Week 1 Lab Report

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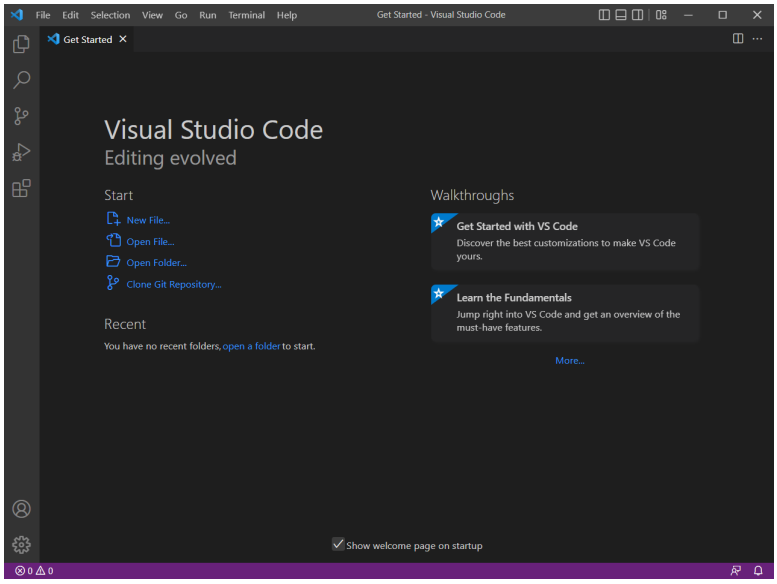
1. **Installing Visual Studio Code**
   Navigate to the VS Code website https://code.visualstudio.com/. Here, you will download the version of the software that is appropriate for your machine. VS Code, also known as Visual Studio Code, is a source code editor, used to edit and run programs. I completed this lab on a Windows machine, so I downloaded the Windows version. A macOS version is available on the same website, if you are using a Mac. After downloading the program, you must complete the setup process and customize the application however you desire. Now, you are ready to Open VS code.



2. **Remotely Connecting**
   After downloading OpenSSH from the web, you can use either Command Prompt or Powershell to remotely connect to the server. Type the command ssh, followed by your username. You will then be prompted to enter your password. After you enter that, you will be connected to the remote server.

```
PS C:\Users\saparvathaneni> ssh saparvathaneni@ieng6.ucsd.edu
Last login: Thu Sep 29 13:27:11 2022 from its-cseb270-08.ucsd.edu
Hello saparvathaneni, 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   13:25:01   23  0.29,  0.12,  0.12
ieng6-202   13:25:01   17  0.43,  0.26,  0.15
ieng6-203   13:25:01   19  0.12,  0.13,  0.08
```

3. **Trying Some Commands**

   Now that you are connected to the remote server, you can use commands to retrieve files or navigate the directories. The command ls is used to list the contents of the current directory. After that, you can use cd to change the directory. Type cd followed by the directory you want to access.

```
[[saparvathaneni@ieng6-201]:~:174$ ls
WhereAmI.class  WhereAmI.java  perl5  wavelet
[[saparvathaneni@ieng6-201]:~:175$ cd wavelet
[[saparvathaneni@ieng6-201]:wavelet:176$ ls
Handler.class       NumberServer.java  Server.class  ServerHttpHandler.class
NumberServer.class  README.md          Server.java   URLHandler.class
```

