Apache Airflow(windows - WSL2)

2023.07.27(thu)
By. aaron

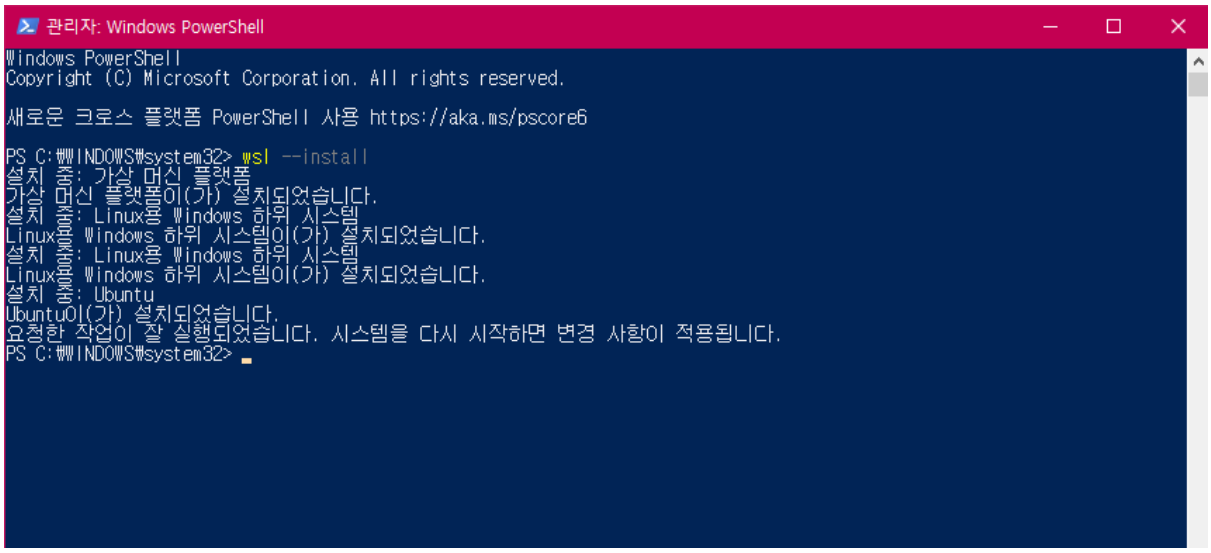
1. Environment

```
#Local PC
Edition. Windows 10 Pro
Version. 22H2
OS Build. 19045.3208

Proc. Intel i5 10세대
RAM. 24GB

#Requirement
WSL2(Ubuntu Jammy - 22.04.2 LTS)
Docker(+Compose)

#Src
Apache airflow 2.6.

ref. https://learn.microsoft.com/ko-kr/windows/wsl/install
     https://docs.docker.com/engine/install/ubuntu/
     https://airflow.apache.org/docs/apache-airflow/stable/howto/docker-compose/index.html
```

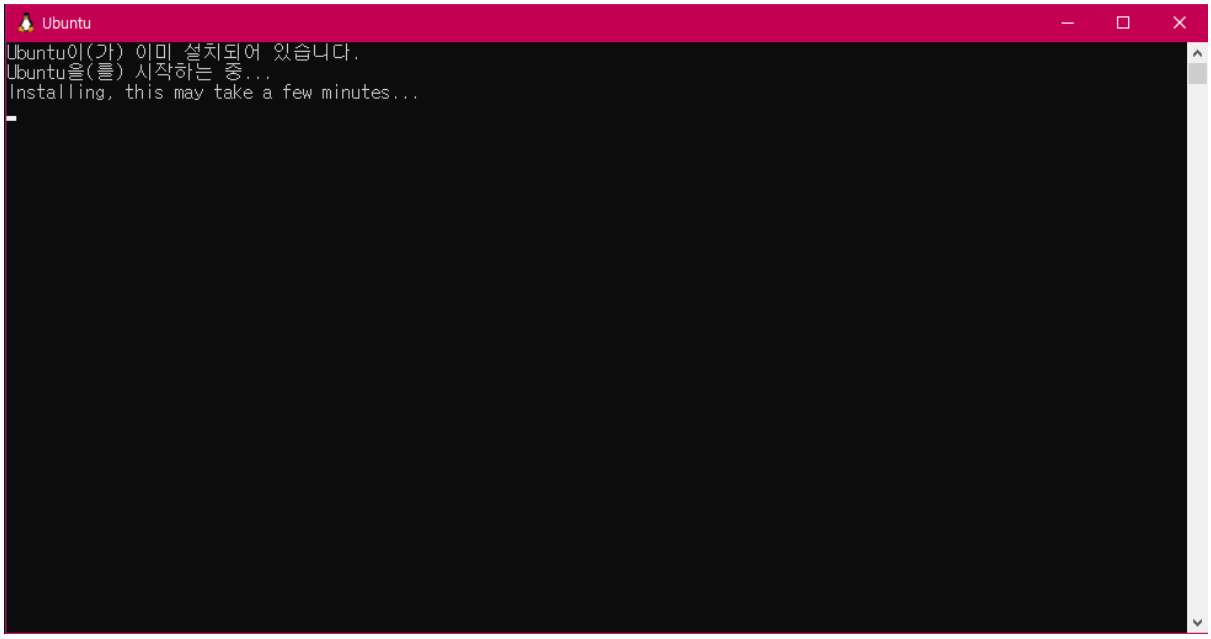
---

2. Install WSL2

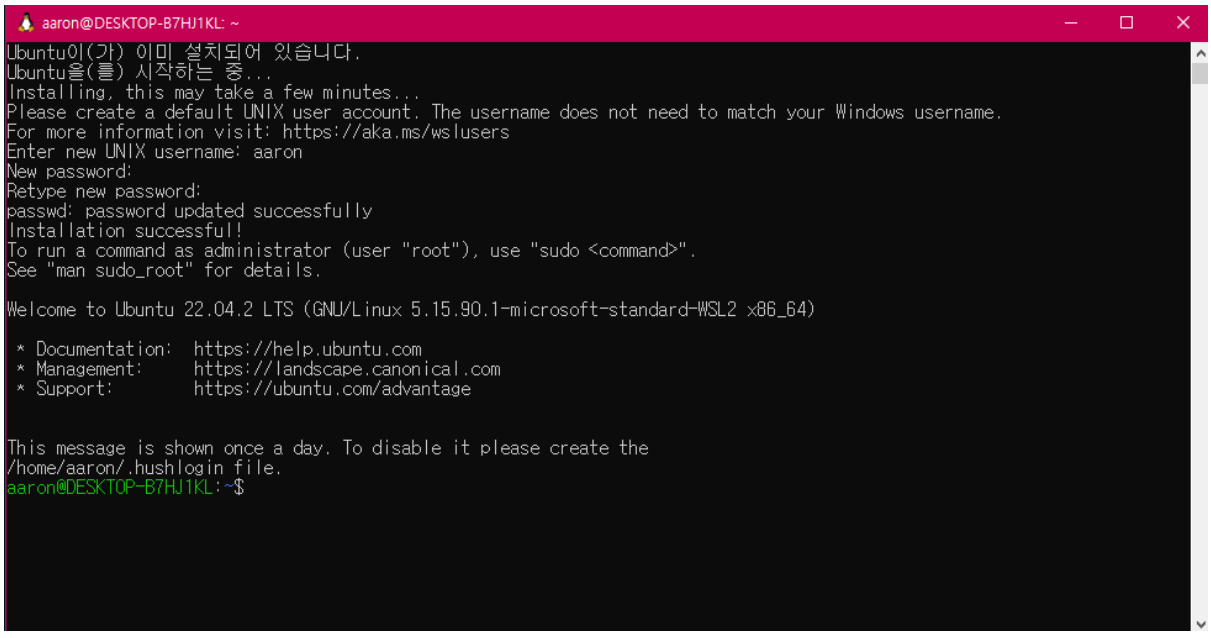
```
1. WSL2 Install
  = POWERSHELL ADMIN MODE
  wsl --install
```




```
> reboot
? 시스템 재시작 시, 자동으로 프롬프트 출력
```

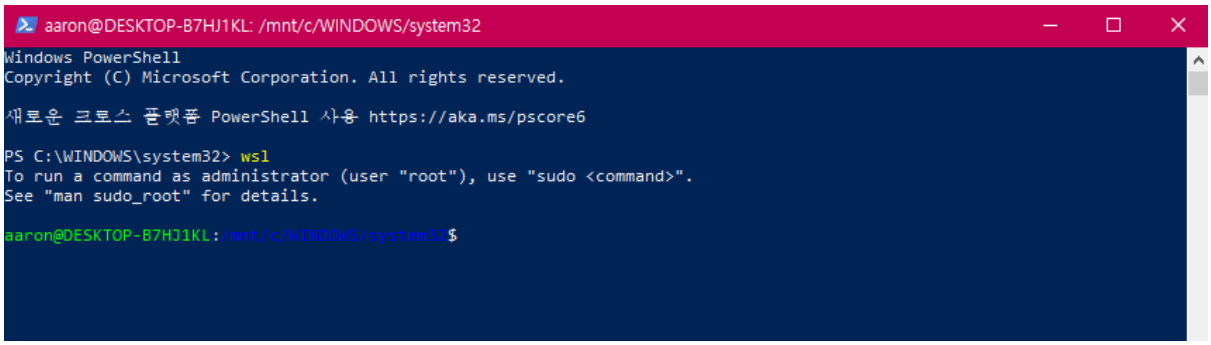



```
? 설치 소요 시간 : 3~5 min

> Enter new UNIX username : aaron
> New password : ***********
```




```
exit;

= POWERSHELL ADMIN MODE
wsl -l -v
```

```
? VERSION 2 - OK (if VERSION 1, → 2 Upgrade)

? wsl 진입은 powershell에서 wsl 입력 또는 시작 메뉴에 wsl 검색 시, wsl 앱으로 진입
```



---

2. Install Docker

```
1. Uninstall old versions
for pkg in docker.io docker-doc docker-compose podman-docker containerd runc; do sudo apt-get remove $pkg; done

2. Setup the repository
#. Update the apt package index ~
sudo apt-get update
sudo apt-get install ca-certificates curl gnupg

#. Add Docker's official GPG key
