

HCC Server Manual

Server Information

- Hardware:
 - CPU : i5-10400 (6C12T)
 - GPU : RTX-3070 (8G)
 - Mem : 16G DDR4 3200MHz
 - Disk: NAS 4T
- OS: Ubuntu Server 20.04 LTS
- Maintainer:
 - 阮柏愷 bkruan.ee11@nycu.edu.tw
 - 黃柏綸 kevin503.ee12@nycu.edu.tw
- Created by:
 - Yi-Lun Wu

Preparation for Connection

Install an SSH client:

- Linux
 - Most Linux distributions come with an SSH client pre-installed.

```
$ sudo apt update  
$ sudo apt install openssh-server
```

- Mac
 - Install [homebrew](#)
 - Install SSH using Homebrew:

```
$ brew install openssh
```

- Windows
 - Powershell
 - MobaXterm
 - Putty

How to Use SSH

- All servers have the same IP address 140.113.160.149.
- To connect to the i -th server, use the following command ($i \in \{1, 3, 4, 5, 7\}$):

```
$ ssh -p 10i22 group_{group_id}@140.113.160.149
```

- For instance, if a student is in the ninth group, he/she can connect to the 5th server using:

```
$ ssh -p 10522 group7@140.113.160.149
```

- Please check the table for the assigned port

Group	Port
1, 2	10122
3, 4	10322
5, 6	10422
7, 8	10522
9, 10	10722

(Optional) Create Config for Your SSH

- Find the config file for SSH at the following path. Create a new file if it is not there.
 - Linux: `~/.ssh/config`
 - Mac: `~/.ssh/config`
 - Windows: `C:/Users/{USER}/.ssh/config`.
- Here is an example of basic block for the SSH config file.

```
Host myhcc
  HostName 140.113.160.149
  User group1
  Port 10122
```

- Test the connection using the following command:

```
$ ssh myhcc
# This is equivalent to:
$ ssh -p 10122 group1@140.113.160.149
```

Some Utilities

- For non-GPU utilization, use htop. Press q to leave.

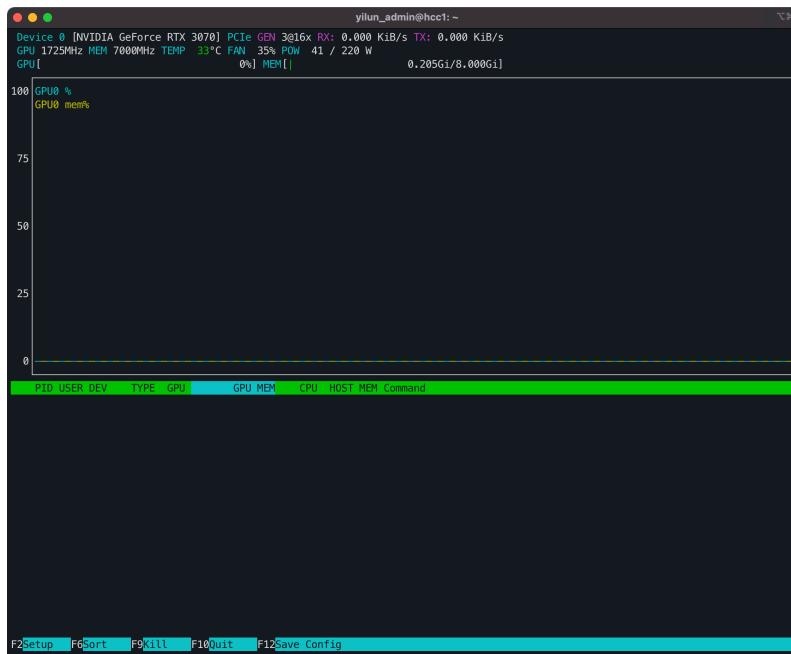
```
$ htop
```

- For GPU utilization, use nvtop. Press q to leave.

```
$ nvtop
```

```
yilun_admin@hcc1:~
```

