1. log into a course-specific account on ieng6
   https://sdacs.ucsd.edu/~icc/index.php

   ## Account Lookup ⓘ

   Username *

   | shz061@ucsd.edu | ← Use your ucsd tritonlink username |

   Student ID *

   | •••••••••••• |

   [提交] Clear Fields
   Then click the submit button

   ## Forgot Username or New Student?

   Last Name *

   | shz061@ucsd.edu |

   Student ID *

   | •••••••••••• |

   [提交] Clear Fields

   ## Account Lookup Results

   Welcome, Shuyang Zhang.

   Your username is **shz061**.

   Your password was last changed on **Sunday, September 29 2022, 02:27 PM PT**.

   You can change your password for this account.

   ## Additional Accounts

   You have additional ETS accounts associated with your Student ID.

   Click each button for more information about those accounts.
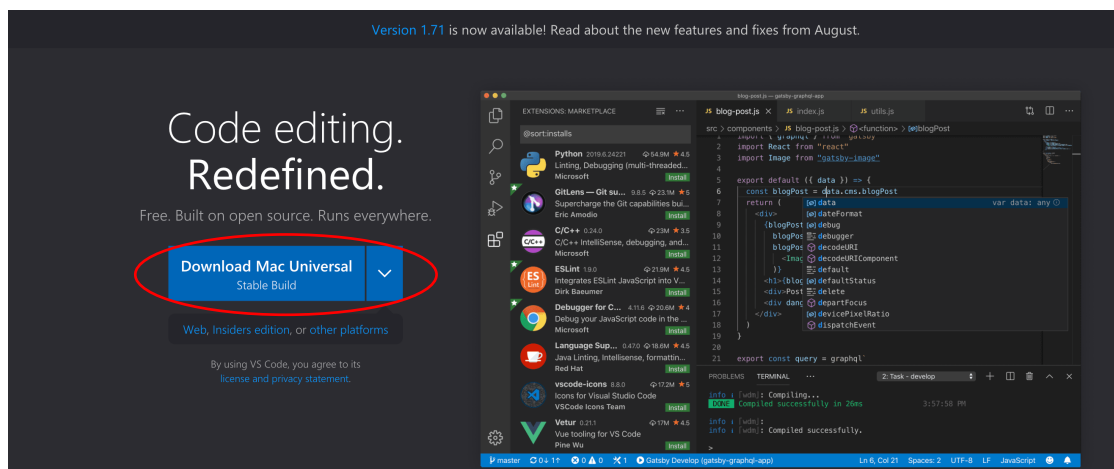
   [cs15lfa22oe] Find the cse 15l course
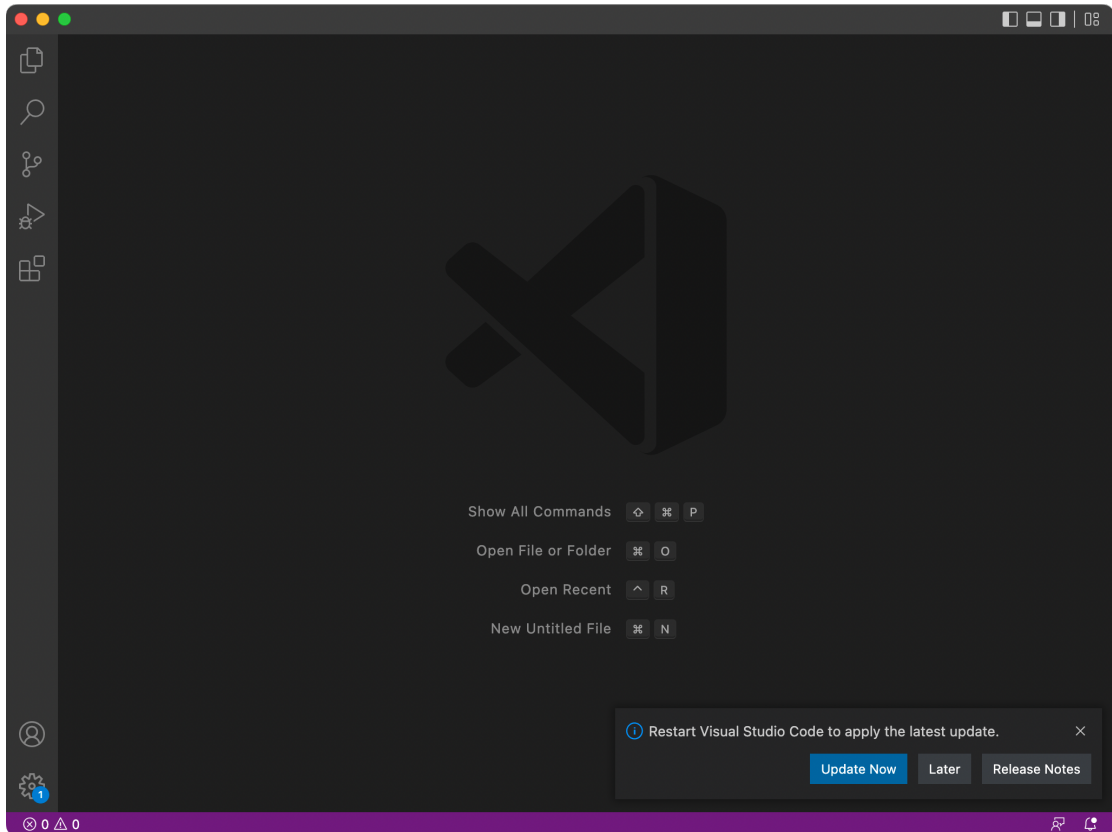
   [cs12fa22nx]

