

UNIX

Goal

The goal of this exercise is to learn to work with directories and files hosted on a server running Unix (or Linux). As I mentioned in lecture last week, your RIT web page is hosted at <http://people.rit.edu/>, but the server you connect to in order to upload or directly modify files is called banjo.rit.edu. Both servers use the same file storage, but allow different programs to access them. Today you'll be logging into banjo.rit.edu to learn how to work with files directly on the server.

***Note:** Every student has their own personal directory on RIT's file server with 1GB of storage under their username. While this is your personal storage, it falls under RIT's Code of Computer Use, and violations of that code can result in you losing access to computer services. **As with all RIT services, you need to be professional about the things for which you use Banjo.**

In addition to the UNIX tutorial assigned for today's class, I've provided UNIX command references **at the end of this exercise**. I suggest taking a quick look at those now.

Part 1: Transferring Files and SSH

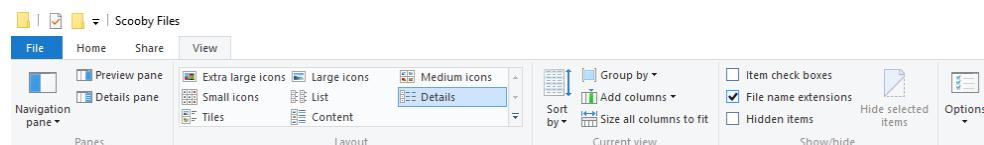
1. Create Files

On your *local* machine, create the following files using Visual Studio Code, or any other plain text editor of your choice. (Do not use a word processor, or Windows Notepad, as they can leave hidden characters in your file that will create problems for you.)

In the left column of the table is the file name (remember that Unix is case sensitive!). On the right side is the text that should be in the file. Save all of the files in a single folder on your computer.

Filename	Contents
Scooby.txt	Hello, I'm Scooby
Shaggy.txt	Hello, I'm Shaggy
Velma.txt	Hello, I'm Velma
Daphne.txt	Hello, I'm Daphne
Fred.txt	Hello, I'm Fred
Ghost.txt	Hello, I'm Ghost
OldManWithers.txt	Hello, I'm Old Man Withers

Make sure that the files have the correct file extension (.txt), and that the extension is lower-case rather than upper-case. If you don't see the .txt extension when viewing the files on your computer, choose "View" from the top of the folder, and make sure the File name extensions box is checked:



3. After creating all of the files, open the FileZilla program on your computer.

FileZilla is a free FTP (file transfer protocol) program that allows you to move files from your computer to a remote server. You'll need to enter this information:

Host: banjo.rit.edu

Username: (your RIT username – Example: abc1234)

Password: (your RIT password)