PID	USER	PR	NL	VIRT	RES	SHR	CPU%	MEM%	TIME+	Command
21235	yilun_admin	20	0	11216	4218	3205	R 63.2	0.0	0:00:03	htop
1	root	20	0	1660	14440	6352	S 0.0	0.1	0:00:01	/sbin/init splash
350	root	19	-1	92396	4916	44584	S 0.0	0.3	0:00:55	/lib/systemd/systemd-journald
378	root	20	0	23984	4708	4026	S 0.0	0.0	0:00:48	/lib/systemd/systemd-udevd
618	systemd-r	20	0	24004	11272	9198	S 0.0	0.1	0:02:81	/lib/systemd/systemd-resolved
637	systemd-t	20	0	90228	5904	5124	S 0.0	0.0	0:00:00	/lib/systemd/systemd-timesyncd
619	systemd-t	20	0	90228	5904	5124	S 0.0	0.0	0:00:49	/lib/systemd/systemd-timesyncd
648	root	20	0	2449	4946	8436	S 0.0	0.1	0:03:18	/usr/lib/accountsservice/accounts-daemon
718	root	20	0	2449	4946	8436	S 0.0	0.1	0:00:01	/usr/lib/accountsservice/accounts-daemon
639	root	20	0	2449	4946	8436	S 0.0	0.1	0:03:26	/usr/lib/accountsservice/accounts-daemon
640	root	20	0	2548	720	648	S 0.0	0.0	0:00:00	/usr/sbin/acpid
643	avahi	20	0	8532	3412	3084	S 0.0	0.0	0:00:34	avahi-daemon: running [hcc1.local]
644	root	20	0	18348	3084	2820	S 0.0	0.0	0:00:50	/usr/sbin/cron -f
647	messagebu	20	0	8756	5616	3904	S 0.0	0.0	0:06:74	/usr/bin/dbus-daemon --system --address=/systemd: --nofork --nopidfi
718	root	20	0	3398	21780	18564	S 0.0	0.1	0:00:28	/usr/bin/NetworkManager --no-daemon
720	root	20	0	3398	21780	18564	S 0.0	0.1	0:01:68	/usr/bin/NetworkManager --no-daemon
649	root	20	0	3398	21780	18564	S 0.0	0.1	2:53:67	/usr/bin/NetworkManager --no-daemon
678	root	20	0	61944	3520	3196	S 0.0	0.0	0:00:00	/usr/bin/irqbalance --foreground
655	root	20	0	61944	3520	3196	S 0.0	0.0	0:29:63	/usr/bin/irqbalance --foreground
657	root	20	0	48260	20212	11966	S 0.0	0.1	0:00:05	/usr/bin/python3 /usr/bin/networkd-dispatcher --run-startup-trigger
661	nvidia-pe	20	0	5208	1884	1652	S 0.0	0.0	0:00:00	/usr/bin/nvidia-persistenced --user nvidia-persistenced --no-persis
689	syslog	20	0	219M	4724	3686	S 0.0	0.0	0:00:22	/usr/sbin/rsyslogd -n -NONE
691	syslog	20	0	219M	4724	3686	S 0.0	0.0	0:00:23	/usr/sbin/rsyslogd -n -NONE
663	syslog	20	0	219M	4724	3686	S 0.0	0.0	0:00:47	/usr/sbin/rsyslogd -n -NONE
781	root	20	0	1719M	42326	19124	S 0.0	0.3	0:01:10	/usr/lib/snapd/snapd
782	root	20	0	1719M	42326	19124	S 0.0	0.3	0:02:64	/usr/lib/snapd/snapd
783	root	20	0	1719M	42326	19124	S 0.0	0.3	0:00:00	/usr/lib/snapd/snapd
784	root	20	0	1719M	42326	19124	S 0.0	0.3	0:00:00	/usr/lib/snapd/snapd
785	root	20	0	1719M	42326	19124	S 0.0	0.3	0:00:00	/usr/lib/snapd/snapd
786	root	20	0	1719M	42326	19124	S 0.0	0.3	0:00:00	/usr/lib/snapd/snapd
787	root	20	0	1719M	42326	19124	S 0.0	0.3	0:00:00	/usr/lib/snapd/snapd
788	root	20	0	1719M	42326	19124	S 0.0	0.3	0:00:00	/usr/lib/snapd/snapd
789	root	20	0	1719M	42326	19124	S 0.0	0.3	0:00:58	/usr/lib/snapd/snapd
791	root	20	0	1719M	42326	19124	S 0.0	0.3	0:00:58	/usr/lib/snapd/snapd
792	root	20	0	1719M	42326	19124	S 0.0	0.3	0:03:10	/usr/lib/snapd/snapd
793	root	20	0	1719M	42326	19124	S 0.0	0.3	0:03:11	/usr/lib/snapd/snapd
794	root	20	0	1719M	42326	19124	S 0.0	0.3	0:03:32	/usr/lib/snapd/snapd
795	root	20	0	1719M	42326	19124	S 0.0	0.3	0:03:55	/usr/lib/snapd/snapd



