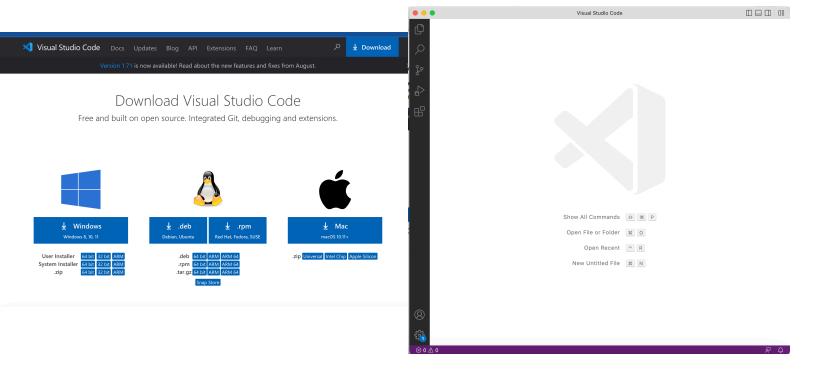# Charlotte Dong Lab1 Report

Step1 installing VScode
Download Visual Studio Code from the official website: https://code.visualstudio.com/download. Open it, you should see a window like the screenshot on the right.

Step2 Remotely Connecting
Ssh into your course-specific account using command: $ ssh cs15lfa22ji@ieng.ucsd.edu. If you see the successful login message as below, your computer (client) is connected to the server in the CSE basement.