4. **Moving Files with scp**

   In order to copy files from your local computer to the remote server, you must use a command called scp. While on your local computer, type scp followed by the file you wish to copy, followed by the location you would like to copy it to. After using scp to copy the file, I then compiled and ran the file using javac and java to see if it ran as expected.

```
PS H:\> scp WhereAmI.java saparvathaneni@ieng6.ucsd.edu
        1 file(s) copied.
PS H:\> ssh saparvathaneni@ieng6.ucsd.edu
Last login: Thu Sep 29 13:29:05 2022 from its-cseb270-08.ucsd.edu
Hello saparvathaneni, 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   13:35:01   19  0.28,  0.19,  0.16
ieng6-202   13:35:01   22  0.05,  0.13,  0.13
ieng6-203   13:35:01   17  0.13,  0.11,  0.08



To see all available software packages, type "prep -l" at the command prompt,
or "prep -h" for more options.
[saparvathaneni@ieng6-203]:~:41$ javac WhereAmI.java
[saparvathaneni@ieng6-203]:~:42$ java WhereAmI
Linux
saparvathaneni
/home/linux/ieng6/oce/81/saparvathaneni
/home/linux/ieng6/oce/81/saparvathaneni
```

5. **Setting an SSH Key**

   Since entering your password every time you login to the remote server can get time-consuming, you can generate a ssh key to streamline the process of logging into the remote server. Enter the command ssh-keygen to start the process. You will have to enter the file path of the file in which you want to save the key. Then you will log back into the remote server and create a directory called ".ssh". Then, exit the remote server and use scp on the local machine to copy the public key to the remote server. Now, you should be able to login to the remote server without entering your password.

```
(base) Samanyus-Air:~ samanyuparvathaneni$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/Users/samanyuparvathaneni/.ssh/id_rsa): /Users/samanyuparvathanen
i/.ssh/id_rsa
/Users/samanyuparvathaneni/.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/samanyuparvathaneni/.ssh/id_rsa
Your public key has been saved in /Users/samanyuparvathaneni/.ssh/id_rsa.pub
```

```
[saparvathaneni@ieng6-201]:~:189$ mkdir .ssh
[saparvathaneni@ieng6-201]:~:190$ exit
logout
Connection to ieng6.ucsd.edu closed.
(base) Samanyus-Air:~ samanyuparvathaneni$ scp /Users/samanyuparvathaneni/.ssh/id_rsa.pub saparvathanen
i@ieng6.ucsd.edu:~/.ssh/authorized_keys
(saparvathaneni@ieng6.ucsd.edu) Password:
(saparvathaneni@ieng6.ucsd.edu) Password:
id_rsa.pub                                    100%  597    22.7KB/s   00:00
(base) Samanyus-Air:~ samanyuparvathaneni$ ssh saparvathaneni@ieng6.ucsd.edu
Last failed login: Mon Oct 10 22:09:33 PDT 2022 from cpe-76-167-65-148.natsow.res.rr.com on ssh:notty
There was 1 failed login attempt since the last successful login.
Last login: Mon Oct 10 22:08:19 2022 from cpe-76-167-65-148.natsow.res.rr.com
Hello saparvathaneni, you are currently logged into ieng6-201.ucsd.edu
```

6. **Optimizing Remote Running**

   The most optimized way to copy and run WhereAmI.java on the remote machine after making edits to it on the local machine would be to login to the remote server normally with the ssh. Then, combining the javac and java commands into one command with a semicolon. By combining these two commands, you are able to use one keystroke to compile and run the code, after entering it once.

```
(base) Samanyus-Air:CSE 15L samanyuparvathaneni$ scp WhereAmI.java saparvathaneni@ieng6.ucsd.edu
(base) Samanyus-Air:CSE 15L samanyuparvathaneni$ ssh saparvathaneni@ieng6.ucsd.edu
Last login: Fri Sep 30 22:42:03 2022 from cpe-76-167-65-148.natsow.res.rr.com
Hello saparvathaneni, 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   22:45:01   8   0.00,  0.01,  0.05
ieng6-202   22:45:01   6   0.04,  0.04,  0.05
ieng6-203   22:45:01   13  0.04,  0.05,  0.05



To see all available software packages, type "prep -l" at the command prompt,
or "prep -h" for more options.
[saparvathaneni@ieng6-203]:~:100$ javac WhereAmI.java; java WhereAmI
Linux
saparvathaneni
/home/linux/ieng6/oce/81/saparvathaneni
/home/linux/ieng6/oce/81/saparvathaneni
This is an edit
```