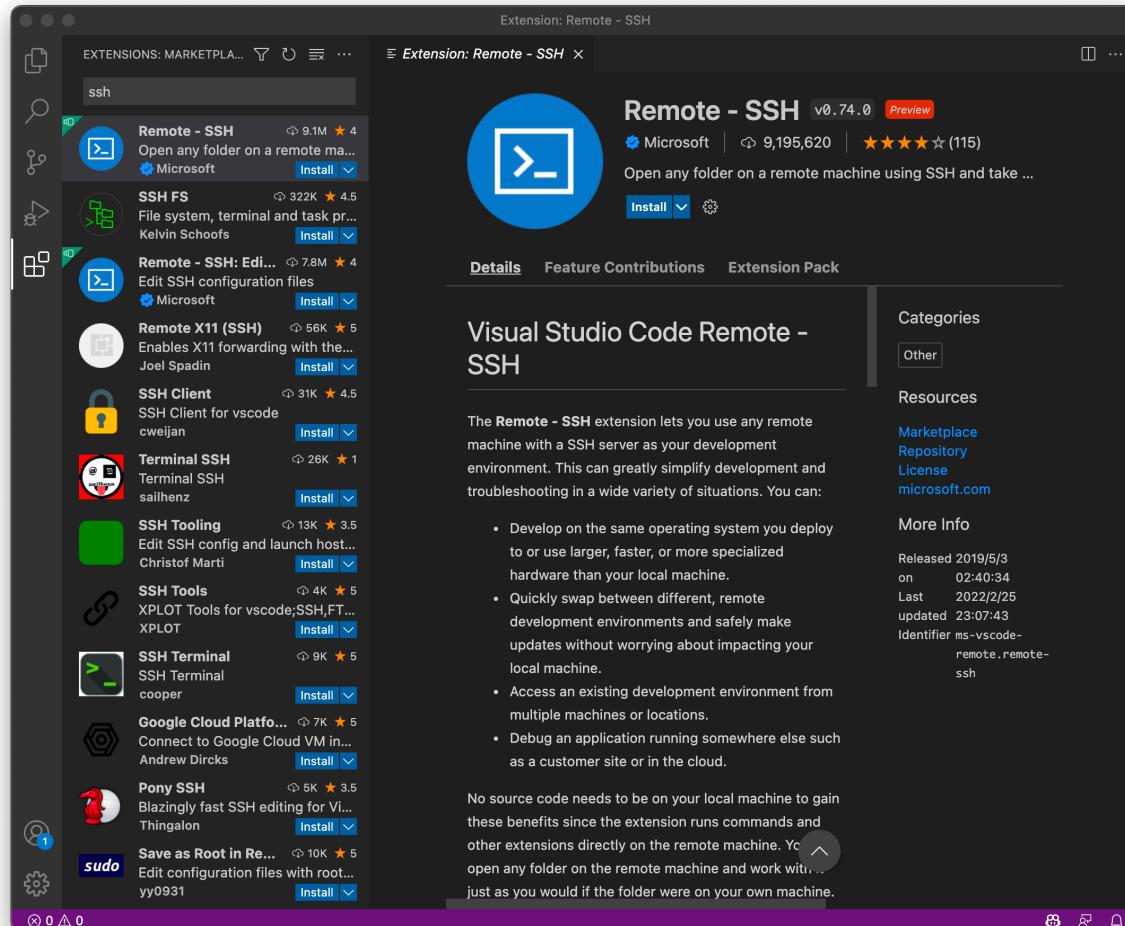
Visual Studio Code (VS Code)

