

General Laboratory Guidance

CS 105, Fall 2019

1 Working with a Partner

Most of the laboratory exercises will be completed in teams of two. You may choose your own partner for the first laboratory exercise, the Data Lab. You will change partners a few times over the semester. Sometimes you will have a choice; other times the assignments will be random.

When you have a choice, remember that the best partner may not be your best friend. Try to find someone whose skills complement your own. For example, on the Data Lab, find someone who is experienced with the command line if you are uncertain about that aspect of the work.

You may not work on a laboratory exercise alone; your partner must be physically present. Be sure that you are making contributions to the endeavor—and that your partner is doing the same!

2 Accessing the Server

Most of our work will be done on `pom-itb-cs2.campus.pomona.edu`. It is a server maintained by Pomona College's ITS department, running a version of the Linux operating system that is suitable for our course. Remember that your programs must be compiled and run on that computer.

2.1 Working in the Lab

Sit down in the lab and log into one of the computers using your Computer Science username and password. Open a terminal window and type¹

```
% ssh wxyz2016@pom-itb-cs2
wxyz2016@pom-itb-cs2's password:
pom-itb-cs2 % mkdir cs105
pom-itb-cs2 % cd cs105
```

substituting your own username for `wxyz2016`. The authentication for the server is the same as the campus-wide systems. Your username will be of the form `wxyz2016` and your password will be the one you use for your Pomona College email. After typing your password at the prompt, you will have a terminal session on the server, and your working directory there will be `cs105`.

Your home directory is local to the server. In order to use a graphical editor to create and modify files, you must mount the server's directory on the laboratory computer. Create a new directory (in Documents, if you

¹A note on color-coding: In a few cases we display commands that you type in a terminal window and the resulting output. We use `%` for the prompt. The characters that you are to type are in green, and the system's responses are in purple.

like, but not the Desktop) named `cs105`. Then in a new terminal window—not the one you just used for `ssh`—type

```
% mkdir Documents/cs105
% sshfs wxyz2016@pom-itb-cs2:cs105 Documents/cs105 -o volname=cs105
```

Type your password again. The files from `pom-itb-cs2` will be on the local machine in the `Documents/cs105` directory. (You may also see a volume labeled FUSE on the Desktop. Just ignore it!)

You may choose any editor you want to create and modify files in the `cs105` directory. Aquamacs is one possible choice. Use the *other* terminal window—the first one you created, with the `ssh` command—for compiling and running the programs.

2.2 Working Outside the Lab

If you are on campus and your laptop is connected to the Pomona wireless network, the process is similar. The computer must have `ssh` and `sshfs` clients. (You're on your own for that part!) There is no real alternative for `ssh`. There are ways to avoid `sshfs`, but they are cumbersome and not recommended.

If you are connected to a wireless network other than Pomona, or if you are off campus, you must first establish a VPN connection. (Look in the ITS Knowledge Base at www.pomona.edu/administration/its/help/its-knowledge-base or contact ITS for more information.) Then follow the steps outlined above.

3 Common Pitfalls

Working in the wrong directory: For a given lab, you will have *one* set of files, residing on the server and mounted on the laboratory computer. The directories may have different names, and it is easy to become confused. Also, if you make a mistake, you may end up with two distinct copies of the files. Be sure that you are editing and compiling the same files!

Working on the wrong computer: Programs must be compiled and run *on the server*. Be sure that the terminal window you are using is an `ssh` session into the server!

Failing to read instructions: There is sometimes a temptation to skip over all the details and start working on the laboratory exercise. Be sure to read over the entire document before you begin!

4 Sharing Files with Your Partner

While you are working on a laboratory exercise, you will always be with your partner. You can use one partner's account for all your work. But after you are finished, you will each want to have a copy of your work.

A brute-force way to copy files is to use `scp`. In a terminal window, change directories to the one where you want the files to reside. Then type something like this

```
% scp -r wxyz2016@pom-itb-cs2:cs105/datalab .
```

where `wxyz2016` is your partner's username. Have your partner type their password in response to the prompt. The option `-r` means that you are recursively copying a directory and all of its contents. The dot at the end means that the files are to be copied into the current directory.

Another, more sophisticated, way to share files is to create a GitHub repository. You learned about GitHub in CS 62.

Do not be tempted to share passwords or make files world-readable. These are both violations of standard computer security practices.