Step3 Trying Commands

Try running some commands on the server and on you personal computer. As it is shown below, the terminal on the left is the command tryout using the server; the terminal on the right is the tryout using my personal computer. All commands were run successfully using the server; while the one using my computer received "no such file or directory" for ls /home/linux/ieng6/cs15lfa22/cs15lfa22ji , cp /home/linux/ieng6/cs15lfa22/public/hello.txt ~/ , cat /home/linux/ieng6/cs15lfa22/public/hello.txt. This is because the directory or file is remote and is not on my personal computer.

```
Password:
Last failed login: Fri Sep 30 15:27:22 PDT 2022 from 100.83.46.248 on ssh:notty
There were 14 failed login attempts since the last successful login.
Last login: Mon May 30 22:47:35 2022 from 128.54.154.63
Hello cs15lfa22ji, you are currently logged into ieng6-202.ucsd.edu

You are using 0% CPU on this system

Cluster Status
Hostname    Time      #Users  Load  Averages
ieng6-201   15:25:01   16  0.04,  0.08,  0.06
ieng6-202   15:25:01   11  2.05,  2.04,  1.99
ieng6-203   15:25:01   11  0.06,  0.06,  0.05


Fri Sep 30, 2022  3:27pm - Prepping cs15lfa22
[cs15lfa22ji@ieng6-202]:~:1$ ls
perl5
[cs15lfa22ji@ieng6-202]:~:2$ cd ~
[cs15lfa22ji@ieng6-202]:~:3$ cd
[cs15lfa22ji@ieng6-202]:~:4$ ls -lat
total 108
-rw-r--r--    1 cs15lfa22ji ieng6_cs15lfa22  1335 Sep 30 15:27 .modulesbegenv
-rw-r------   1 cs15lfa22ji ieng6_cs15lfa22     0 Sep 30 14:49 .motd
drwxr-s---    6 cs15lfa22ji ieng6_cs15lfa22  4096 Sep 30 14:49 .
drwxr-sr-x    2 cs15lfa22ji ieng6_cs15lfa22  4096 Sep 30 14:49 perl5
drwxr-sr-x    3 cs15lfa22ji ieng6_cs15lfa22  4096 Sep 30 14:49 .local
drwxr-sr-x    3 cs15lfa22ji ieng6_cs15lfa22  4096 Sep 30 14:49 .config
drwxr-sr-x    3 cs15lfa22ji ieng6_cs15lfa22  4096 Sep 30 14:49 .cache
drwxr-sr-x  464 cs15lfa22ji ieng6_cs15lfa22 36864 Sep 30 08:06 ..
-rwxr-x---    1 cs15lfa22ji ieng6_cs15lfa22   290 Sep  8 16:12 .zshrc
-rwxr-x---    1 cs15lfa22ji ieng6_cs15lfa22   481 Sep  8 16:12 .zshenv
-rwxr-x---    1 cs15lfa22ji ieng6_cs15lfa22  1931 Sep  8 16:12 .zprofile
-rwxr-x---    1 cs15lfa22ji ieng6_cs15lfa22  1961 Sep  8 16:12 .profile
-rwxr-x---    1 cs15lfa22ji ieng6_cs15lfa22   837 Sep  8 16:12 .procmailrc
-rwxr-x---    1 cs15lfa22ji ieng6_cs15lfa22   431 Sep  8 16:12 .login
-rwxr-x---    1 cs15lfa22ji ieng6_cs15lfa22   155 Sep  8 16:12 .locallogin
-rwxr-x---    1 cs15lfa22ji ieng6_cs15lfa22  1692 Sep  8 16:12 .kshrc
-rwxr-x---    1 cs15lfa22ji ieng6_cs15lfa22  1931 Sep  8 16:12 .cshrc
-rwxr-x---    1 cs15lfa22ji ieng6_cs15lfa22  1721 Sep  8 16:12 .bashrc
-rwxr-x---    1 cs15lfa22ji ieng6_cs15lfa22   975 Sep  8 16:12 .bash_profile
[cs15lfa22ji@ieng6-202]:~:5$ ls -a
.   .bash_profile  .cache  .cshrc  .local    .login    .motd    .profil
e   .zshenv  perl5
..  .bashrc    .config  .kshrc  .locallogin  .modulesbegenv  .procmailrc  .zprofi
le  .zshrc
[cs15lfa22ji@ieng6-202]:~:6$ ls /home/linux/ieng6/cs15lfa22/cs15lfa22ji
perl5
[cs15lfa22ji@ieng6-202]:~:7$ cp /home/linux/ieng6/cs15lfa22/public/hello.txt ~/
[cs15lfa22ji@ieng6-202]:~:8$ cat /home/linux/ieng6/cs15lfa22/public/hello.txt
Hi! Welcome to CSE15L Fall 22
[cs15lfa22ji@ieng6-202]:~:9$ 
```

```
dongqiyue@Charlottes-Macbook-Pro ~ % cd ~
dongqiyue@Charlottes-Macbook-Pro ~ % cd
dongqiyue@Charlottes-Macbook-Pro ~ % ls -lat
total 64
drwxr-xr-x+  29 dongqiyue  staff    928 Sep 30 15:43 .
-rw-------    1 dongqiyue  staff   7717 Sep 30 15:42 .zsh_history
drwx------@  12 dongqiyue  staff    384 Sep 30 15:41 Desktop
drwx------  210 dongqiyue  staff   6720 Sep 30 15:22 .Trash
drwx------    3 dongqiyue  staff     96 Sep 29 10:36 .ssh
drwx------   34 dongqiyue  staff   1088 Sep 29 10:35 .zsh_sessions
drwx------@ 388 dongqiyue  staff  12416 Sep 28 10:12 Downloads
drwxr-xr-x    8 dongqiyue  staff    256 Sep 27 14:22 .p2
drwxr-xr-x    5 dongqiyue  staff    160 Sep 26 19:09 eclipse
-rw-r--r--@   1 dongqiyue  staff  10244 Sep 26 18:55 .DS_Store
drwxr-xr-x    8 dongqiyue  staff    256 Sep 26 18:50 .eclipse
drwx------@  13 dongqiyue  staff    416 Sep 25 22:04 Documents
-rw-r--r--    1 dongqiyue  staff    176 Sep 25 22:02 .gitconfig
drwxr-xr-x    3 dongqiyue  staff     96 Sep 24 08:44 eclipse-workspace
drwxr-xr-x    3 dongqiyue  staff     96 Aug  3 12:49 .cache
drwxr-xr-x    4 dongqiyue  staff    128 Aug  1 12:02 .vscode
-rw-r--r--    1 dongqiyue  staff      0 Jul 17 16:47 cd
drwx------    6 dongqiyue  staff    192 Jul  1 20:18 Movies
drwxr-xr-x    5 dongqiyue  staff    160 Jul  1 19:09 .idlerc
-rw-r--r--    1 dongqiyue  staff      0 Jun 27 11:29 .lesshsQ
-rw-r--r--    1 dongqiyue  staff    166 Jun 27 11:04 .zprofile
drwx------@  71 dongqiyue  staff   2272 May 27 15:06 Library
drwxr-xr-x    3 dongqiyue  staff     96 Mar 29  2022 .oracle_jre_usage
drwx------+   4 dongqiyue  staff    128 Nov 28  2021 Music
drwx------+   5 dongqiyue  staff    160 Oct 25  2021 Pictures
drwx------@   3 dongqiyue  staff     96 Oct 21  2021 Applications
-r--------    1 dongqiyue  staff      7 Oct 21  2021 .CFUserTextEncoding
drwxr-xr-x+   4 dongqiyue  staff    128 Oct 21  2021 Public
drwxr-xr-x    6 root       admin    192 Oct 21  2021 ..
dongqiyue@Charlottes-Macbook-Pro ~ % ls -a
.                    .oracle_jre_usage    Downloads
..                   .p2                  Library
.CFUserTextEncoding  .ssh                 Movies
.DS_Store            .vscode              Music
.Trash               .zprofile            Pictures
.cache               .zsh_history         Public
.eclipse             .zsh_sessions        cd
.gitconfig           Applications         eclipse
.idlerc              Desktop              eclipse-workspace
.lesshsQ             Documents
dongqiyue@Charlottes-Macbook-Pro ~ % ls /home/linux/ieng6/cs15lfa22/cs15lfa22ji
ls: /home/linux/ieng6/cs15lfa22/cs15lfa22ji: No such file or directory
dongqiyue@Charlottes-Macbook-Pro ~ % cp /home/linux/ieng6/cs15lfa22/public/hello.txt
~/
cp: /home/linux/ieng6/cs15lfa22/public/hello.txt: No such file or directory
dongqiyue@Charlottes-Macbook-Pro ~ % cat /home/linux/ieng6/cs15lfa22/public/hello.txt
cat: /home/linux/ieng6/cs15lfa22/public/hello.txt: No such file or directory
dongqiyue@Charlottes-Macbook-Pro ~ % 
```