OPTIONAL

- VS Code is a simple text editor maintained by Microsoft.
- Its biggest advantage is its strong community support stars 170.6K.
- Download VS Code from the [official site](#) and install it.

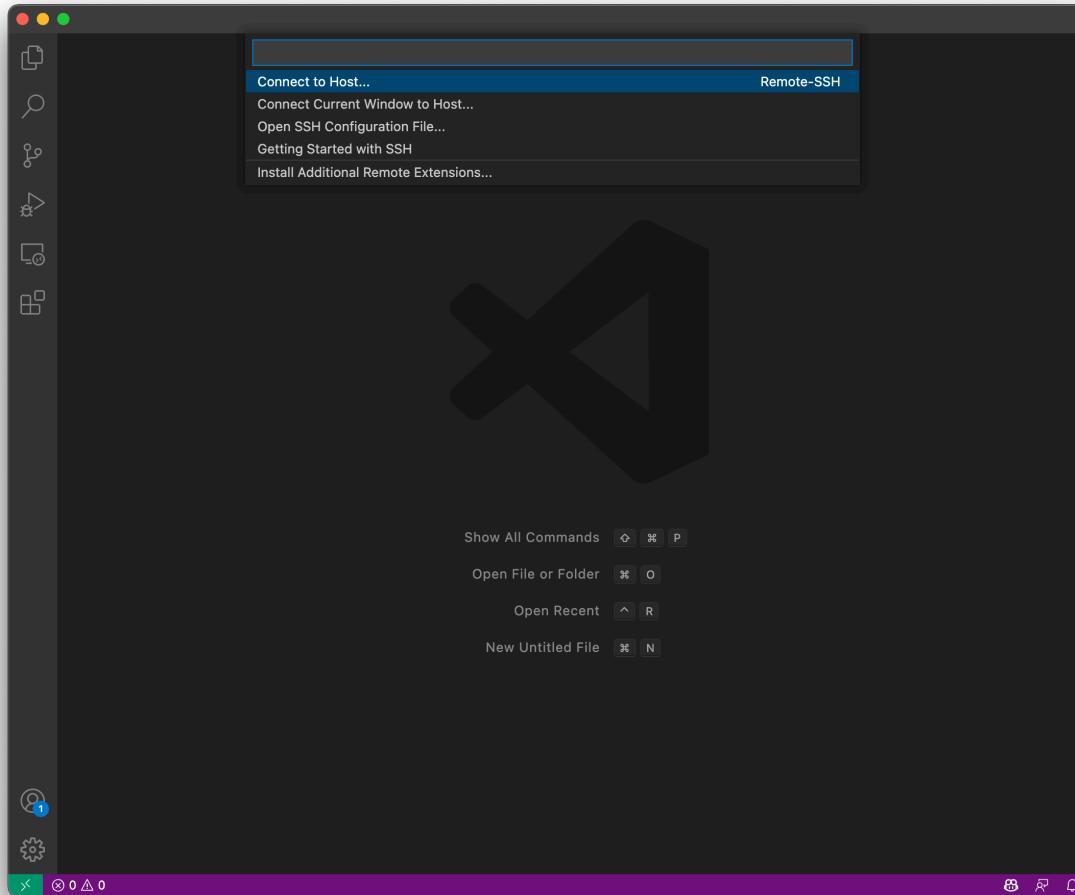
Install SSH Remote Extension

Switch to Extension tab. Search for and install Remote-SSH.



