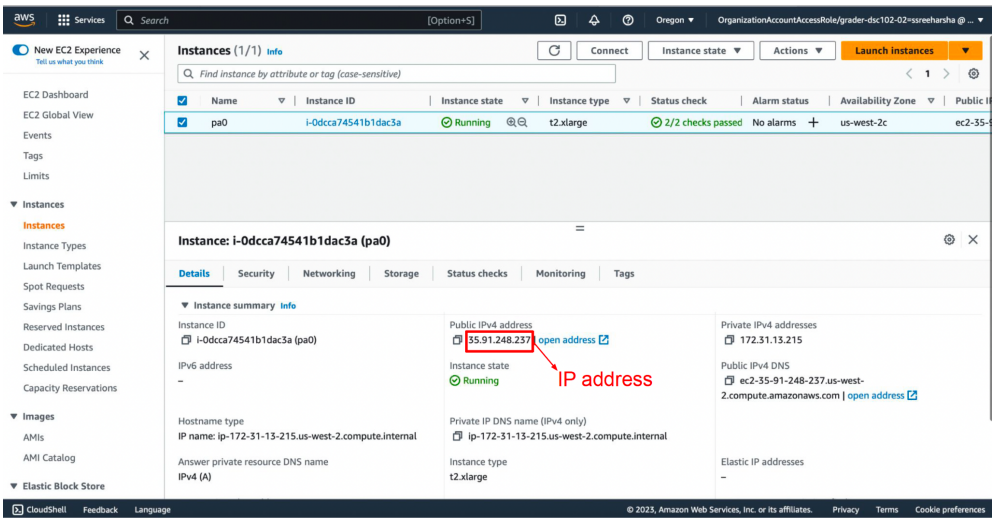
DSC 102 PA0 System Setup Tutorial

Step 1 : Setup Client i.e Jupyter Notebook and Port Forwarding for Jupyter Notebook onto localhost.

a) After creating your EC2 instance note down its IP address as shown below



b) Open a Terminal Window and do the following:

i) **Change permission of key file**
chmod 400 dask-key.pem

ii) **SSH Into the Scheduler EC2 Instance:**
ssh -i dask-key.pem ubuntu@35.91.248.237

iii) **Activate the Dask Environment:**
source dask_env/bin/activate

```
saisreeharsha@Sais-MacBook-Air-2 ~ % chmod 400 Downloads/dask-key.pem
saisreeharsha@Sais-MacBook-Air-2 ~ % ssh -i Downloads/dask-key.pem ubuntu@35.91.248.237
Welcome to Ubuntu 22.04.2 LTS (GNU/Linux 5.15.0-1031-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

  System information as of Wed Apr 19 12:47:24 UTC 2023

  System load:  0.16650390625     Processes:             128
  Usage of /:   8.9% of 38.58GB   Users logged in:       0
  Memory usage: 2%                IPv4 address for eth0: 172.31.13.215
  Swap usage:   0%


 * Introducing Expanded Security Maintenance for Applications.
   Receive updates to over 25,000 software packages with your
   Ubuntu Pro subscription. Free for personal use.

     https://ubuntu.com/aws/pro

Expanded Security Maintenance for Applications is not enabled.

14 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

7 additional security updates can be applied with ESM Apps.
Learn more about enabling ESM Apps service at https://ubuntu.com/esm


*** System restart required ***
Last login: Sun Apr 16 19:22:00 2023 from 24.43.123.72
ubuntu@ip-172-31-13-215:~$ source dask_env/bin/activate
(dask_env) ubuntu@ip-172-31-13-215:~$ jupyter notebook --port=8888
```

iv) Launch Jupyter Notebook on the EC2:

jupyter notebook --port=8888

```
(dask_env) ubuntu@ip-172-31-13-215:~$ jupyter notebook --port=8888
[I 12:49:50.842 NotebookApp] Writing notebook server cookie secret to /home/ubuntu/.local/
share/jupyter/runtime/notebook_cookie_secret

  _   _          _       _
 | | | |_ __   __| |__ _| |_ ___
 | |_| | '_ \/ _` / _` |  _/ -_)
  \___/| .__/\__,_\__,_|\__\___|
       |_|

Read the migration plan to Notebook 7 to learn about the new features and the actions to t
ake if you are using extensions.

https://jupyter-notebook.readthedocs.io/en/latest/migrate_to_notebook7.html

Please note that updating to Notebook 7 might break some of your extensions.

[I 12:49:54.030 NotebookApp] Serving notebooks from local directory: /home/ubuntu
[I 12:49:54.030 NotebookApp] Jupyter Notebook 6.5.4 is running at:
[I 12:49:54.030 NotebookApp] http://localhost:8888/?token=ace5c6b61bf24461ee067412cea642df
40a5809e38cbe756
[I 12:49:54.030 NotebookApp]  or http://127.0.0.1:8888/?token=ace5c6b61bf24461ee067412cea6
42df40a5809e38cbe756
[I 12:49:54.030 NotebookApp] Use Control-C to stop this server and shut down all kernels (
twice to skip confirmation).
[W 12:49:54.035 NotebookApp] No web browser found: could not locate runnable browser.
[C 12:49:54.035 NotebookApp]

    To access the notebook, open this file in a browser:
        file:///home/ubuntu/.local/share/jupyter/runtime/nbserver-7696-open.html
    Or copy and paste one of these URLs:
        http://localhost:8888/?token=ace5c6b61bf24461ee067412cea642df40a5809e38cbe756
     or http://127.0.0.1:8888/?token=ace5c6b61bf24461ee067412cea642df40a5809e38cbe756
```

