

CS311 - FA13: Homework 1

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1. Describe at least 2 ways of transferring files from a remote server to a local machine.

(a) `$ scp user@remotehost:filepath localpath`

(b) `$ {wget,curl -L} URL`

2. What are revision control systems? Why are they useful? Explain how to create a subversion or git repository on os-class (and create it, while you're at it).

A 'revision control system' is a program from keeping track of revisions to files. They are useful in software development for keeping track of the history of a project and keeping code between developers in sync.

(a) `$ svnadmin create`

(b) `$ git init`

3. What is the difference between redirecting and piping? Describe each.

Redirecting on the shell is a way to connect stdin, stdout, and stderr of one command to a file descriptor. For example: `$ echo "hello, world" > newfile` would connect the echo command's stdout to newfile's stdin.

Piping is shorthand for connecting fd 1 (stdout) to fd 0 (stdin), and runs each command as a subprocess.

4. What is make, and how is it useful?

Paraphrase from the manpage: "Make is a utility to maintain groups of programs.". In short, Make is a build tool for managing program dependencies. When not being used for the C language Make is generally used to hold a collection of related shell commands, like how this class is currently using it to build LaTeX documents.

5. Describe, in detail, the syntax of a make file.

A makefile is made up of 5 elements:

(a) target rules

(b) inference rules

(c) macros

(d) empty lines

(e) comments

Since empty lines and comments are self explanatory, I will skip over them.

Macros

Target Rules

Inference Rules

6. Give a find command that will run the file command on every regular file (not directories!) within the current filesystem subtree.

`$ find . -type f -exec file '{}' \;`