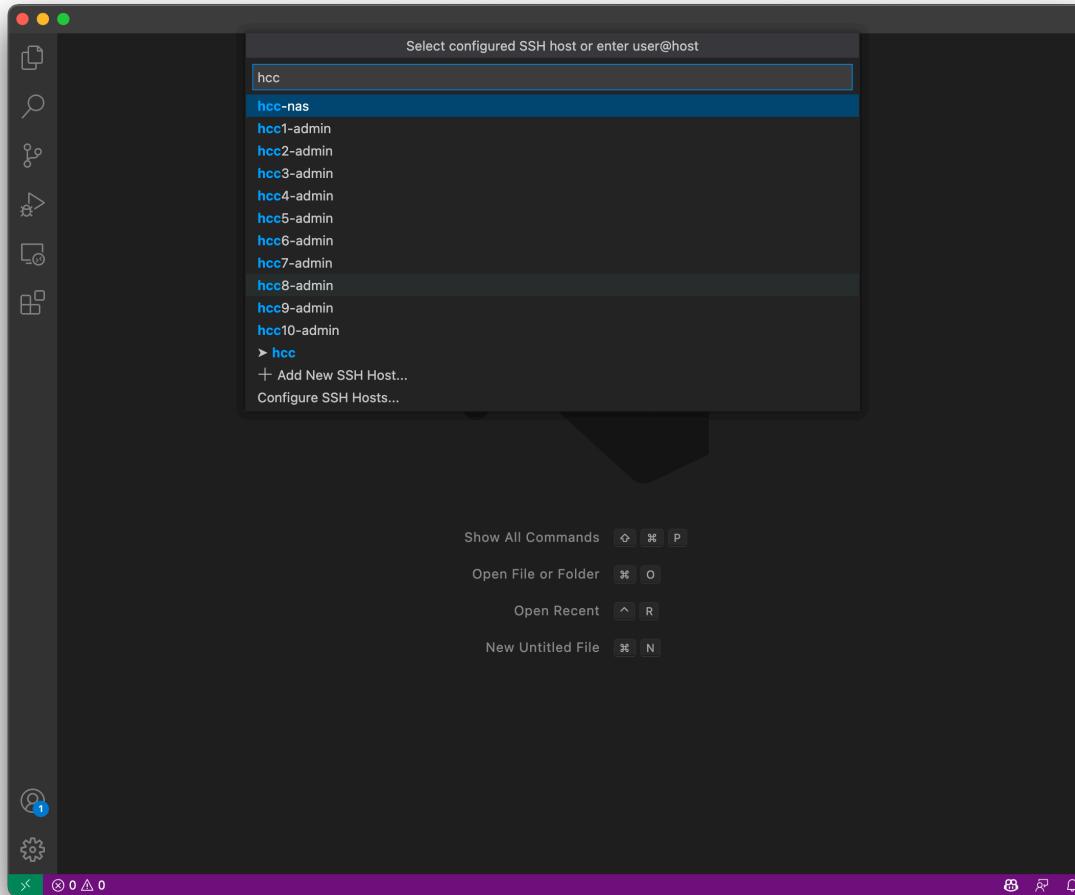
Connect to the Server

Click the green button >< in the bottom-left corner.

