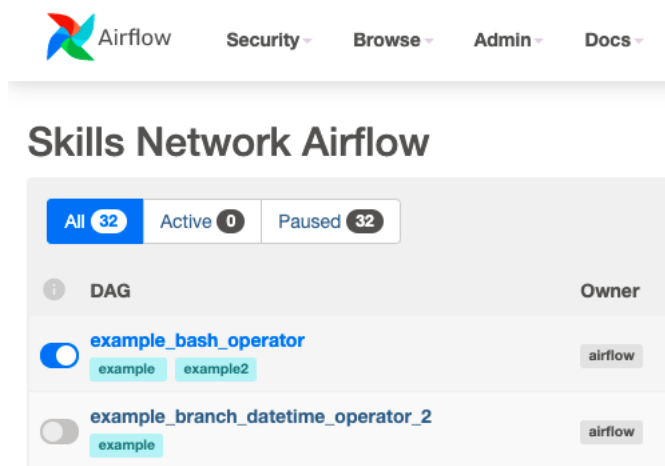
All 32

Active 0

Paused 32

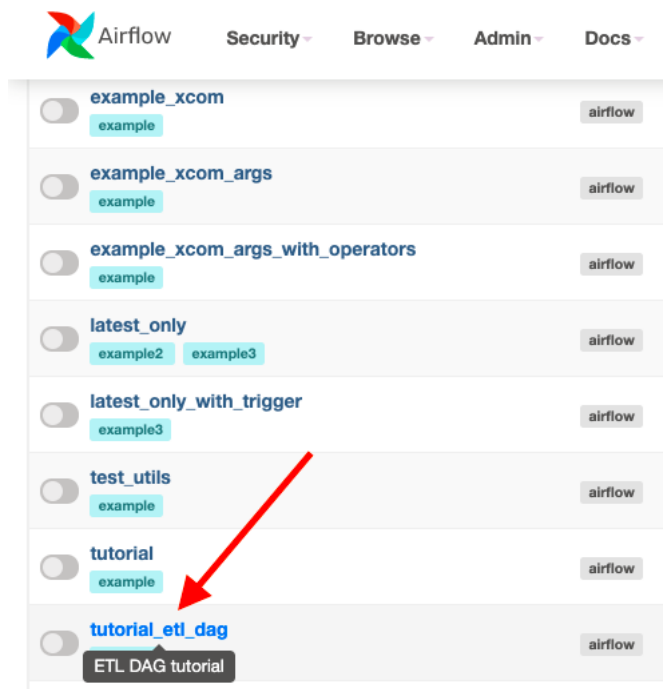
DAG	Owner
<div><div><div><div><input type="checkbox"/></div><div>example_bash_operator</div><div>exampleexample2</div></div><div>airflow</div></div></div>	
<div><div><div><div><input type="checkbox"/></div><div>example_branch_datetime_operator_2</div><div>example</div></div><div>airflow</div></div></div>	

An unpaused DAG looks like this:



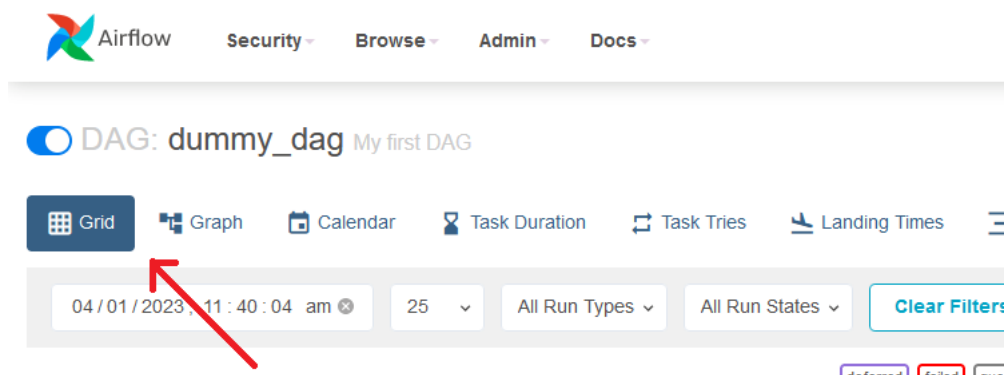
The screenshot shows the Airflow Skills Network interface. At the top, there is a navigation bar with the Airflow logo and links for Security, Browse, Admin, and Docs. Below the navigation bar, the title "Skills Network Airflow" is displayed. Underneath the title, there are three tabs: "All 32", "Active 0", and "Paused 32". The main content area is a table with two columns: "DAG" and "Owner". The table lists several DAGs, including "example_bash_operator", "example_branch_datetime_operator_2", "example_xcom", "example_xcom_args", "example_xcom_args_with_operators", "latest_only", "latest_only_with_trigger", "test_utils", "tutorial", and "tutorial_etl_dag". Each DAG entry has a toggle switch on the left and the owner "airflow" on the right. A red arrow points to the "tutorial_etl_dag" entry.

