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CSE15L B01
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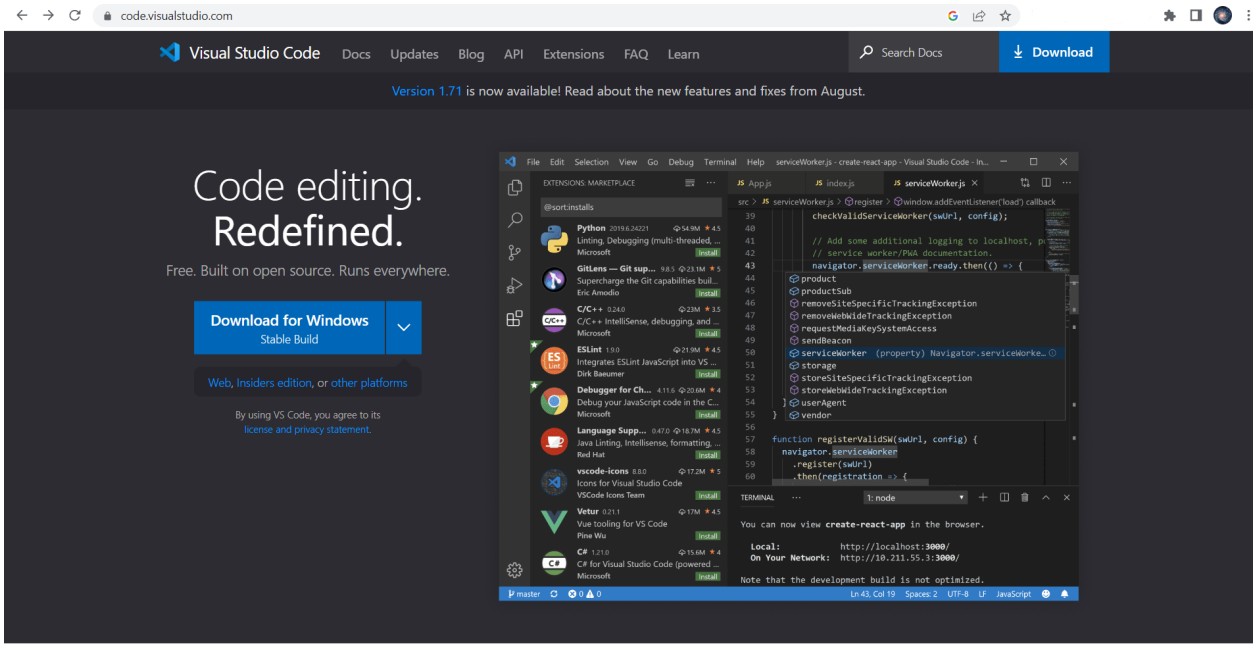
Tutorial: How to Set up Remote Access to Your Course Account on ieng6

Prerequisites:

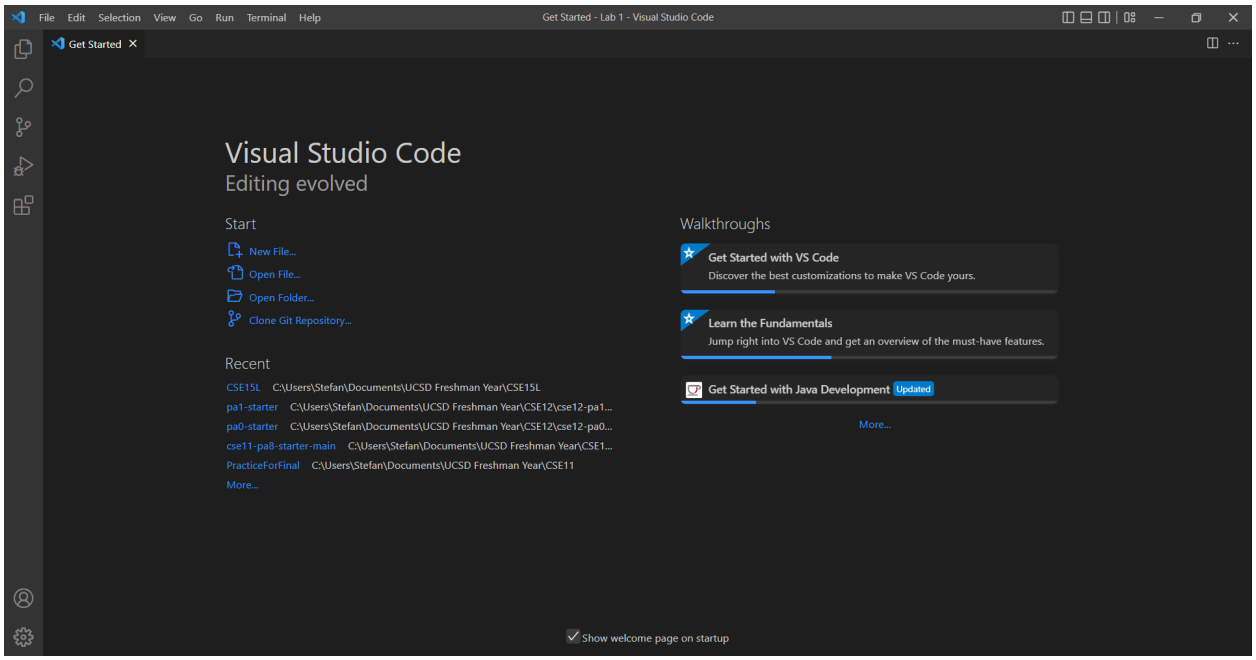
- Windows OS
- Powershell (comes pre-installed with Windows)
- Administrator Privilege
- Your AD password

Step 1: Install Visual Studio Code (VSCode)

a) Navigate to https://code.visualstudio.com/ and download the latest version of VSCode for Windows

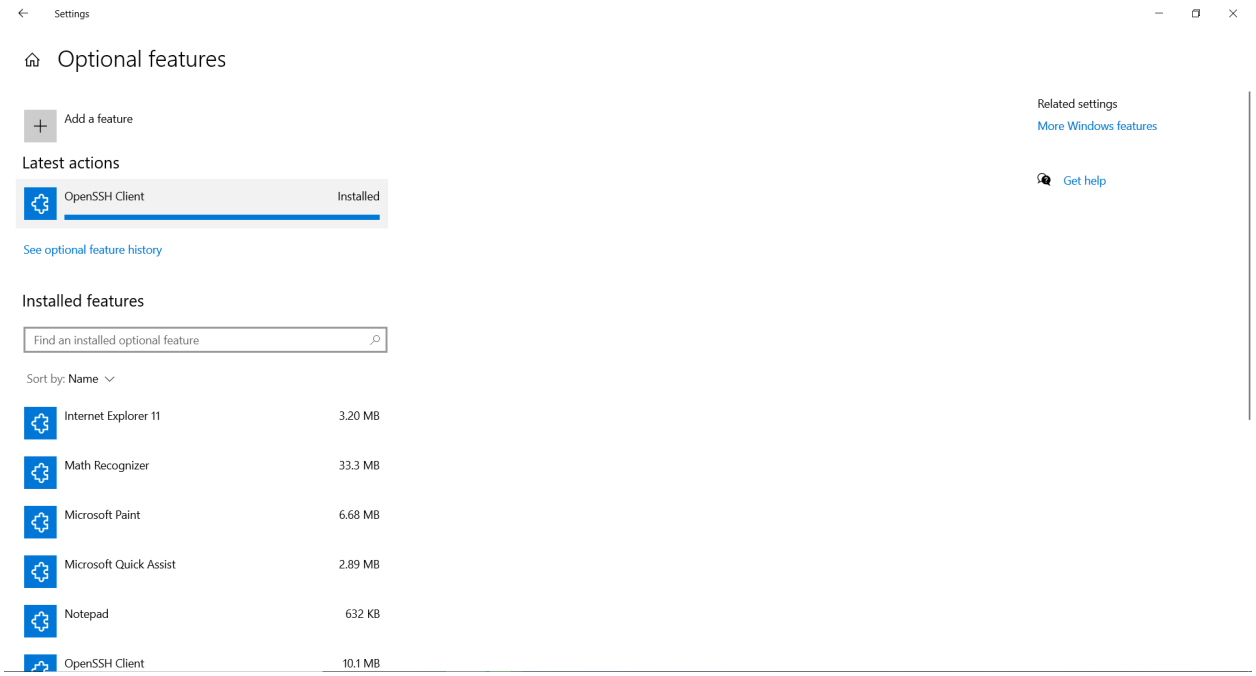


b) Open the downloaded file and follow the installation instructions. When you are finished installing, open VSCode. It should look like the image below.