2. Installing VScode
   https://code.visualstudio.com/

   Go to the link above and click the download button.

   If you successfully download the VScode, open it, you will see the screen below

3. Remotely Connecting

-open the terminal in the VScode (terminal—new terminal) and enter a command:

ssh yourusername@ieng6.ucsd.edu

yourusername is the 11-character account you see in step 1 start with cs15l22fa.

-Press enter/return, it will show some sentence:

The authenticity of host 'ieng6-202.ucsd.edu (128.54.70.227)' can't be established.

RSA key fingerprint is SHA256:ksruYwhnYH+sySHnHAtLUHngrPEyZTDl/1x99wUQcec.

Are you sure you want to continue connecting (yes/no/[fingerprint])?

-Enter yes and press enter/return

-Then it will ask you to enter the password.

-After entering your password, you are now on the remote server and you will see some picture like below:

-Now you have successfully connected to the CSE basement, and all commands will run on this computer.

4. Trying Some Commands
   -Type some command in the terminal, for example:
   ➢ pwd
   ➢ ls
   ➢ ls -lat
   ➢ ls -a
   ➢ ls /home/linux/ieng6/cs15lfa22/other's_username
   ➢ cp /home/linux/ieng6/cs15lfa22/public/hello.txt ~/
   ➢ cat /home/linux/ieng6/cs15lfa22/public/hello.txt

```
drwxr-s---   7 cs15lfa22oe ieng6_cs15lfa22   4096 Sep 29 15:48 .
-rw-r-----   1 cs15lfa22oe ieng6_cs15lfa22     30 Sep 29 14:55 hello.txt
-rw-r-----   1 cs15lfa22oe ieng6_cs15lfa22      0 Sep 29 14:37 .motd
drwxr-sr-x   2 cs15lfa22oe ieng6_cs15lfa22   4096 Sep 29 14:37 perl5
drwxr-sr-x   3 cs15lfa22oe ieng6_cs15lfa22   4096 Sep 29 14:37 .local
drwxr-sr-x   3 cs15lfa22oe ieng6_cs15lfa22   4096 Sep 29 14:37 .config
drwxr-sr-x   3 cs15lfa22oe ieng6_cs15lfa22   4096 Sep 29 14:37 .cache
drwxr-sr-x 463 cs15lfa22   ieng6_cs15lfa22  36864 Sep 29 08:06 ..
-rwxr-x---   1 cs15lfa22oe ieng6_cs15lfa22    290 Sep  8 16:13 .zshrc
-rwxr-x---   1 cs15lfa22oe ieng6_cs15lfa22    481 Sep  8 16:13 .zshenv
-rwxr-x---   1 cs15lfa22oe ieng6_cs15lfa22   1931 Sep  8 16:13 .zprofile
-rwxr-x---   1 cs15lfa22oe ieng6_cs15lfa22   1961 Sep  8 16:13 .profile
-rwxr-x---   1 cs15lfa22oe ieng6_cs15lfa22    837 Sep  8 16:13 .procmailrc
-rwxr-x---   1 cs15lfa22oe ieng6_cs15lfa22    431 Sep  8 16:13 .login
-rwxr-x---   1 cs15lfa22oe ieng6_cs15lfa22    155 Sep  8 16:13 .locallogin
-rwxr-x---   1 cs15lfa22oe ieng6_cs15lfa22   1692 Sep  8 16:13 .kshrc
-rwxr-x---   1 cs15lfa22oe ieng6_cs15lfa22   1931 Sep  8 16:13 .cshrc
-rwxr-x---   1 cs15lfa22oe ieng6_cs15lfa22   1721 Sep  8 16:13 .bashrc