Step4 Moving Files with scp

The code should work the same both local and remote, but the printed out results are different. When I run this on the client, my local system name, username and directory gets print out; but when I run this on the server, the remote system name, username and directory gets print out.

```
scp WhereAmI.java cs15lfa22ji@ieng6.ucsd.edu:~/
Password:
WhereAmI.ja 100%  304    23.7KB/s   00:00
dongqiyue@Charlottes-Macbook-Pro lab1 files % javac WhereAmI.java
dongqiyue@Charlottes-Macbook-Pro lab1 files % java WhereAmI
Mac OS X
dongqiyue
/Users/charlottedong
/Users/charlottedong/Desktop/UCSD/2nd year/F22/CSE15L/lab1 files
dongqiyue@Charlottes-Macbook-Pro lab1 files % ssh cs15lfa22ji@ieng6.ucsd.edu
Password:
Last login: Fri Sep 30 15:27:30 2022 from 100.83.46.248
Hello cs15lfa22ji, you are currently logged into ieng6-202.ucsd.edu

You are using 0% CPU on this system

Cluster Status
Hostname    Time      #Users  Load  Averages
ieng6-201   17:25:01   15  0.06,  0.06,  0.05
ieng6-202   17:25:01    8  0.10,  0.10,  0.12
ieng6-203   17:25:01   14  0.06,  0.11,  0.13


Fri Sep 30, 2022  5:26pm - Prepping cs15lfa22
[cs15lfa22ji@ieng6-202]:~:9$ javac WhereAmI.java
[cs15lfa22ji@ieng6-202]:~:10$ java WhereAmI
Linux
cs15lfa22ji
/home/linux/ieng6/cs15lfa22/cs15lfa22ji
/home/linux/ieng6/cs15lfa22/cs15lfa22ji
[cs15lfa22ji@ieng6-202]:~:11$ 
```

