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CSE 15L
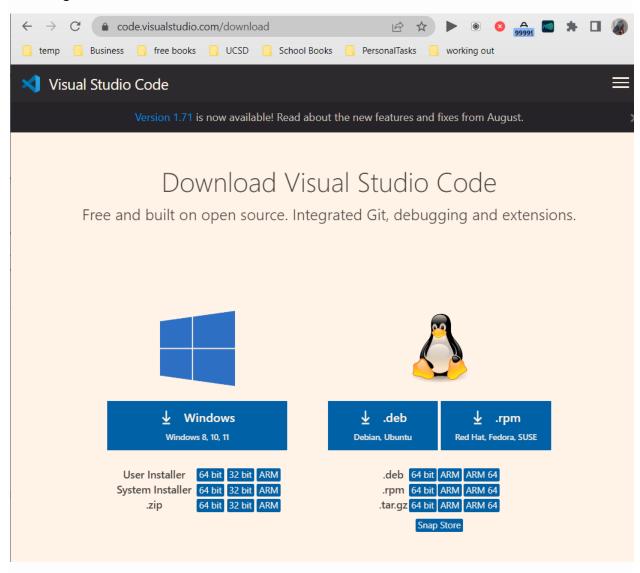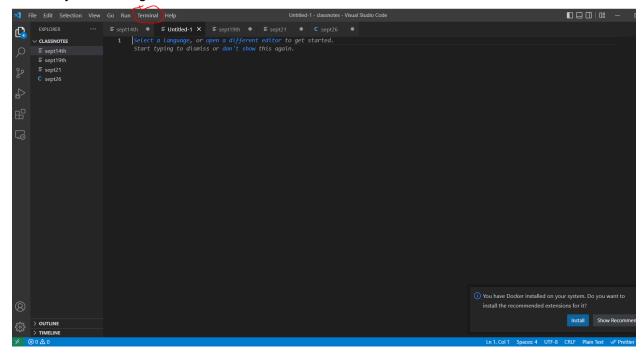
Week 1 Lab Report

Installing VScode

- Go onto https://code.visualstudio.com/download .
- Click download depending on the operating system you are using. Click accept for all terms and wait for the installation to be complete. Open up visual studios

Remotely connecting

- Click on the terminal in visual studios. Then type in ssh cs15lfa22xx@ieng6.ucsd.edu where the xx's need to be replaced by ur course specific kei letters.

- If u don't know your two key letters: You can find our kei letters bi going on to the site https://sdacs.ucsd.edu/~icc/index.php. Put our ucsd username and student id in account look up.
  Here is an example
  Username; jsmith
  Student id; a123456
  Hit submit. Then in the large grey button under the 'additional accounts' header will be the ets account username. Go back to the visual studios terminal and type in the xx's with ur specific account letters.

- It will ask you for a password. Here you will type the same password to get into ur ucsd active directory, for example 123password. Be careful: The password characters will not show up in the linux terminal. You'll only know if the password is correct once you hit enter and this shows up:

```
PS C:\             ssh cs15lfa22    @ieng6.ucsd.edu
Password:
Password:
Password:
Last failed login: Thu Sep 29 14:57:41 PDT 2022 from its-cseb270-25.ucsd.edu on ssh:notty
There were 2 failed login attempts since the last successful login.
Last login: Thu Sep 29 14:57:13 2022 from 100.81.32.34
^[[A^[[AHello cs15lfa2.   , you are currently logged into ieng6-203.ucsd.edu

You are using 0% CPU on this system

Cluster Status
Hostname     Time     #Users  Load  Averages
ieng6-201   14:55:02   15  0.27,  0.11,  0.06
ieng6-202   14:55:01    8  0.17,  0.16,  0.11
ieng6-203   14:55:01   18  0.08,  0.07,  0.05

^Z
Thu Sep 29, 2022  2:58pm - Prepping cs15lfa22
```

