

CS 111 - useful details: `ssh`, `sftp`, and `~st10/111submit`

You write Racket BSL code in the Definitions window in DrRacket, and save that Definitions window's contents to a file, whose name ends with `.rkt`, typically somewhere on YOUR computer (although in an on-campus lab, you can save it to the U: drive, reachable from any on-campus lab). (Later, you will write C++ code in files whose names have a different ending, but more on those later.)

If you saved your homework file anywhere but the U: drive, you need to COPY it to another computer, `nrs-labs.humboldt.edu`, using some kind of `sftp`, secure file transfer protocol, program:



(BUT if you save your file to the U: drive, it is ALREADY on `nrs-labs.humboldt.edu`.)

Once your file is on `nrs-labs.humboldt.edu`, you need to run a program ON `nrs-labs` to submit that file so I can grade it. You connect to `nrs-labs` using some kind of `ssh`, secure shell, program, and then run another program to submit your homework file.

The purpose of this handout is to give you a bit more reference for these steps:

1. **`sftp`** - how to transfer files to and from `nrs-labs`
2. **`ssh`** - how to connect/log on to `nrs-labs`
3. **`~st10/111submit`** - how to submit course assignments

to turn in course assignments...

...is basically a 3-step process:

- get your homework file(s) from your computer to `nrs-labs` (if they are not already there), and
- connect/log on to `nrs-labs` using `ssh`,
- ...so that you can run the program `~st10/111submit` to submit/turn in those files

`sftp` - secure file transfer program - how to transfer files to and from `nrs-labs`

FIRST: if you are working in a campus lab, you do NOT NEED to use `sftp` (or Secure Shell Transfer Client or WinSCP or FileZilla, all of which are graphical versions of `sftp`) -- if you save your files to the U: drive, that IS `nrs-labs`, and your files are now on `nrs-labs`, ready for the next `ssh` part.

`sftp` (secure file transfer program) is used to transfer files between computers across a network. It

allows you to connect to a remote computer and transfer files between it and the computer you connect to from wherever you are on the Internet.

...from Windows

WinSCP, installed in HSU campus labs, is a "graphical" implementations of `sftp`.

And, there is an open source version, FileZilla, which has versions for Windows and Mac OS X, available from:

<https://filezilla-project.org/>

For any of these choices of software, use `nrs-labs.humboldt.edu` as the host, and use your campus username, and your campus password. If WinSCP or FileZilla require a port number, enter a port number of 22.

Once you have connected, you can drag files from the left side to the right side to move files from your computer to nrs-labs, and from the right side to the left side to move files from nrs-labs to your computer.

...from Mac OS X or Linux

There are graphical `sftp` clients for these, too -- for example, FileZilla, which has versions for Windows and Mac OS X, is available from:

<https://filezilla-project.org/>

-- but I tend to just use their command-line versions (which should already be installed on your computer).

For the command-line approach, on Mac OS X, you'll want to open a terminal using the Terminal application (under Applications -> Utilities); if you use Linux, you probably already know how to open a terminal window under whatever version you are running.

Once you have a terminal window open, life is easier if you go to the directory (using the `cd` command) where the files are that you want to transfer. Then, type:

```
sftp your_hsu_username@nrs-labs.humboldt.edu
```

substituting your HSU username where indicated. Answer `y` for yes to agree if it asks you if its really okay to proceed, and type in your HSU campus password when indicated. (NOTE: your password will not show on the screen when you type it, for security reasons! It IS still being read in.)

Once you see the prompt:

```
sftp>
```

...you are now connected to nrs-labs using `sftp`, and can type `sftp` commands at this prompt. (Type the enter key to end an `sftp` command, and note that Unix is case-sensitive.)

