

# Working From Home: Using SSH Remotely

CS181, Fall 2020

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## 1 Intro

This guide will help you set up remote SSH on your personal computer and discuss how to use SSH to access your files on department machines. Some information in this guide was adapted from the CS0170 and CS1250 SSH Setup Guides.

## 2 Terminology

**Definition:** *Remote Computer* - This is the computer you will be working from. This is your laptop or desktop in your home.

**Definition:** *Host Computer* - This is the computer you will be connecting to. In this case, it is some machine in the CIT where all of your files are stored.

**Definition:** *SSH* - SSH stands for Secure Shell. It is a way of securely logging into one computer from another.

## 3 Setting up SSH

For Mac, Linux, Windows, or even Android, you can set up SSH by going to a terminal and typing:

```
ssh [your cs login]@ssh.cs.brown.edu
```

You will then be prompted to enter your password. Once you enter it, your ssh is all set up!

For further detail, see [Working from Home: Setting up SSH on your Laptop](#).

## 4 Using SSH

Once SSH is set up, there are many different ways to use it. Since all assignments are submitted via Gradescope in CS181, you will mostly only need SSH to download and copy project stencil code to a local machine. Therefore, we would recommend getting familiar with using a terminal to navigate and work with a SSH connected Unix file system.

The simplest way to copy over files from the CS filesystem to your laptop is with the `scp` (secure copy) terminal command. The `scp` command is analogous to the `cp` (copy) command; the difference is that with `scp`, you are copying files between *hosts*, rather than just from one location in your file system to another. It uses `scp` to login to the *remote host* (the Sunlab Linux box) and copy files to or from the *local host* (your laptop).

The usage of regular `cp` in a Linux terminal looks something like this:

```
cp ~/source.txt ~/target.txt
```

This will copy the `source.txt` file in your home directory to a new file, `target.txt`, also in your home directory.

Now, say the `source.txt` file is in my CS file system home directory and I want to copy it to the `target.txt` file on the desktop of my MacBook. On my Mac, the path to this target file is `/Users/Sarah/Desktop/target.txt`. On the CS file system, the path to the source file is still `~/source.txt`; however, because this file is on the *remote host*, I have to add a prefix that uses my CS login, `sbranse`. To copy this text file, I open the Terminal window and type the following:

```
scp sbranse@ssh.cs.brown.edu:~/source.txt /Users/Sarah/Desktop/target.txt
```

Notice that the prefix is the same argument you give to the `ssh` command to login from your laptop, `<cs-login>@ssh.cs.brown.edu`. Note that there is a colon between this prefix and the actual file path. You will have to enter your `ssh` password for the copying to begin, and you will be able to watch its progress as each file is processed (in this case, it's just the one). This example demonstrates how to copy a file from the CS filesystem to your laptop. **Note:** to copy a file from your laptop to the file system just reverse the order of the two files.

A more useful example for CS1810 is learning how to copy a whole directory (or folder) from the CS filesystem to your laptop. Let's say I have an organized folder on my CS file system at location `~/course/cs1810/warmup`. I need to copy this folder to a chosen location on my Mac computer, `/Users/Sarah/Desktop/cs1810`. To copy a folder and all the files within it, use the `-r` (recursive) flag with the `scp` command:

```
scp -r sbranse@ssh.cs.brown.edu:~/course/cs1810/warmup /Users/Sarah/Desktop/cs1810
```

The `scp` command will put a copy of the `warmup` directory within the `cs1810` folder in my Mac Desktop. If I already have a `/Users/Sarah/Desktop/cs1810` directory, then any files within it will be *overwritten* with the copied over folder. Always double-check that your source and target folders are in the correct order before you hit enter! If you switch them, you could accidentally overwrite all the progress you've made on your laptop with a previous version you have on the CS filesystem.

Finally, feel free to come to office hours or ask on Piazza if you need any additional assistance with SSH!