Click on a DAG to explore more about the DAG.



The screenshot shows the Airflow Skills Network interface with the "tutorial_etl_dag" selected. The navigation bar is the same as in the previous screenshot. The title "Skills Network Airflow" is displayed. Below the title, there are three tabs: "All 32", "Active 0", and "Paused 32". The main content area is a table with two columns: "DAG" and "Owner". The table lists several DAGs, including "example_bash_operator", "example_branch_datetime_operator_2", "example_xcom", "example_xcom_args", "example_xcom_args_with_operators", "latest_only", "latest_only_with_trigger", "test_utils", "tutorial", and "tutorial_etl_dag". Each DAG entry has a toggle switch on the left and the owner "airflow" on the right. A red arrow points to the "tutorial_etl_dag" entry.


Click on the Grid button to see the grid view of the DAG.

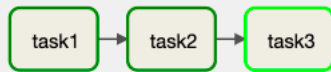


The screenshot shows the Airflow DAG: dummy_dag interface. At the top, there is a navigation bar with the Airflow logo and links for Security, Browse, Admin, and Docs. Below the navigation bar, the title "DAG: dummy_dag My first DAG" is displayed. Underneath the title, there are several tabs: "Grid", "Graph", "Calendar", "Task Duration", "Task Tries", and "Landing Times". The "Grid" tab is selected. Below the tabs, there is a filter bar with a date range "04 / 01 / 2023, 11 : 40 : 04 am", a dropdown menu for "25", a dropdown menu for "All Run Types", and a dropdown menu for "All Run States". A red arrow points to the "Grid" tab.

Click on the Graph button to see the graph view of the DAG.

queued
running
success
failed
up_for_retry
up_for_reschedule
upstream_failed
skipped
scheduled
no_status

☒ Auto-refresh
 



Exercise 3 - List all DAGs

Apache airflow gives us some handy command line options to work with.

Run the command below in the terminal to list out all the existing DAGs.

1. 1
1. `airflow dags list`

Copied!

Exercise 4 - List tasks in a DAG

Run the command below in the terminal to list out all the tasks in the DAG named `example_bash_operator`.

1. 1
1. `airflow tasks list example_bash_operator`

Copied!

Here `example_bash_operator` is the name of the DAG.

Try listing out the tasks for the DAG `tutorial1`.

Exercise 5 - Pause/Unpause a DAG

Run the command below in the terminal to unpause a DAG.

1. 1
1. `airflow dags unpause tutorial`

Copied!

Here `tutorial` is the name of the DAG.

Pause a DAG.

1. 1
1. `airflow dags pause tutorial`

Copied!

Try to unpause the DAG named `example_branch_operator`.

Practice exercises

1. Problem:

List tasks for the DAG `example_branch_Labels`.

- [Click here for Hint](#)
- [Click here for Solution](#)

2. Problem:

Unpause the DAG `example_branch_Labels`.

- [Click here for Hint](#)
- [Click here for Solution](#)

3. Problem:

Pause the DAG `example_branch_Labels`.

- [Click here for Hint](#)

► [Click here for Solution](#)

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Change Log

Date (YYYY-MM-DD)	Version	Changed By	Change Description
2023-05-04	0.2	Benny Li	Minor formatting changes
2021-07-05	0.1	Ramesh Sannareddy	Created initial version of the lab

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