sudo install -m 0755 -d /etc/apt/keyrings
curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo gpg --dearmor -o /etc/apt/keyrings/docker.gpg
sudo chmod a+r /etc/apt/keyrings/docker.gpg

#. Setup the repository
echo \
  "deb [arch="$(dpkg --print-architecture)" signed-by=/etc/apt/keyrings/docker.gpg] https://download.docker.com/linux/ubuntu \
  "$(. /etc/os-release && echo "$VERSION_CODENAME")" stable" | \
  sudo tee /etc/apt/sources.list.d/docker.list > /dev/null
```

```
aaron@DESKTOP-B7HJ1KL:/mnt/c/WINDOWS/system32$ for pkg in docker.io docker-doc docker-compose podman-docker containerd runc;
do sudo apt-get remove $pkg; done
[sudo] password for aaron:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Package 'docker.io' is not installed, so not removed
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
E: Unable to locate package docker-doc
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
E: Unable to locate package docker-compose
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
E: Unable to locate package podman-docker
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Package 'containerd' is not installed, so not removed
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Package 'runc' is not installed, so not removed
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
aaron@DESKTOP-B7HJ1KL:/mnt/c/WINDOWS/system32$
```

```
aaron@DESKTOP-B7HJ1KL:/mnt/c/WINDOWS/system32$ sudo apt-get update
Hit:1 http://archive.ubuntu.com/ubuntu jammy InRelease                    icates curl gnupg
Get:2 http://archive.ubuntu.com/ubuntu jammy-updates InRelease [119 kB]
Get:3 http://security.ubuntu.com/ubuntu jammy-security InRelease [110 kB]
Get:4 http://archive.ubuntu.com/ubuntu jammy-backports InRelease [108 kB]
Get:5 http://archive.ubuntu.com/ubuntu jammy/universe amd64 Packages [14.1 MB]
Get:6 http://security.ubuntu.com/ubuntu jammy-security/main amd64 Packages [633 kB]
Get:7 http://security.ubuntu.com/ubuntu jammy-security/main Translation-en [149 kB]
Get:8 http://security.ubuntu.com/ubuntu jammy-security/main amd64 c-n-f Metadata [11.0 kB]
Get:9 http://security.ubuntu.com/ubuntu jammy-security/restricted amd64 Packages [656 kB]
Get:10 http://security.ubuntu.com/ubuntu jammy-security/restricted Translation-en [104 kB]
Get:11 http://security.ubuntu.com/ubuntu jammy-security/restricted amd64 c-n-f Metadata [532 B]
Get:12 http://security.ubuntu.com/ubuntu jammy-security/universe amd64 Packages [757 kB]
Get:13 http://security.ubuntu.com/ubuntu jammy-security/universe Translation-en [136 kB]
Get:14 http://security.ubuntu.com/ubuntu jammy-security/universe amd64 c-n-f Metadata [15.9 kB]
Get:15 http://security.ubuntu.com/ubuntu jammy-security/multiverse amd64 Packages [36.5 kB]