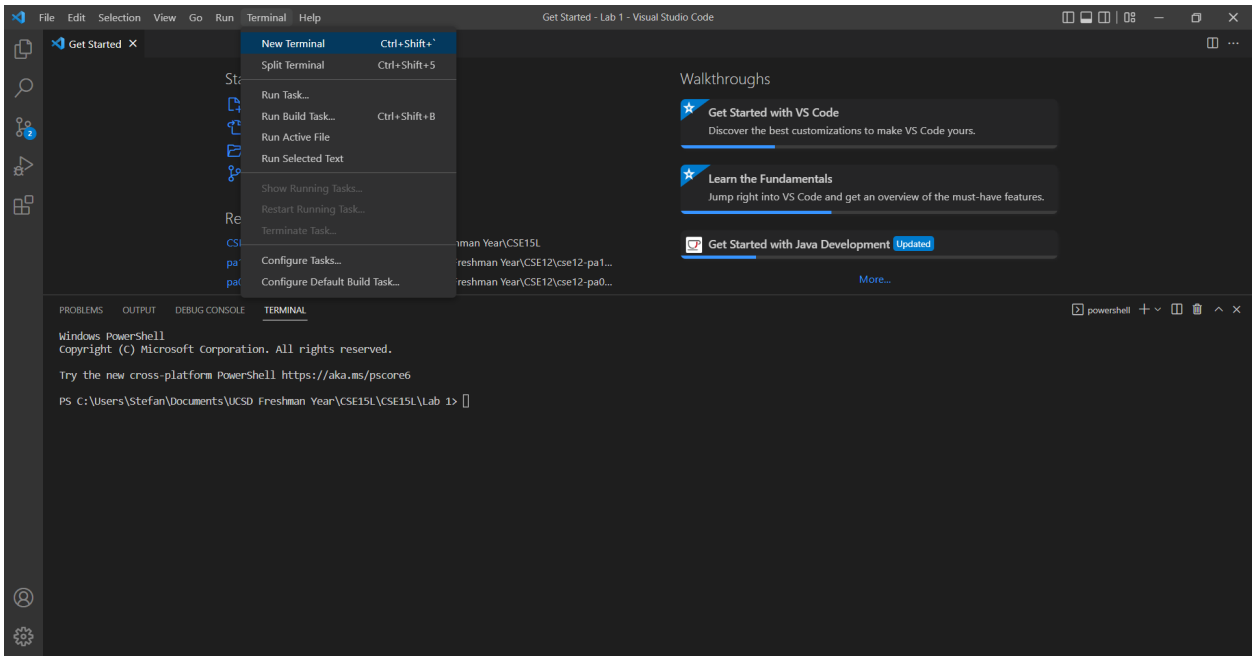


Step 2: Remotely Connecting

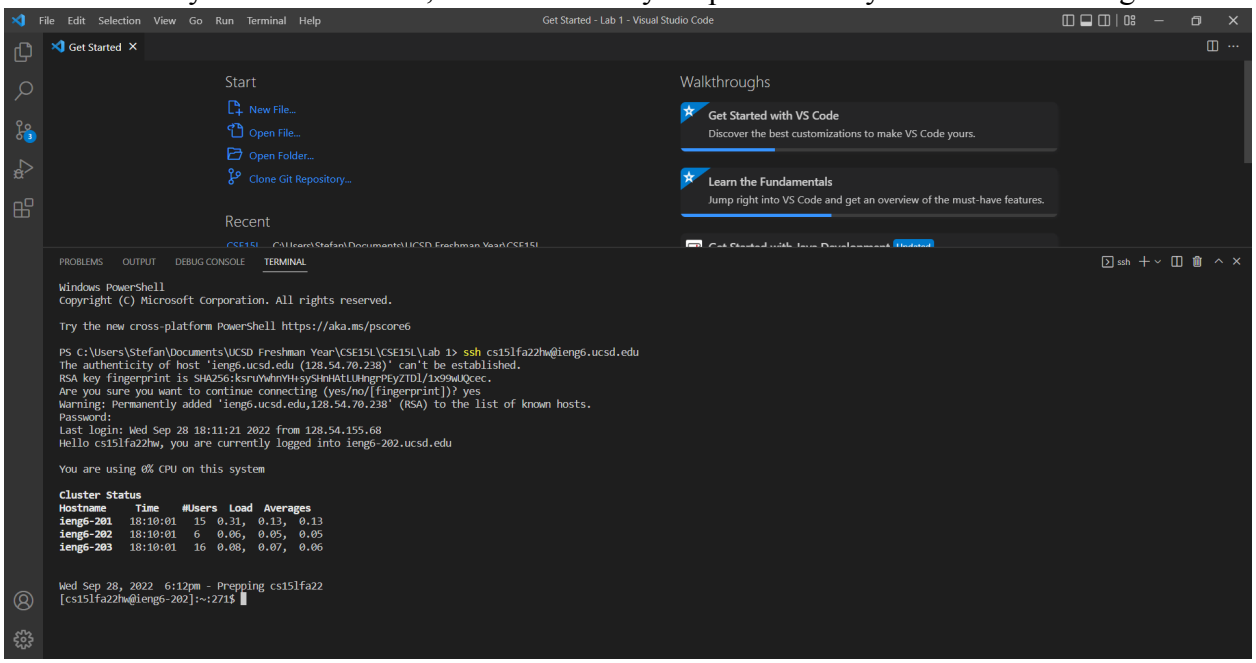
a) Install OpenSSH client. Go to Settings → Apps → Optional Features. Click on Add a Feature, locate OpenSSH client, and install. There is no need to install OpenSSH server.



b) Open VSCode Terminal by going to the menu at the top → Terminal → New Terminal.



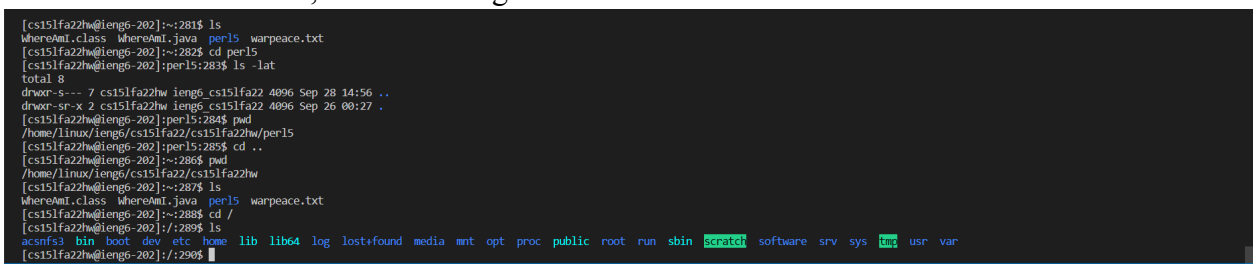
c) Login to your course account using the *ssh accountname@ieng6.ucsd.edu* command. You will be asked a "do you wish to connect?" prompt, to which you should answer "yes". You will then be prompted with your AD password, which is invisible when entered into the password field. Note that you may need to visit https://sdacs.ucsd.edu/~icc/index.php to find your *accountname*, as well as reset your password if you are unable to login.