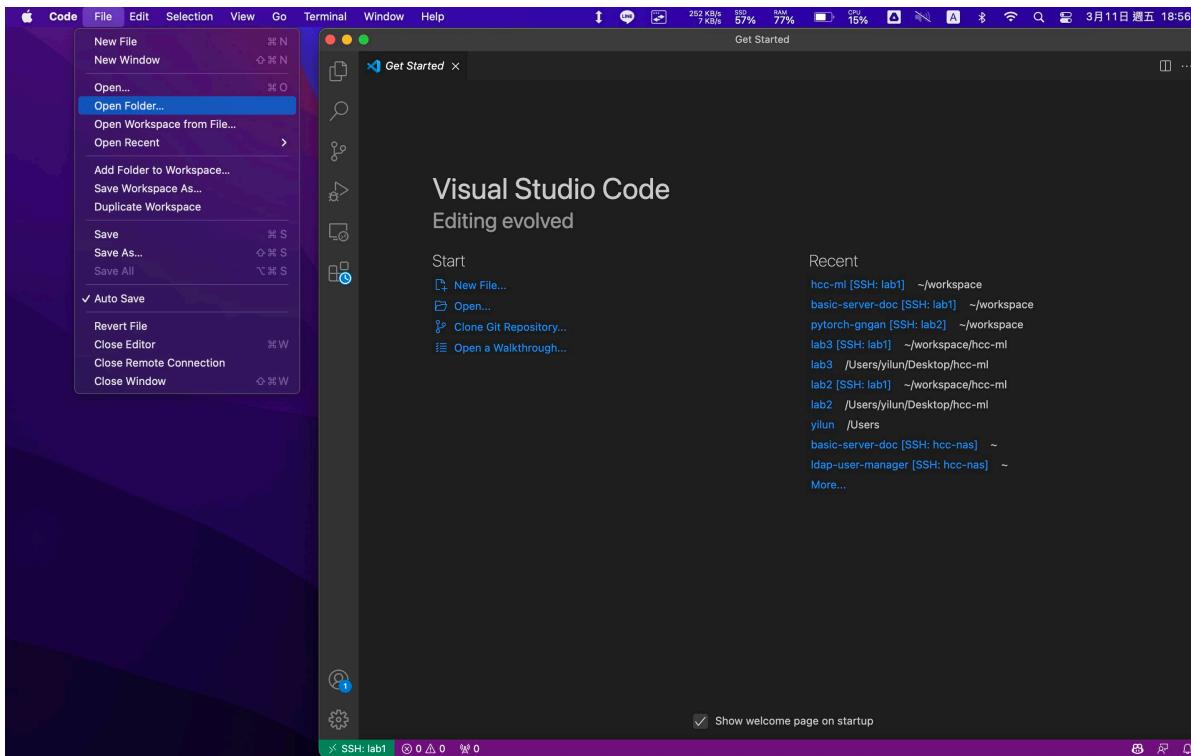


Connect to the Server

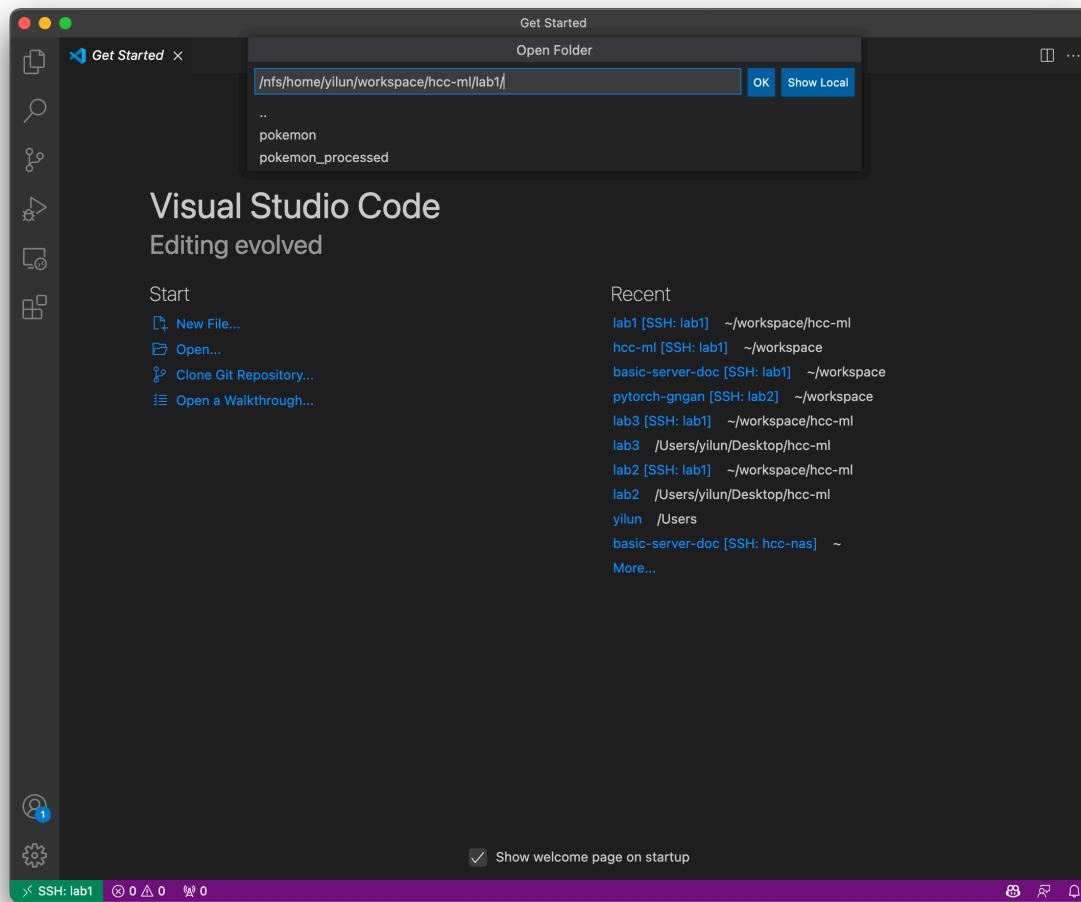
Select myhcc, which is defined in your SSH config file.