Get:16 http://security.ubuntu.com/ubuntu jammy-security/multiverse Translation-en [7060 B]
Get:17 http://security.ubuntu.com/ubuntu jammy-security/multiverse amd64 c-n-f Metadata [260 B]
Get:18 http://archive.ubuntu.com/ubuntu jammy/universe Translation-en [5652 kB]
Get:19 http://archive.ubuntu.com/ubuntu jammy/universe amd64 c-n-f Metadata [286 kB]
Get:20 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 Packages [217 kB]
Get:21 http://archive.ubuntu.com/ubuntu jammy/multiverse Translation-en [112 kB]
Get:22 http://archive.ubuntu.com/ubuntu jammy/multiverse amd64 c-n-f Metadata [8372 B]
Get:23 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [853 kB]
Get:24 http://archive.ubuntu.com/ubuntu jammy-updates/main Translation-en [208 kB]
Get:25 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 c-n-f Metadata [15.4 kB]
Get:26 http://archive.ubuntu.com/ubuntu jammy-updates/restricted amd64 Packages [668 kB]
Get:27 http://archive.ubuntu.com/ubuntu jammy-updates/restricted Translation-en [106 kB]
Get:28 http://archive.ubuntu.com/ubuntu jammy-updates/restricted amd64 c-n-f Metadata [528 B]
```

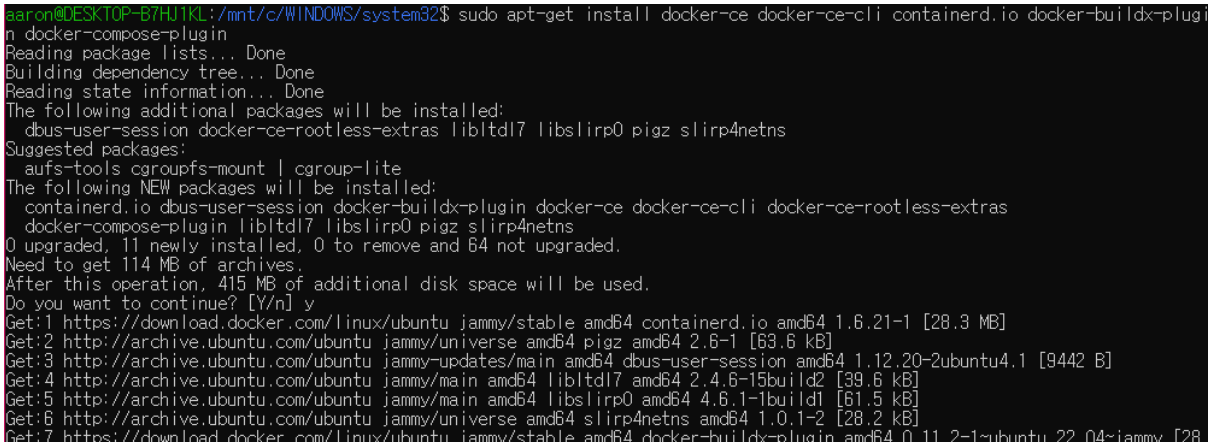
```
aaron@DESKTOP-B7HJ1KL:/mnt/c/WINDOWS/system32$ sudo apt-get install ca-certificates curl gnupg
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
gnupg is already the newest version (2.2.27-3ubuntu2.1).