Running commands


```
[cs15lfa22ta2@ieng6-203]:~:174$ ls
JustinLiu  Pierre          WhereAmI.java  cs15lfa22ta2@ieng6.ucsd.edu  id_rsa.pub.
Lab1V      WhereAmI.class  cs15.txt        hello.txt                    perl5
[cs15lfa22. )@ieng6-203]:~:175$ mkdir
[cs15lfa2. @ieng6-203]:~:176$ ls
AmberSzulc  Lab1V   WhereAmI.class  cs15.txt                         hello.txt   perl5
JustinLiu   Pierre  WhereAmI.java   cs15lfa22ta2@ieng6.ucsd.edu  id_rsa.pub.
[cs15lfa22' )@ieng6-203]:~:177$ cd
[cs15lfa22   @ieng6-203]:        :178$ ls -lat
total 8
drwxr-s--- 15 cs15lfa22ta2 ieng6_cs15lfa22 4096 Sep 29 15:03 ..
drwxr-s---  2 cs15lfa22ta2 ieng6_cs15lfa22 4096 Sep 29 14:58 .
[cs15lfa22   )ieng6-203]:       :179$ cd ~
[cs15lfa22   @ieng6-203]:~:180$ cd
[cs15lfa22   )ieng6-203]:.      lc:181$ ls -a
.  ..
[cs15lfa22   @ieng6-203]:       c:182$ ls /home/linux/ieng6/cs15lfa22/cs15lfa22
[cs15lfa22'  @ieng6-203]:       c:183$ cp /home/linux/ieng6/cs15lfa22/public/hello.txt ~/
[cs15lfa22   @ieng6-203]       lc:184$ cat /home/linux/ieng6/cs15lfa22/public/hello.txt
Hi! Welcome to CSE15L Fall 22
[cs15lfa22ta2@ieng6-203]:A        :185$ []
```

- Pwd means print working directory. Ls gives you a list of all folders in the current directory you are in. Mkdir creates a new directory. Cd moves you into that new directory. Moving files from one computer/directory to another uses scp
- Please type these commands and which directory you want to interact with in the terminal

Moving Files over SSH with scp

```
PS Microsoft.PowerShell.Core\FileSystem::\\acsnfs4.ucsd.edu\CifsHomes\090\aszulc\cs15l>
javac WhereAmI.java
PS Microsoft.PowerShell.Core\FileSystem::\\acsnfs4.ucsd.edu\CifsHomes\090\aszulc\cs15l>
java WhereAmI
Windows 10
aszulc                                                              javac WhereAmI.java
C:\Users\aszulc                                                     java WhereAmI
\\acsnfs4.ucsd.edu\CifsHomes\090\aszulc\cs15l
PS Microsoft.PowerShell.Core\FileSystem::\\acsnfs4.ucsd.edu\CifsHomes\090\aszulc\cs15l>
scp WhereAmI.java cs15lfa22ta2@ieng6.ucsd.edu:~/
Password:
Password:                                                           scp WhereAmI.java cs15lfa22ta2@ieng6.ucsd.edu:~/
WhereAmI.java
                                        100%  297    52.8KB/s   00:00
PS Microsoft.PowerShell.Core\FileSystem::\\acsnfs4.ucsd.edu\CifsHomes\090\aszulc\cs15l>                                    100%
```

- Click on the terminal in the upper right hand corner of visual studios. You are on your local computer. Name this terminal local and the other terminal ssh. On your local computer's file explorer, either create a .java file in a chosen path or acquire the path where the .java file exists. Back at your terminal type javac [path to file/filename].c to compile code and java [path to file/filename] to run it. Type the command
- scp [path to file/filename].java cs15lfa22xx@ieng6.ucsd.edu:~/
- where xx represents your ETS account letters in order to move this file into . Type in your password and then go back to the ssh terminal. Type ls to see this new java file in your remote server's folders. Repeat the java and java with your new path to filename (likely the path is just ~)

Setting an SSH Keys

```
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\aszulc> ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (C:\Users\aszulc/.ssh/id_rsa): C:\Users\aszulc/.ssh/id_rsa
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in C:\Users\aszulc/.ssh/id_rsa.
The key fingerprint is:
SHA256:2SWYPxM0eU+R7ctTrECKOoja1VIQ+rHEhvcNH3Gza+o ad\aszulc@its-cseb270-25
The key's randomart image is:
+---[RSA 3072]----+
|    ..  . =.  .+ |
|   +.    *.+o o .|
|  o *.. +.++.o o |
|   = +.+.=.=. . +|
|   .o+..S B  ...o|
|   . + +  o o  .+ |
|  o . . ..      .|
|. .    .         |
|       E         |
+----[SHA256]-----+
PS C:\Users\aszulc> ssh-add
Error connecting to agent: No such file or directory
PS C:\Users\aszulc> scp \Users\aszulc/.ssh/id_rsa
usage: scp [-346BCpqrTv] [-c cipher] [-F ssh_config] [-i identity_file]
           [-J destination] [-l limit] [-o ssh_option] [-P port]
           [-S program] source ... target
PS C:\Users\aszulc> scp \Users\aszulc/.ssh/id_rsa.pub cs15lfa22ta2@ieng6.ucsd.edu:~/.ssh/authorized_keys
Password:
Password:
Password:
id_rsa.pub
PS C:\Users\aszulc>
```