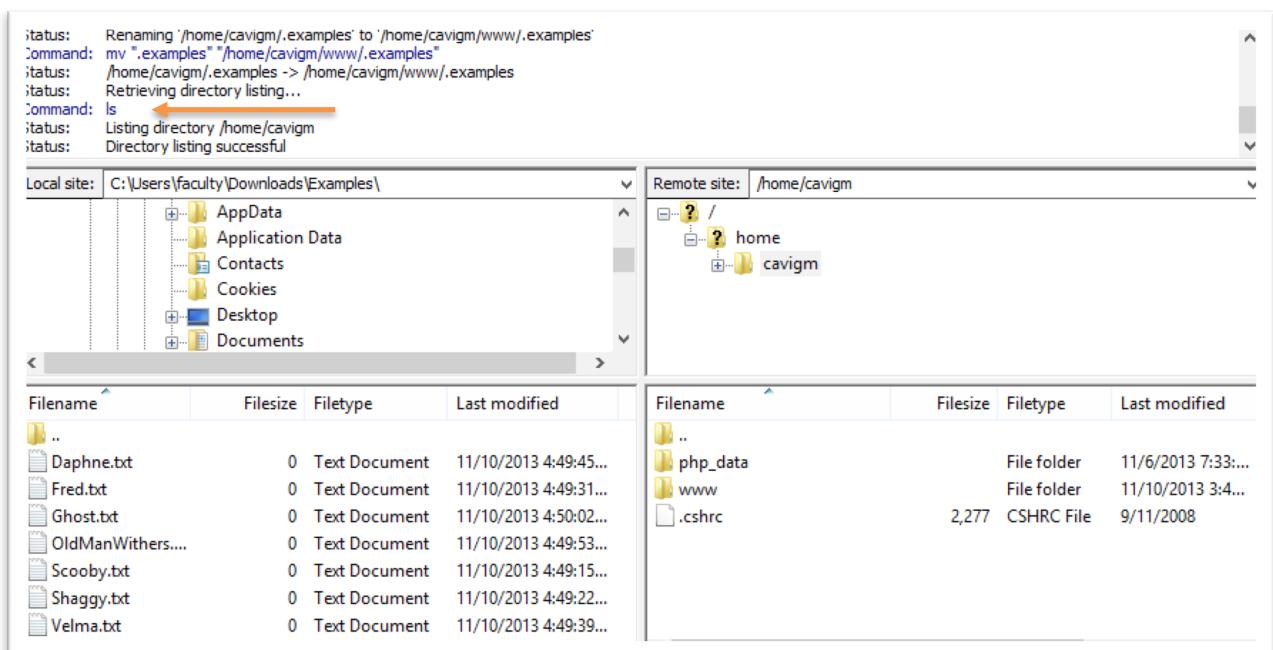
Port: 22



After entering that information, press the Quickconnect button. You should be automatically connected to your personal directory (home directory) on Banjo.

4. Find the directories you'll be working with.

The left lower pane shows the folder and file structure of your computer. The right lower pane shows the folder and file structure on the RIT server. In the left pane, find the folder that you just saved your .txt files in. In the right pane, make sure that your home directory is active. (In the “Remote Site” field, it should say /home/youruserid).



status: Renaming '/home/cavigm/.examples' to '/home/cavigm/www/.examples'
Command: mv ".examples" "/home/cavigm/www/.examples"
status: /home/cavigm/.examples -> /home/cavigm/www/.examples
status: Retrieving directory listing...
Command: ls
status: Listing directory /home/cavigm
status: Directory listing successful

Filename	Filesize	Filetype	Last modified
..			
Daphne.txt	0	Text Document	11/10/2013 4:49:45...
Fred.bt	0	Text Document	11/10/2013 4:49:31...
Ghost.txt	0	Text Document	11/10/2013 4:50:02...
OldManWithers....	0	Text Document	11/10/2013 4:49:53...
Scooby.txt	0	Text Document	11/10/2013 4:49:15...
Shaggy.txt	0	Text Document	11/10/2013 4:49:22...
Velma.txt	0	Text Document	11/10/2013 4:49:39...

Filename	Filesize	Filetype	Last modified
..			
php_data		File folder	11/6/2013 7:33:...
www		File folder	11/10/2013 3:4...
.cshrc	2,277	CSHRC File	9/11/2008

5. Drag all of the text files from the lower left pane to the lower right pane to upload them.

Filename	Filesize	Filetype	Last modified
...			
Daphne.txt	0	Text Document	11/10/2013 4:49:45...
Fred.txt	0	Text Document	11/10/2013 4:49:31...
Ghost.txt	0	Text Document	11/10/2013 4:50:02...
OldManWithers....	0	Text Document	11/10/2013 4:49:53...
Scooby.txt	0	Text Document	11/10/2013 4:49:15...
Shaggy.txt	0	Text Document	11/10/2013 4:49:22...
Velma.txt	0	Text Document	11/10/2013 4:49:39...

Filename	Filesize	Filetype	Last modified
www		File folder	11/10/2013 3:4...
.cshrc	2,277	CSHRC File	9/11/2008
Daphne.txt	0	Text Docu...	11/10/2013 3:5...
Fred.txt	0	Text Docu...	11/10/2013 3:5...
Ghost.txt	0	Text Docu...	11/10/2013 3:5...
OldManWithers.txt	0	Text Docu...	11/10/2013 3:5...
Scooby.txt	0	Text Docu...	11/10/2013 3:5...
Shaggy.txt	0	Text Docu...	11/10/2013 3:5...

6. Now you can quit FileZilla.

Part II: The Mystery Machine (Unix Exercise using your terminal program)

The rest of this exercise is going to be completed by logging into banjo.rit.edu with a terminal emulation program (PuTTY on a PC, or Terminal on a Mac). You should have done this at least once before, as part of the Week 5 prep exercise

Read this paragraph twice to be sure you know what you're supposed to do! You must keep a record **all** of the UNIX commands (like 'cd' or 'mkdir'), as a sequential list that you used to do this exercise with the flags and filenames. The document with that list of commands must be submitted. Submit a word document with your written commands for each step to the dropbox before next class.