gnupg set to manually installed.
The following packages will be upgraded:
  ca-certificates curl libcurl4
3 upgraded, 0 newly installed, 0 to remove and 64 not upgraded.
Need to get 640 kB of archives.
After this operation, 23.6 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 ca-certificates all 20230311ubuntu0.22.04.1 [155 kB]
Get:2 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 curl amd64 7.81.0-1ubuntu1.13 [194 kB]
Get:3 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 libcurl4 amd64 7.81.0-1ubuntu1.13 [290 kB]
Fetched 640 kB in 2s (330 kB/s)
Preconfiguring packages ...
(Reading database ... 24137 files and directories currently installed.)
Preparing to unpack .../ca-certificates_20230311ubuntu0.22.04.1_all.deb ...
Unpacking ca-certificates (20230311ubuntu0.22.04.1) over (20211016ubuntu0.22.04.1) ...
Preparing to unpack .../curl_7.81.0-1ubuntu1.13_amd64.deb ...
Unpacking curl (7.81.0-1ubuntu1.13) over (7.81.0-1ubuntu1.10) ...
Preparing to unpack .../libcurl4_7.81.0-1ubuntu1.13_amd64.deb ...
Unpacking libcurl4:amd64 (7.81.0-1ubuntu1.13) over (7.81.0-1ubuntu1.10) ...
Setting up ca-certificates (20230311ubuntu0.22.04.1) ...
Updating certificates in /etc/ssl/certs...
rehash: warning: skipping ca-certificates.crt,it does not contain exactly one certificate or CRL
19 added, 6 removed; done.
Setting up libcurl4:amd64 (7.81.0-1ubuntu1.13) ...
Setting up curl (7.81.0-1ubuntu1.13) ...
Processing triggers for man-db (2.10.2-1) ...
Processing triggers for libc-bin (2.35-0ubuntu3.1) ...
Processing triggers for ca-certificates (20230311ubuntu0.22.04.1) ...
Updating certificates in /etc/ssl/certs...
0 added, 0 removed; done.
Running hooks in /etc/ca-certificates/update.d...
done.