Here are a few very useful `sftp` commands:

<code>cd directory_name</code>	change to directory <i>directory_name</i> on nrs-labs
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<code>lcd directory_name</code>	(local <code>cd</code>) change to directory <i>directory_name</i> on your (local) computer
<code>pwd</code>	see the name of the current directory on nrs-labs
<code>lpwd</code>	(local <code>pwd</code>) see the name of the current directory on your (local) computer
<code>ls</code>	list the files in the current directory on nrs-labs
<code>lls</code>	(local <code>ls</code>) list the files in the current directory on your (local) computer
<code>put file_name</code>	transfer a copy of the file <i>file_name</i> <u>from your</u> computer <u>to</u> nrs-labs
<code>get file_name</code>	transfer a copy of the file <i>file_name</i> from nrs-labs <u>to your</u> computer
<code>?</code>	gives a list of <code>sftp</code> commands, each with a 1-line description
<code>quit</code>	exit <code>sftp</code>

It is good practice to quit (type the command `quit` or type the `ctrl` and `d` keys at the same time) when you are done.

ssh - secure shell - how to connect to nrs-labs

`ssh` (secure shell) is used to connect to computers across a network. It allows you to log onto a remote Unix computer and use it from wherever you are on the Internet.

...from Windows

HSU's campus labs include a "graphical" implementations of `ssh` called PuTTY.

For PuTTY, use `nrs-labs.humboldt.edu` as the host, and use your campus username, and your campus password. Some of these `ssh` programs may also want a port number -- if so, use a port number of 22.

Once you see the prompt:

```
[your_hsu_username@nrs-labs ~]$
```

...you are now logged into nrs-labs, and can type Unix commands at this prompt. (Type the enter key to end a Unix command, and note that Unix is case-sensitive.)

It is good practice to logout (type the command `logout` or type the `ctrl` and `d` keys at the same time) when you are done.

...from Mac OS X or Linux

There are graphical `ssh` clients for these, too, but I tend to just use their command-line versions (which should already be installed on your computer).

For the command-line version already installed in Mac OS X, you'll want to open a terminal using the

Terminal application (under Applications -> Utilities); if you use Linux, you probably already know how to open a terminal window under whatever version you are running.

Once you have a terminal window open, just type:

```
ssh your_hsu_username@nrs-labs.humboldt.edu
```

substituting your HSU username where indicated. Answer `y` for yes to agree if it asks you if its really okay to proceed, and type in your HSU campus password when indicated. (NOTE: your password will not show on the screen when you type it, for security reasons! It IS still being read in.)

Once you see the prompt:

```
[your_hsu_username@nrs-labs ~]$
```

...you are now logged into nrs-labs, and can type Unix commands at this prompt. (Type the enter key to end a Unix command, and note that Unix is case-sensitive.)

It is good practice to logout (type the command `logout` or type the ctrl and d keys at the same time) when you are done.

~st10/111submit - how to submit course assignments

`~st10/111submit` is a small program (a Perl script) in my directory on nrs-labs that I wrote for students to use to submit homework files.

Whether you are using Windows, Mac OS X, or Linux:

1. FIRST, you need to transfer the files you wish to submit to nrs-labs. From a campus lab, you can copy them to the U: drive; from elsewhere, you will need to use `sftp` to do so (as discussed above).

It will be easier in the long run if you put them in their own directory on nrs-labs, but in a pinch your home directory will do.

It will also be easier if you **avoid** using blanks in file and directory/folder names -- you'll have to quote such names in Unix commands otherwise.

2. Now, you need to use `ssh` to log onto nrs-labs (as discussed above).
3. Use the `cd` command to change to the directory where your files are -- for example, if those files are in your nrs-labs directory/folder `this-homework`, then:

```
cd this-homework
```

...will change to that directory. The command `pwd` will tell you the name of the present directory, if you have forgotten, and `cd` all by itself will take you back to your main, home directory.

4. Make sure that your files are in this directory -- `ls` will list all of the files in your current directory.
5. Now that you are in the directory where the files to submit, are, type:

```
~st10/111submit
```

...to run the submission program. Give the homework number when asked (in lab, I'll try to remember to tell you what number to use), and when asked if you want to submit all of the appropriate-type files in the current directory, answer `y` for yes.

Make sure that you see the files you hoped to submit listed as having been submitted; don't worry if others were submitted, also, as long as the ones you wanted to submit made it.

6. A copy of what you submitted is stored in a directory named `submitted` in your current directory. Keep this copy until this work's grade is posted on Moodle.

And, remember to `logout` of your `ssh` session when you are done.