1) Change directory to the www directory

Now that you are connected, use the **cd** command to move to the **www** directory. [In your document, you would record '**cd www**']

2) Create a new directory

Using the **mkdir** command to create a directory called **110** . [In your document, you would record '**mkdir 110**']

3) Change directories

Change directories to the new **110** directory using the **cd** command.

4) Show your path

Show your current path using the **pwd** command, to ensure that you are in the **110** directory, inside of the **www** directory. It should look like this, with your user ID in place of abc1234:

/home/abc1234/www/110

5) Create directories

Inside of the current directory (**110**), create two more directories : one called **mysteryMachine** and another called **withersMansion** (remember, capitalization matters!)

6) List the contents of your current directory

Type in the the `ls` command to list the contents of the current directory. It should show you the two directories you just created.

7) Return to your home directory

Now return to your home directory using the `cd` command (If you don't specify a destination, the `cd` command will take you to your home directory)

8) Use `pwd` and `ls` to verify that you are back in your starting directory

Make sure you are in your home directory (`/home/abc1234/`), and that you can see the scooby-doo text files you uploaded.

9) Move Daphne to the 110 directory

Using the `mv` command move the `Daphne.txt` file to the `110` directory. Since the `110` directory is inside of the `www` directory, and the `www` directory is in the directory you're currently in, the path you're moving the file to would be `www/110`

10) List the contents of the 110 directory with this command: `ls www/110`

If you moved the `Daphne.txt` file properly, it should show up in the listing. If not, you may have accidentally renamed the `Daphne.txt` file rather than moving it—in which case you may want to ask for help here ☺

11) Once you're sure you've moved the `Daphne.txt` file properly, move the rest of the files to the 110 directory:

- o `Scooby.txt`
- o `Shaggy.txt`
- o `Velma.txt`
- o `Fred.txt`
- o `OldManWithers.txt`
- o `Ghost.txt`

(if those files are the only .txt files in the directory, a shortcut for moving them all at once would be `mv *.txt www/110`)

12) Verify text files moved

`cd` to the `110` directory inside `www` and use the `ls` command to verify all of the text files are there. **The rest of the commands in this exercise can all be executed from within the 110 directory, by using relative path names!**

13) Copy (don't move!) the Ghost to the withersMansion

Now using the `cp` command, copy the `Ghost.txt` file to the `withersMansion` directory.

14) Verify that you have two Ghosts

Using `ls` verify that the `Ghost.txt` file is inside both the `withersMansion` directory and the `110` directory.

15) Removing a Ghost

Once you have verified the Ghost.txt file is in withersMansion and in the 110 directory, use the `rm` command to remove the Ghost.txt file from the 110 directory.

16) Move OldManWithers

Move the OldManWithers.txt file to the withersMansion directory.

17) Move Fred and Velma to the withersMansion

Move Fred.txt and Velma.txt to the withersMansion

18) Move Shaggy and Scooby to the mysteryMachine

Shaggy.txt and Scooby.txt are too scared, so move them to the mysteryMachine.

19) Move the Ghost from withersMansion to the mysteryMachine

The Ghost.txt follows them to the mysteryMachine!

20) Move Shaggy and Scooby to the withersMansion

Shaggy.txt and Scooby.txt are scared out of the mysteryMachine by Ghost.txt. Move them to the withersMansion.

21) Move Daphne to the mysteryMachine to drive out the Ghost

Move Daphne.txt to the mysteryMachine to drive out the Ghost.

22) Discover the graveyard

Create a directory in your 110 directory called `graveyard`

23) Move the Ghost to the graveyard.

Move the Ghost.txt from the mysteryMachine to the graveyard.

24) Hide the Ghost

Make the Ghost a hidden file by using the `mv` command to change the name from Ghost.txt to `.Ghost.txt` (a period added to the front of the filename)

25) Verify the Ghost is hidden

Now use `ls` to make sure the Ghost is hidden. (You can use `ls -a` to view hidden files, too.)

26) You solved the mystery

Move OldManWithers.txt from withersMansion to graveyard

27) To the mystery machine!

Now move all of the Scooby gang back to the mysteryMachine, using the `mv` command. (You can use `mv *.txt` rather than specifying each file individually.)

28) Leaving withersMansion

Verify that all of the scooby gang are in the mysteryMachine and that OldManWithers.txt and the hidden Ghost file are in the graveyard. (Use `ls -a` to show all files, including hidden files.) Once you have verified everyone's location, remove the withersMansion directory using the `rmdir` command.