aaron@DESKTOP-B7HJ1KL:/mnt/c/WINDOWS/system32$
```

```
aaron@DESKTOP-B7HJ1KL:/mnt/c/WINDOWS/system32$ sudo install -m 0755 -d /etc/apt/keyrings
aaron@DESKTOP-B7HJ1KL:/mnt/c/WINDOWS/system32$ curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo gpg --dearmor -
o /etc/apt/keyrings/docker.gpg
aaron@DESKTOP-B7HJ1KL:/mnt/c/WINDOWS/system32$ sudo chmod a+r /etc/apt/keyrings/docker.gpg
aaron@DESKTOP-B7HJ1KL:/mnt/c/WINDOWS/system32$
```

```
aaron@DESKTOP-B7HJ1KL:/mnt/c/WINDOWS/system32$ echo ₩
 "deb [>   "deb [arch="$(dpkg --print-architecture)" signed-by=/etc/apt/keyrings/docker.gpg] https://download.docker.com/linu
x/ubuntu ₩
>   "$(. /etc/os-release && echo "$VERSION_CODENAME")" stable" | ₩
>   sudo tee /etc/apt/sources.list.d/docker.list > /dev/null
```

```
3. Install Docker Engine
sudo apt-get update
sudo apt-get install docker-ce docker-ce-cli containerd.io docker-buildx-plugin docker-compose-plugin
```

```
aaron@DESKTOP-B7HJ1KL:/mnt/c/WINDOWS/system32$ sudo apt-get update
Get:1 https://download.docker.com/linux/ubuntu jammy InRelease [48.9 kB]
Get:2 https://download.docker.com/linux/ubuntu jammy/stable amd64 Packages [21.2 kB]
Hit:3 http://archive.ubuntu.com/ubuntu jammy InRelease
Hit:4 http://archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:5 http://archive.ubuntu.com/ubuntu jammy-backports InRelease
Get:6 http://security.ubuntu.com/ubuntu jammy-security InRelease [110 kB]
Get:7 http://security.ubuntu.com/ubuntu jammy-security/main amd64 c-n-f Metadata [11.0 kB]
Fetched 191 kB in 3s (70.6 kB/s)
Reading package lists... Done
aaron@DESKTOP-B7HJ1KL:/mnt/c/WINDOWS/system32$
```




```
4. Start Docker
sudo service docker start

5. Docker Permission
sudo usermod -aG docker aaron
sudo service docker restart

? 이후 계정 재접속 시, 적용됨

docker ps
```

3. Install Apache Airflow

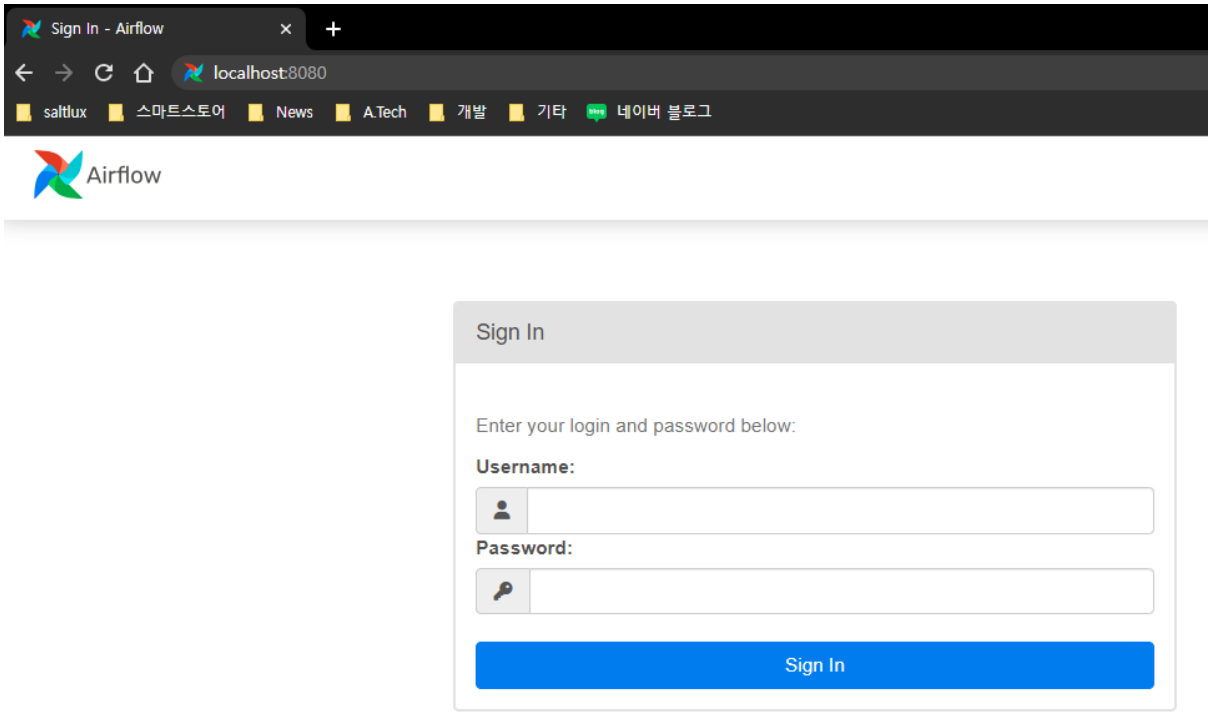
```
1. Fetching docker-compose
cd ~
mkdir airflow
cd airflow
curl -LfO 'https://airflow.apache.org/docs/apache-airflow/2.6.3/docker-compose.yaml'

2. Setting the right Airflow user
mkdir -p ./dags ./logs ./plugins ./config
echo -e "AIRFLOW_UID=$(id -u)" > .env
vi docker-compose.yaml
> /8080
> i
> 8080: → 8088:
> esc
> /AIRFLOW__CORE__LOAD_EXAMPLES
> i
> 'true' → 'false'
> :wq

3. Initialize the database
docker compose up airflow-init

4. Running Airflow
docker compose up -d
? '-d' 백그라운드로 컨테이너 실행
? docker compose down : 모든 서비스 컨테이너를 한 번에 정지시키고 삭제
? docker compose start : 특정 서비스 컨테이너를 올리기 위해서 사용
? docker compose stop : 특정 서비스 컨테이너를 정지시키기 위해서 사용

5. Web
localhost:8088
id/pw : airflow / airflow
```

```
aaron@DESKTOP-B7HJ1KL: $ curl -LfO 'https://airflow.apache.org/docs/apache-airflow/2.6.3/docker-compose.yaml'