-rwxr-x---   1 cs15lfa22oe ieng6_cs15lfa22    975 Sep  8 16:13 .bash_profile
[cs15lfa22oe@ieng6-201]:~:38$ ls -a
.   .bash_history .bashrc  .config  .kshrc  .locallogin  .modulesbegenv  .procmailrc  .ssh       .zshenv   WhereAmI.class  hello.txt
..  .bash_profile .cache   .cshrc   .local  .login       .motd           .profile     .zprofile .zshrc    WhereAmI.java   perl5
[cs15lfa22oe@ieng6-201]:~:39$ pwd
/home/linux/ieng6/cs15lfa22/cs15lfa22oe
[cs15lfa22oe@ieng6-201]:~:40$ cp /home/linux/ieng6/cs15lfa22/public/hello.txt ~/
[cs15lfa22oe@ieng6-201]:~:41$ cat /home/linux/ieng6/cs15lfa22/public/hello.txt
Hi! Welcome to CSE15L Fall 22
```

You may see something like the picture above.

5. Moving Files with scp
   -First log out the account you current using by:
   i)   Crtl +D
   ii)   Type exit in the terminal
   -Create a file call WhereAmI.java on your own computer:
   ```
        class WhereAmI {
            public static void main(String[] args) {
                System.out.println(System.getProperty("os.name"));
                System.out.println(System.getProperty("user.name"));
                System.out.println(System.getProperty("user.home"));
                System.out.println(System.getProperty("user.dir"));
            }
        }
   ```
   -Using javac and java command to compile and run the file:
   javac WhereAmI.java
   java WhereAmI
   -Run the scp command:
   scp WhereAmI.java cs15lfa22__@ieng6.ucsd.edu:~/
   (enter your username on the horizontal line.)
   -Then login to the account again using ssh command, and you need to enter your password

-Use ls, you will see the file. Then you can run this file on the server with your course account (using the javac and java command again)

```
yehanniao@yehanniaodeMacBook-Pro Desktop % scp WhereAmI.java cs15lfa22oe@ieng6.ucsd.edu:~/
(cs15lfa22oe@ieng6.ucsd.edu) Password:
WhereAmI.java
yehanniao@yehanniaodeMacBook-Pro Desktop %  ssh cs15lfa22oe@ieng6.ucsd.edu
(cs15lfa22oe@ieng6.ucsd.edu) Password:
Last login: Thu Sep 29 14:37:45 2022 from 69.196.47.63
Hello cs15lfa22oe, 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   15:15:01   21  0.05,  0.04,  0.05
ieng6-202   15:15:01   13  0.13,  0.08,  0.08
ieng6-203   15:15:01   19  0.01,  0.05,  0.05


Thu Sep 29, 2022  3:19pm - Prepping cs15lfa22
[cs15lfa22oe@ieng6-202]:~:19$ ls
WhereAmI.java  hello.txt  perl5
[cs15lfa22oe@ieng6-202]:~:20$ javac WhereAmI.java
[cs15lfa22oe@ieng6-202]:~:21$ java WhereAmI
Linux
cs15lfa22oe
/home/linux/ieng6/cs15lfa22/cs15lfa22oe
/home/linux/ieng6/cs15lfa22/cs15lfa22oe
[cs15lfa22oe@ieng6-202]:~:22$ 
```