29) Check your work

Open a web browser and go to people.rit.edu/abc1234/110 (replacing abc1234 with your RIT user ID). It should look similar to this. If you can't get to this page or get a **404 Error - Page not found error**, then your permissions are incorrect or the directory paths are wrong. Use `pwd` to make sure your 110 directory is inside of the www directory, and that the permissions are set properly.

	Name	Last modified	Size	Description
	Parent Directory		-	
	graveyard/	10-Nov-2013 20:36	-	
	mysteryMachine/	10-Nov-2013 20:37	-	

If you do not see both the graveyard and mysteryMachine directories, then your directory permissions are incorrect.

- Take a screen shot of this page, making sure that the URL and the file list both appear. Add it to your list of commands.

30) Check the mysteryMachine directory

Click the mysteryMachine directory. You should see all of the gang there.

	Name	Last modified	Size	Description
	Parent Directory		-	
	Daphne.txt	10-Nov-2013 16:53	0	
	Fred.txt	10-Nov-2013 21:50	0	
	Scooby.txt	10-Nov-2013 21:50	0	
	Shaggy.txt	10-Nov-2013 21:50	0	
	Velma.txt	10-Nov-2013 21:50	0	

- Take a screenshot of this page, making sure that the URL and the file list both appear. (On Windows machines, you can do this with the Snipping Tool program.) Paste the screenshot into your document listing commands.

31) Check Shaggy.txt

Hit the browser's back arrow and choose Shaggy.txt instead. You should see the text on the right. If you get a forbidden error, then the permissions on the Shaggy.txt file are incorrect. If it is blank, then you forgot to save the contents into the file.

Hello, I'm Shaggy

- Take a screen shot of this page, making sure that the URL and the text both appear. Add it to your list of commands.

32) Graveyard

Click the back arrow in the browser and choose the link for **parent directory**. This will take you back to the graveyard and mysteryMachine directories.

Choose the graveyard directory. The Ghost is in there with Mr. Withers, but it's hidden because of the leading . in the file name, so it won't show up here.

- Take a screen shot of this page, making sure that the URL and the file list both appear. Add it to your list of commands.

33) Ghost

The .Ghost.txt file is hidden, but it does have read permissions. Instead of trying to get there through the directory, go there directly. In the browser's address bar put in <http://people.rit.edu/abc1234/110/graveyard/.Ghost.txt> (replacing abc1234 with your RIT user ID).

*Make sure you put the period before *Ghost.txt*, so it is *graveyard/.Ghost.txt*

In the top left of the page you should see.

Hello, I'm Ghost

- Take a screen shot of this page, making sure that the URL and the contents both appear. Add it to your list of commands.

34) Submission

- a) At the beginning of the document where you recorded your UNIX commands, add your name and the URL to your 110 directory (e.g. <http://people.rit.edu/abc1234/110/>, with your user ID replacing abc1234) at the top of the document.
- b) Make sure you've included a command or a screenshot for each of the steps in the exercise.
- c) Submit the document to the dropbox for this week's exercise, no later than your class time on Thursday. There is another activity for Thursday.

Reference:

Command Order

command -flags argument argument argument Example `ls -a h*` meaning list all that starts with h

command	Mnemonic for what you want to do
-flags	Letters that alter the command
argument	Zero or several additional pieces of information

Command Reference

Command	Function
<code>pwd</code>	Print Working Directory
<code>cd path</code>	Change Directory (moves you to the path/directory specified)
<code>man command</code>	Read manual for command
<code>ls</code>	Lists the files in a directory
<code>mkdir filename</code>	Creates a directory
<code>mv filename1 filename2</code>	Moves file1 to file2 (how to rename a file)
<code>cp filename1 filename2</code>	Copies file1 to file2
<code>rm -i filename</code>	Remove filename (i means interactive – asks for confirmation before doing anything)
<code>chmod options filename</code>	Change Mode (sets permissions for a file)

Flag Reference (using the ls command for example)

Command -flag	Function
<code>ls</code>	Lists basic contents of current directory
<code>ls -a</code>	All files (even hidden ones)
<code>ls -l</code>	Long details for
<code>ls -al</code>	All Long details

Permission Number Table

Decimal Code	Read bit	Write bit	Execute bit
0	0	0	0
1	0	0	1
2	0	1	0
3	0	1	1
4	1	0	0
5	1	0	1
6	1	1	0
7	1	1	1

Permissions order:

owner group others

owner	The owner of the file
group	The group to which the owner belongs
others	Everyone else (including the web server)

Example of changing to owner having full permissions and the group/others having no permissions

chmod 700 filename

Example of changing to owner and group having full permissions and others having no permissions

chmod 770 filename