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100 11632  100 11632    0     0  27010      0 --:--:-- --:--:-- --:--:-- 27051
aaron@DESKTOP-B7HJ1KL: $ ll
total 44
drwxr-x--- 4 aaron aaron  4096 Jul 27 15:54 ./
drwxr-xr-x 3 root  root   4096 Jul 27 15:15 ../
-rw------- 1 aaron aaron  1006 Jul 27 15:48 .bash_history
-rw-r--r-- 1 aaron aaron   220 Jul 27 15:15 .bash_logout
-rw-r--r-- 1 aaron aaron  3771 Jul 27 15:15 .bashrc
drwx------ 2 aaron aaron  4096 Jul 27 15:17 .cache/
-rw-r--r-- 1 aaron aaron     0 Jul 27 15:17 .motd_shown
-rw-r--r-- 1 aaron aaron   807 Jul 27 15:15 .profile
-rw-r--r-- 1 aaron aaron     0 Jul 27 15:32 .sudo_as_admin_successful
-rw-r--r-- 1 aaron aaron 11632 Jul 27 15:54 docker-compose.yaml
drwx------ 3 aaron aaron  4096 Jul 27 15:27 snap/
```

```
aaron@DESKTOP-B7HJ1KL:~/airflow$ echo -e "AIRFLOW_UID=$(id -u)" > .env
aaron@DESKTOP-B7HJ1KL:~/airflow$
aaron@DESKTOP-B7HJ1KL:~/airflow$ ll
total 28
drwxr-xr-x 6 aaron aaron 4096 Jul 27 15:57 ./
drwxr-x--- 5 aaron aaron 4096 Jul 27 15:57 ../
-rw-r--r-- 1 aaron aaron   17 Jul 27 15:57 .env
drwxr-xr-x 2 aaron aaron 4096 Jul 27 15:57 config/
drwxr-xr-x 2 aaron aaron 4096 Jul 27 15:57 dags/
drwxr-xr-x 2 aaron aaron 4096 Jul 27 15:57 logs/
drwxr-xr-x 2 aaron aaron 4096 Jul 27 15:57 plugins/
aaron@DESKTOP-B7HJ1KL:~/airflow$ vi .env
```

```
aaron@DESKTOP-B7HJ1KL:~/airflow$ docker compose up airflow-init
[+] Running 1/40
 ⊡ airflow-init 19 layers [⊡⊡⊡⊡⊡⊡⊡⊡⊡⊡⊡⊡⊡⊡⊡⊡⊡⊡] 18.67MB/41.99MB Pulling                                    5.9s
   ⊡ 9d21b12d5fab Downloading    [=================>                                  ] ...          2.5s
   ⊡ 40b9e4b957ee Download complete                                                                 0.9s
   ⊡ eb29edf26071 Downloading    [===================================>                ] ...          2.5s
   ⊡ 372969c6bacf Waiting                                                                           2.5s
   ⊡ 6d500aa98681 Waiting                                                                           2.5s
   ⊡ f2f72b6472e2 Waiting                                                                           2.5s
   ⊡ fe4d31f47862 Waiting                                                                           2.5s
   ⊡ 8def3cb2c35c Waiting                                                                           2.5s
   ⊡ d089d4eafa63 Waiting                                                                           2.5s
   ⊡ ec85d837fde9 Waiting                                                                           2.5s