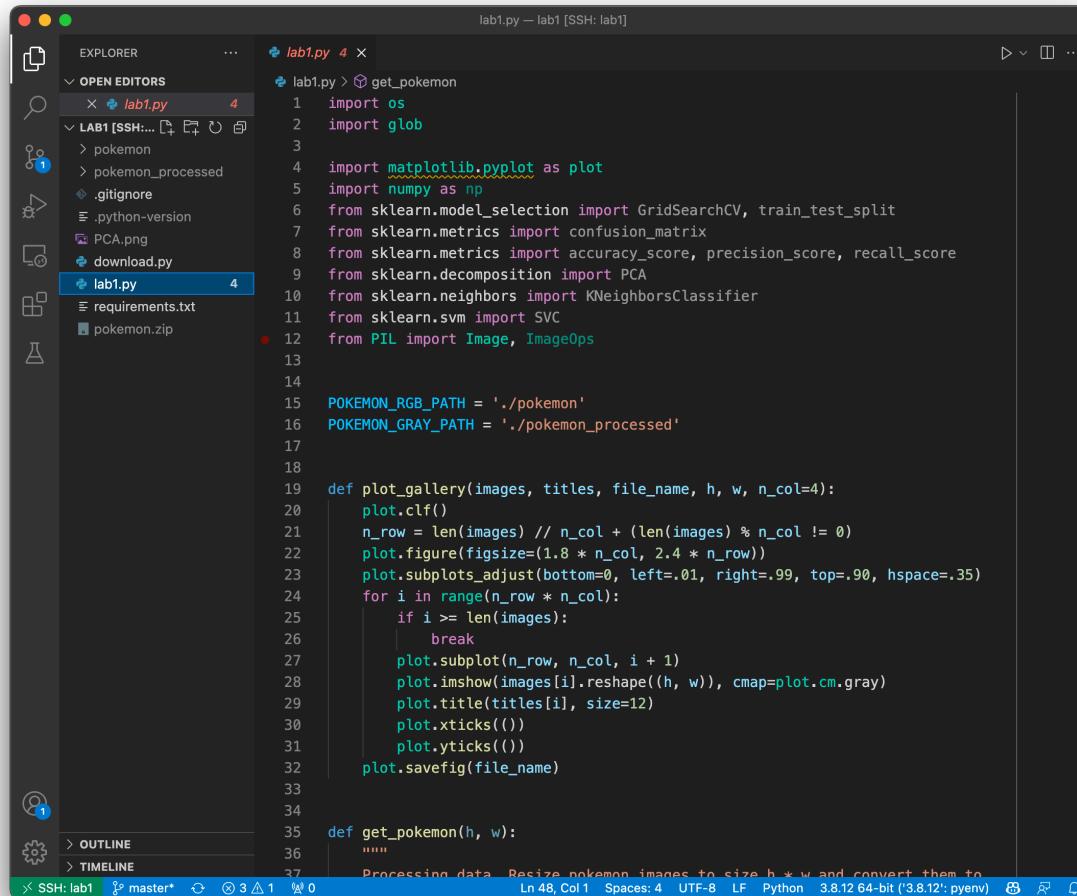
Open a Folder



Select/Enter the Path of the Folder



Here is Your Code



The screenshot shows a dark-themed code editor interface, likely from Visual Studio Code, displaying a Python script named `lab1.py`. The code is intended for processing and visualizing Pokemon images.

```
lab1.py - lab1 [SSH: lab1]
lab1.py > get_pokemon
1 import os
2 import glob
3
4 import matplotlib.pyplot as plot
5 import numpy as np
6 from sklearn.model_selection import GridSearchCV, train_test_split
7 from sklearn.metrics import confusion_matrix
8 from sklearn.metrics import accuracy_score, precision_score, recall_score
9 from sklearn.decomposition import PCA
10 from sklearn.neighbors import KNeighborsClassifier
11 from sklearn.svm import SVC
12 from PIL import Image, ImageOps
13
14
15 POKEMON_RGB_PATH = './pokemon'
16 POKEMON_GRAY_PATH = './pokemon_processed'
17
18
19 def plot_gallery(images, titles, file_name, h, w, n_col=4):
20     plot.clf()
21     n_row = len(images) // n_col + (len(images) % n_col != 0)
22     plot.figure(figsize=(1.8 * n_col, 2.4 * n_row))
23     plot.subplots_adjust(bottom=0, left=.01, right=.99, top=.90, hspace=.35)
24     for i in range(n_row * n_col):
25         if i >= len(images):
26             break
27         plot.subplot(n_row, n_col, i + 1)
28         plot.imshow(images[i].reshape((h, w)), cmap=plot.cm.gray)
29         plot.title(titles[i], size=12)
30         plot.xticks(())
31         plot.yticks(())