- To set up ssh from your current computer to this remote server without a password, go back to your 'local' terminal and type 'ssh-keygen'. Please type the file path - lets call local_file_path_ssh where it asks you where you want to save the key. Click enter when it asks you for password.. Type 'ssh-add'. Then type 'scp [local_file_path_ssh] cs15lfaxx@ieng6.ucsd.edu~/.ssh/authorized_keys. Type in your password

- Then go to the ssh terminal. Logout of remote terminal with 'exit' command if you are logged in. To log back in type 'ssh cs15lfaxx@ieng6.ucsd.edu' where you should now be able to log-in without a password. A successful set up on the remote server looks like this:

```
PS C:\Users\         ssh cs15lfa22    @ieng6.ucsd.edu
Last failed login: Thu Sep 29 15:51:51 PDT 2022 from its-cseb270-25.ucsd.edu on ssh:notty
There were 2 failed login attempts since the last successful login.
Last login: Thu Sep 29 15:47:45 2022 from 100.81.32.34
Hello cs15lfa22    , you are currently logged into ieng6-203.ucsd.edu

You are using 0% CPU on this system

Cluster Status
Hostname    Time     #Users  Load  Averages
ieng6-201   15:50:01   19  0.19,  0.10,  0.06
ieng6-202   15:50:01   17  0.05,  0.05,  0.05
ieng6-203   15:50:01   14  0.18,  0.10,  0.07


Thu Sep 29, 2022  3:53pm - Prepping cs15lfa22
[cs15lfa22   @ieng6-203]:~:416$
```

Optimize Remote Running

```
PS C:\Users\amber\Documents\1_Palomar\cse30\classnotes> ssh cs15lfa22    @ieng6.ucsd.edu "ls"

WhereAmI.class
WhereAmI.java

hello.txt
id_rsa.pub.
```

```
PS C:\Users\                              > cp WhereAmI.java OtherMain.java; javac OtherMain.java; ja
va WhereAmI
Windows 10

C:\Users\
C:\Users\       \Documents\1_UCSD_Classes\cse15l
PS C:\Users\     \Documents\1_UCSD_Classes\cse15l>
```

- On the client terminal(local terminal) be in the same directory as the java file. Then type ssh cs15lfa22xx@ieng6.ucsd.edu "ls"Then type cp WhereAmI.java OtherMain.java; javac OtherMain.java; java WhereAmI as shown above

```
PS C:\Users\      \Documents\1_UCSD_Classes\cse15l> cp WhereAmI.java cs15lfa22   @ieng6.ucsd.edu
PS C:\Users\      \Documents\1_UCSD_Classes\cse15l> ssh cs15lfa22  @ieng6.ucsd.edu "javac WhereAmI.java"
PS C:\Users\      \Documents\1_UCSD_Classes\cse15l> ssh cs15lfa22  @ieng6.ucsd.edu "java WhereAmI"
Linux
cs15lfa22
/home/linux/ieng6/cs15lfa22/cs15lfa22
/home/linux/ieng6/cs15lfa22/cs15lfa22
PS C:\Users\      \Documents\1_UCSD_Classes\cse15l>
```

- To copy a java file from local server to remote server and run it in as few lines as possible (as shown above): Scroll up to a scp [filename].java

cs15lfa22txx@ieng6.ucsd.edu. Delete s and press enter. Scroll up to ssh cs15lfa22xx@ieng6.ucsd.edu "ls" and replace with javac [filename].java". Scroll up to ssh cs15lfa22xx@ieng6.ucsd.edu "javac [filename].java". Remove the c in java and the .java. Press enter and you have your result