Step 3: Trying Some Commands

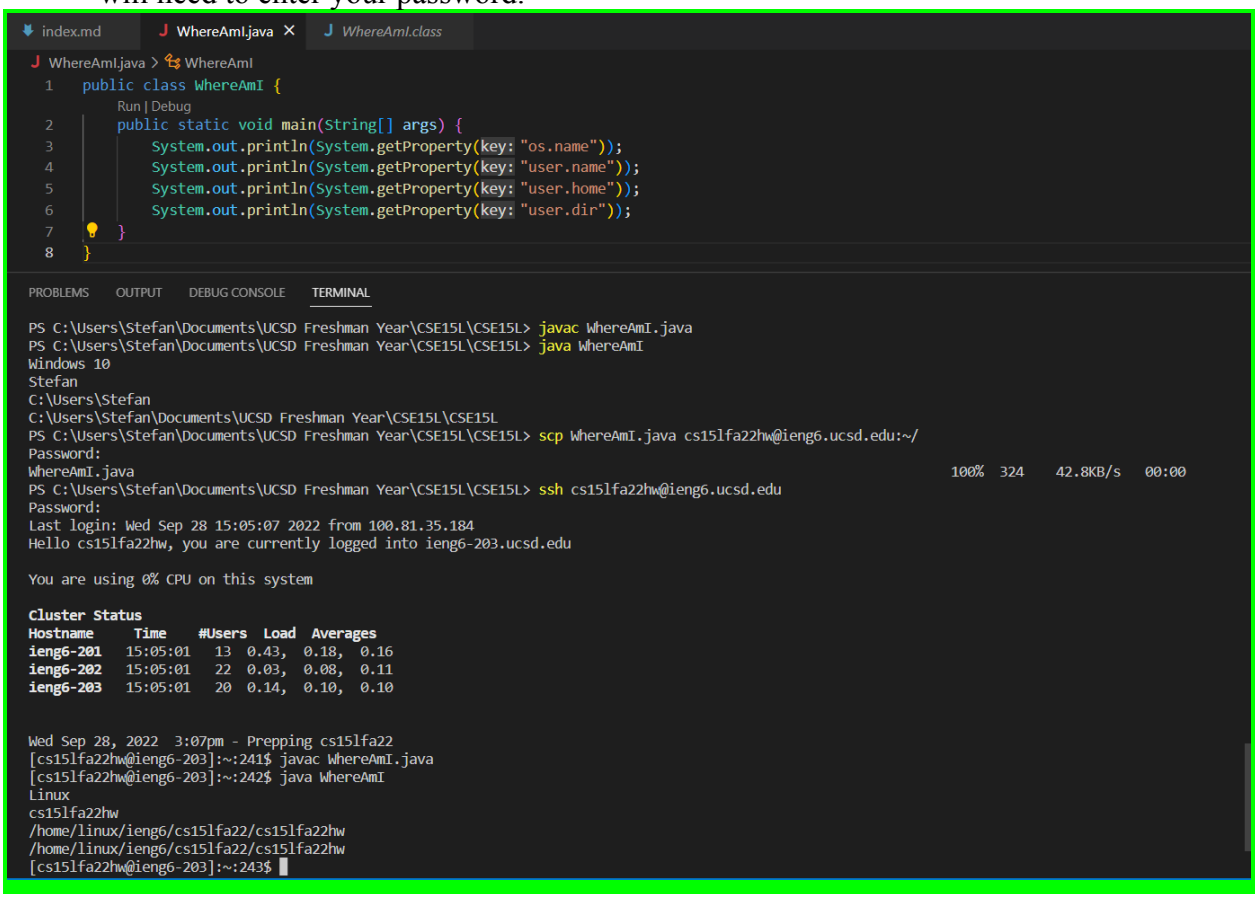
a) Now that you've successfully logged in, let's test some linux commands. Use *cd* to change directories, *ls* to list all files in your current directory, *pwd* to print the full path of

your current directory, *cp* to copy a file from one directory to another, *cat* to print out the contents of a file, and *exit* to logoff the server.



Step 4: Moving Files with *scp*

a) One important command to learn is the *scp* command, which moves files from our host computer to the remote machine. Usage: *scp file1* accountname@ieng6.ucsd.edu:~/. You will need to enter your password.



b) Verify that the file was transferred by using *ssh* to log back into the server.