Step5 Setting an SSH Key

Below is the screenshot for my the setup process. Once its setup, you should be able to log in without password.

```
dongqiyue@Charlottes-Macbook-Pro lab
dongqiyue@Charlottes-Macbook-Pro lab1 files % ssh-k
eygen
Generating public/private rsa key pair.
Enter file in which to save the key (/Users/charlottedong/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /Users/charlottedong/.ssh/id_rsa.
Your public key has been saved in /Users/charlottedong/.ssh/id_rsa.pub.
The key fingerprint is:
SHA256:qe+69AHoCtcivzB2+X4y7fEoYRFxKFkDUxQ5ZVywK9I dongqiyue@Charlottes-Macbook-Pro.local
The key's randomart image is:
+---[RSA 3072]----+
|   o*BB=o.       |
|   o.=+..        |
|    . o.         |
|    .o  ..       |
|    ..Eo.S       |
|    ooo.o        |
|=.oo+ =..        |
|.B.o.= =+.       |
|  +..oO*+.       |
+----[SHA256]-----+
dongqiyue@Charlottes-Macbook-Pro lab1 files % ssh cs15lfa22ji@ieng6.ucsd.edu
Password:
Password:
Password:
Last failed login: Fri Sep 30 17:50:28 PDT 2022 from 100.82.19.26 on ssh:notty
There were 2 failed login attempts since the last successful login.
Last login: Fri Sep 30 17:26:07 2022 from 100.82.19.26
Hello cs15lfa22ji, you are currently logged into ieng6-202.ucsd.edu

You are using 0% CPU on this system

Cluster Status
Hostname    Time       #Users  Load  Averages
ieng6-201   17:50:01   18  0.20,  0.14,  0.08
ieng6-202   17:50:01   10  0.11,  0.06,  0.08
ieng6-203   17:50:01   12  0.01,  0.08,  0.12


Fri Sep 30, 2022  5:50pm - Prepping cs15lfa22
[cs15lfa22ji@ieng6-202]:~:12$ mkdir .ssh
mkdir: cannot create directory '.ssh': File exists
[cs15lfa22ji@ieng6-202]:~:13$ logout
Connection to ieng6.ucsd.edu closed.
dongqiyue@Charlottes-Macbook-Pro lab1 files % ▯
dongqiyue@Charlottes-Macbook-Pro lab1 files % scp /Users/charlottedong/.ssh/id_rsa.pub cs15lfa22ji
@ieng6.ucsd.edu:~/.ssh/authorized_keys
Password:
id_rsa.pub                                                100%  592     73.2KB/s   00:00
dongqiyue@Charlottes-Macbook-Pro lab1 files % ▮
```

This is the screenshot of ssh into my account without password.

```
dongqiyue@Charlottes-Macbook-Pro lab1 files % ssh cs15lfa22ji@ieng6.ucsd.edu
Last login: Fri Sep 30 17:50:43 2022 from 100.82.19.26
Hello cs15lfa22ji, you are currently logged into ieng6-202.ucsd.edu

You are using 0% CPU on this system

Cluster Status
Hostname    Time       #Users  Load  Averages
ieng6-201   17:55:01   15  0.01,  0.07,  0.06
ieng6-202   17:55:01   13  0.05,  0.07,  0.08
ieng6-203   17:55:01   14  0.06,  0.10,  0.13


Fri Sep 30, 2022  5:58pm - Prepping cs15lfa22
[cs15lfa22ji@ieng6-202]:~:13$ ▮
```

Step6 Optimizing Remote Running
Below are two efficient commands. A third efficient command is to use the up-arrow to pull up the last command that was run.

```
connection to ieng6.ucsd.edu closed.
dongqiyue@Charlottes-Macbook-Pro lab1 files % ssh cs15lfa22ji@ieng6.ucsd.edu "ls"
hello.txt
perl5
WhereAmI.class
WhereAmI.java
dongqiyue@Charlottes-Macbook-Pro lab1 files % cp WhereAmI.java OtherMain.java; javac OtherMain.jav
a; java WhereAmI
Mac OS X
dongqiyue
/Users/charlottedong
/Users/charlottedong/Desktop/UCSD/2nd year/F22/CSE15L/lab1 files
dongqiyue@Charlottes-Macbook-Pro lab1 files % ▉
```