32     plot.savefig(file_name)
33
34
35 def get_pokemon(h, w):
36     """
37     Processing data. Resize pokemon images to size h * w and convert them to
```

The code includes imports for `os`, `glob`, `matplotlib.pyplot`, `numpy`, `GridSearchCV`, `train_test_split`, `confusion_matrix`, `accuracy_score`, `precision_score`, `recall_score`, `PCA`, `KNeighborsClassifier`, `SVC`, and `PIL`. It defines two functions: `plot_gallery` for displaying a grid of images and `get_pokemon` for processing the data. The `get_pokemon` function is currently a placeholder with a docstring.

Press Ctrl + ` To Open Terminal

The screenshot shows the Visual Studio Code (VS Code) interface. The left sidebar displays the file structure of a workspace named 'LAB1 [SSH: LAB1]'. The 'EXPLORER' view shows files like 'lab1.py', 'plot_gallery.ipynb', 'pokemon', 'pokemon_processed', '.gitignore', '.python-version', 'PCA.png', 'download.py', 'requirements.txt', and 'pokemon.zip'. The main editor area shows the content of 'lab1.py':

```
lab1.py – lab1 [SSH: lab1]
lab1.py > plot_gallery
1 import os
2 import glob
3
4 import matplotlib.pyplot as plot
5 import numpy as np
6 from sklearn.model_selection import GridSearchCV, train_test_split
7 from sklearn.metrics import confusion_matrix
8 from sklearn.metrics import accuracy_score, precision_score, recall_score
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25         if i >= len(images):
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