   ⊡ a450b6ba66f9 Waiting                                                                           2.5s
   ⊡ c786456a7813 Pulling fs layer                                                                  2.5s
   ⊡ fc6f0eb5fe45 Pulling fs layer                                                                  2.5s
   ⊡ d5c045522b3e Waiting                                                                           2.5s
   ⊡ 72e41a4b3c64 Waiting                                                                           2.5s
   ⊡ 7161c1b70c6d Waiting                                                                           2.5s
   ⊡ 53bbecb2e6d8 Waiting                                                                           2.5s
   ⊡ 049db433574e Pulling fs layer                                                                  2.5s
   ⊡ 4f4fb700ef54 Waiting                                                                           2.5s
 ⊡ redis 5 layers [⊡⊡⊡⊡⊡]      0B/0B      Pulling                                                    5.9s
   ⊡ bb595d48e52d Waiting                                                                           2.5s
   ⊡ d479b54c3bb2 Waiting                                                                           2.5s
   ⊡ 2044989c541a Waiting                                                                           2.5s
   ⊡ 01e4ba5495fa Waiting                                                                           2.5s
   ⊡ ed7a9fd4b0ea Pulling fs layer                                                                  2.5s
 ⊡ postgres 13 layers [⊡⊡⊡⊡⊡⊡⊡⊡⊡⊡⊡⊡⊡]      0B/0B      Pulling                                      5.9s
   ⊡ faef57eae888 Waiting                                                                           2.5s
```

```
aaron@DESKTOP-B7HJ1KL:~/airflow$ docker compose up -d
[+] Running 7/7
 ⊡ Container aaron-postgres-1            Healthy
 ⊡ Container aaron-redis-1               Healthy
 ⊡ Container aaron-airflow-init-1        Exited
 ⊡ Container aaron-airflow-webserver-1   Running
 ⊡ Container aaron-airflow-scheduler-1   Running
 ⊡ Container aaron-airflow-triggerer-1   Running
 ⊡ Container aaron-airflow-worker-1      Running
aaron@DESKTOP-B7HJ1KL:~/airflow$ _
```



4. Setting Apache Airflow

```
1. change timezone
docker exec -it -u root airflow-airflow-webserver-1 /bin/bash
apt-get update
apt install vim

cd /opt/airflow
vi airflow.cfg
> /timezone
> utc → Asia/Seoul
? [core], [webserver] 두 영역만 변경하면 됨
> :wq
exit;

docker compose stop
docker compose start

2. create user
docker exec -it -u root airflow-airflow-webserver-1 /bin/bash

airflow users list
```