Step 5: Setting up an SSH Key

a) Open Powershell as an Administrator

b) Generate ssh keys using *ssh-keygen*. You will be prompted to save the key, saving it to the default file is fine. Enter your password and confirm it.

c) Make sure that ssh-agent is running. Run the *Get-Service ssh-agent | Set-Service -StartupType Automatic* command to set the ssh-agent to automatic startup, and start ssh-agent with *Start-Service ssh-agent*. You can verify that it is running with *Get-Service ssh-agent*.

d) Add your keys to the ssh-agent using the *ssh-add $env:USERPROFILE\.ssh\id_rsa* command. Authorize with password.

e) Copy the PUBLIC key to the server's ssh authorized_keys file using the *spc* command. *scp C:\Users\<name>\.ssh\id_rsa.pub accountname@ieng6.ucsd.edu:~/.ssh/authorized_keys*

f) Verify that you can login without typing a password!

```
PS C:\Users\Stefan> ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (C:\Users\Stefan/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in C:\Users\Stefan/.ssh/id_rsa.
Your public key has been saved in C:\Users\Stefan/.ssh/id_rsa.pub.
The key fingerprint is:
SHA256:J9j3MV/UHR1Er+TmuoSfPR6Vn0A1J/vuTBuTR3XCKwk stefan@Stefan-Laptop
The key's randomart image is:
+---[RSA 3072]----+
|              +B+|
|             ..oO|
|          E  .= B|
|       o   ..+ *+|
|      . S o =.=.=|
|         + o B.=+|
|          . o +==|
|           o +.==|
|            =oooo|
+----[SHA256]-----+
PS C:\Users\Stefan> ssh-add $env:USERPROFILE\.ssh\id_rsa
Enter passphrase for C:\Users\Stefan\.ssh\id_rsa:
Bad passphrase, try again for C:\Users\Stefan\.ssh\id_rsa:
Identity added: C:\Users\Stefan\.ssh\id_rsa (stefan@Stefan-Laptop)
PS C:\Users\Stefan> scp C:\Users\Stefan\.ssh\id_rsa.pub cs15lfa22hw@ieng6.ucsd.edu:~/.ssh/authorized_keys
Password:
id_rsa.pub                                                    100%  575     1.8KB/s   00:00
PS C:\Users\Stefan> ssh cs15lfa22hw@ieng6.ucsd.edu
Last login: Wed Sep 28 15:07:50 2022 from 100.81.35.184
Hello cs15lfa22hw, 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   15:30:01   18  0.08,  0.10,  0.13
ieng6-202   15:30:01   21  0.13,  0.10,  0.17
ieng6-203   15:30:01   22  0.05,  0.16,  0.14


Wed Sep 28, 2022  3:30pm - Prepping cs15lfa22
[cs15lfa22hw@ieng6-203]:~:257$
```

Step 6: Optimize Remote Running

a) To login: copy and paste in the *ssh accountname@ieng6.ucsd.edu* command or use the up-arrow key

b) To compile and run a java file locally → *javac* <filename>*.java*; *java* <filename>*;*

c) To compile and run a java file remotely:
   i) *scp* <java file> *accountname@ieng6.ucsd.edu:~/desiredpath*
   ii) *ssh accountname@ieng6.ucsd.edu "javac* <filename>*.java*; *java* <filename>*;"*
   iii) To minimize keystrokes, use copy/paste to this document when initially inputting the filename, and the up and down arrows to alternate between the two commands

```
C:\Users\Stefan\Documents\UCSD Freshman Year\CSE15L\CSE15L\Lab 1>scp RemoteTest.java cs15lfa22hw@ieng6.ucsd.edu:~/
RemoteTest.java                                                                       100%  132     0.6KB/s   00:00

C:\Users\Stefan\Documents\UCSD Freshman Year\CSE15L\CSE15L\Lab 1>ssh cs15lfa22hw@ieng6.ucsd.edu "javac RemoteTest.java;
java RemoteTest;"
This is test #1.

C:\Users\Stefan\Documents\UCSD Freshman Year\CSE15L\CSE15L\Lab 1>scp RemoteTest.java cs15lfa22hw@ieng6.ucsd.edu:~/
RemoteTest.java                                                                       100%  132    15.4KB/s   00:00

C:\Users\Stefan\Documents\UCSD Freshman Year\CSE15L\CSE15L\Lab 1>ssh cs15lfa22hw@ieng6.ucsd.edu "javac RemoteTest.java;
java RemoteTest;"
This is test #2.

C:\Users\Stefan\Documents\UCSD Freshman Year\CSE15L\CSE15L\Lab 1>
```