-you will get something like the above picture

6. Setting an SSH Key

-First log out from the server (Ctrl + D, exit)

-enter ssh-keygen

```
yehanniao@yehanniaodeMacBook-Pro ~ % ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/Users/yehanniao/.ssh/id_rsa): 
```

-Press enter/return when you see this, and remember the path.

```
yehanniao@yehanniaodeMacBook-Pro ~ % ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/Users/yehanniao/.ssh/id_rsa):
/Users/yehanniao/.ssh/id_rsa already exists.
Overwrite (y/n)? y
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
```

-Press enter/return two times

```
yehanniao@yehanniaodeMacBook-Pro ~ % ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/Users/yehanniao/.ssh/id_rsa):
/Users/yehanniao/.ssh/id_rsa already exists.
Overwrite (y/n)? y
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /Users/yehanniao/.ssh/id_rsa
Your public key has been saved in /Users/yehanniao/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:wjI4iZI+i6YUOHSAZgLG4FxcmHbQnWic+Tf/X21lUqI yehanniao@yehanniaodeMacBook-Pro.local
The key's randomart image is:
+---[RSA 3072]----+
|Bo.oB.= .        |
|*+o= O o         |
|++..o .       . .|
|oo.o . . o   . o |
|*.+ o o S o E . o|
|o... o .   .  oo |
| +          .  +|
|o.o            ..|
|=.            .. |
+----[SHA256]-----+
```

-Finally you will see the key image

-Now log in to your account: ssh cs15lfa22__@ieng6.ucsd.edu

(enter your username on the horizontal line)

you will need to enter your password

-type mkdir .ssh in the terminal

-log out your account(Ctrl + D, exit)

-type scp the_path_you_get_from_previous_step.pub

cs15lfa22__@ieng6.ucsd.edu:~/.ssh/authorized_keys

The path_you_get_from_previous_step will be something like:

/Users/private_account_name/.ssh/id_rsa, and enter your username on the horizontal line.

-now you can using the scp or ssh command without entering password, which will save a lot of time.

```
yehanniao@yehanniaodeMacBook-Pro ~ % scp /Users/yehanniao/.ssh/id_rsa.pub cs15lfa22oe@ieng6.ucsd.edu:~/.ssh/authorized_keys
(cs15lfa22oe@ieng6.ucsd.edu) Password:
id_rsa.pub                                                          100%  592     3.8KB/s   00:00
yehanniao@yehanniaodeMacBook-Pro ~ % ssh cs15lfa22oe@ieng6.ucsd.edu
Last login: Thu Sep 29 16:22:22 2022 from 69.196.47.63
Hello cs15lfa22oe, 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   16:20:01   18  0.25,  0.09,  0.06
ieng6-202   16:20:01   17  0.02,  0.06,  0.05
ieng6-203   16:20:01   9   0.01,  0.04,  0.05


Thu Sep 29, 2022  4:24pm - Prepping cs15lfa22
[cs15lfa22oe@ieng6-202]:~:35$
```

7. Optimizing Remote Running

-You can use semicolons to connect different commands in the same line

-You can use quotes to quote your command after the ssh and scp commands

-so that the shortcut to copy the file to the server and run it is:

scp WhereAmI.java cs15lfa22oe@ieng6.ucsd.edu:~/; ssh cs15lfa22oe@ieng6.ucsd.edu

"javac WhereAmI.java; java WhereAmI"

-after doing this, if you want to make some change in your WhereAmIjava file, you just need to press the upper arrow to update the change on the server.

```
yehanniao@yehanniaodeMacBook-Pro Desktop % scp WhereAmI.java cs15lfa22oe@ieng6.ucsd.edu:~/; ssh cs15lfa22oe@ieng6.ucsd.edu "javac Whe
reAmI.java; java WhereAmI"
WhereAmI.java                                                       100%  426     48.9KB/s   00:00
Linux
cs15lfa22oe
/home/linux/ieng6/cs15lfa22/cs15lfa22oe
/home/linux/ieng6/cs15lfa22/cs15lfa22oe
Hello, I'm editing the file.
The second time
save time
yehanniao@yehanniaodeMacBook-Pro Desktop %
```