v) Copy the link to the Jupyter Server
(shown in the last line of the above screenshot)
You can paste it in the browser AFTER performing step (c) below

c) Open **New Terminal Window** and run the following command:

i) Port Forwarding Jupyter Notebook running on port 8888 on the EC2 to port 8888 on local system:

ssh -i dask-key.pem ubuntu@35.91.248.237 -L 8888:localhost:8888

```
saisreeharsha@Sais-MacBook-Air-2 ~ % ssh -i Downloads/dask-key.pem ubuntu@35.91.248.237 -L 8888:localhost:8888
Welcome to Ubuntu 22.04.2 LTS (GNU/Linux 5.15.0-1031-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

  System information as of Wed Apr 19 13:02:06 UTC 2023

  System load:  0.0               Processes:             124
  Usage of /:   8.9% of 38.58GB   Users logged in:       1
  Memory usage: 2%                IPv4 address for eth0: 172.31.13.215
  Swap usage:   0%


 * Introducing Expanded Security Maintenance for Applications.
   Receive updates to over 25,000 software packages with your
   Ubuntu Pro subscription. Free for personal use.

     https://ubuntu.com/aws/pro

Expanded Security Maintenance for Applications is not enabled.

14 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

7 additional security updates can be applied with ESM Apps.
Learn more about enabling ESM Apps service at https://ubuntu.com/esm


*** System restart required ***
Last login: Wed Apr 19 12:47:26 2023 from 24.43.123.72
ubuntu@ip-172-31-13-215:~$
```

Step 2 : Dask UI Port forwarding

a) Open a **New Terminal Window** and run the following command:

i) Port Forwarding the Dask dashboard UI running on port 8787 on the EC2 to port 8001 on local system:
ssh -i dask-key.pem ubuntu@35.91.248.237 -L 8001:localhost:8787

```
saisreeharsha@Sais-MacBook-Air-2 ~ % ssh -i Downloads/dask-key.pem ubuntu@35.91.248.237 -L 8001:localhost:8787
Welcome to Ubuntu 22.04.2 LTS (GNU/Linux 5.15.0-1031-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

  System information as of Wed Apr 19 13:13:16 UTC 2023

  System load:  0.0               Processes:             127
  Usage of /:   8.9% of 38.58GB   Users logged in:       1
  Memory usage: 2%                IPv4 address for eth0: 172.31.13.215
  Swap usage:   0%


 * Introducing Expanded Security Maintenance for Applications.
   Receive updates to over 25,000 software packages with your
   Ubuntu Pro subscription. Free for personal use.

     https://ubuntu.com/aws/pro

Expanded Security Maintenance for Applications is not enabled.

14 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

7 additional security updates can be applied with ESM Apps.
Learn more about enabling ESM Apps service at https://ubuntu.com/esm


*** System restart required ***
Last login: Wed Apr 19 13:02:07 2023 from 24.43.123.72
ubuntu@ip-172-31-13-215:~$
```

Step 3 : Download data from S3

a) In the most recently opened Terminal Window:

i) **Copy and paste the AWS ACCESS KEY ID, AWS SECRET ACCESS KEY, and AWS SESSION TOKEN**

ii) **Download all the files from the S3 :**
aws s3 sync s3://dsc102-public /home/ubuntu/

```
ubuntu@ip-172-31-13-215:~$ aws s3 sync s3://dsc102-public /home/ubuntu/
download: s3://dsc102-public/PA0.py to ./PA0.py
download: s3://dsc102-public/OutputSchema_PA0.json to ./OutputSchema_PA0.json
download: s3://dsc102-public/results_PA0.json to ./results_PA0.json
download: s3://dsc102-public/user_reviews.csv to ./user_reviews.csv
ubuntu@ip-172-31-13-215:~$
```

Now, on navigating to the link copied at the end of Step 1 b), you should see the following. You can now create a new notebook and are ready to code up.