Unix Shell basics

Introduction:

* A shell is a program whose primary purpose is to read commands and run other programs.
* This lesson uses Bash, the default shell in many implementations of Unix.
* Programs can be run in Bash by entering commands at the command-line prompt.
* The shell’s main advantages are its high action-to-keystroke ratio, its support for automating repetitive tasks, and its capacity to access networked machines.
* The shell’s main disadvantages are its primarily textual nature and how cryptic its commands and operation can be.

Navigating files and directories:

* The file system is responsible for managing information on the disk.
* Information is stored in files, which are stored in directories (folders).
* Directories can also store other directories, which then form a directory tree.
* pwd prints the user’s current working directory.
* ls [path] prints a listing of a specific file or directory; ls on its own lists the current working directory.
* cd [path] changes the current working directory.
* Most commands take options that begin with a single -.
* Directory names in a path are separated with / on Unix, but \ on Windows.
* / on its own is the root directory of the whole file system.
* An absolute path specifies a location from the root of the file system.
* A relative path specifies a location starting from the current location.
* . on its own means ‘the current directory’; .. means ‘the directory above the current one’.

Working with files and directories:

* cp [old] [new] copies a file.
* mkdir [path] creates a new directory.
* mv [old] [new] moves (renames) a file or directory.
* rm [path] removes (deletes) a file.
* \* matches zero or more characters in a filename, so \*.txt matches all files ending in .txt.
* ? matches any single character in a filename, so ?.txt matches a.txt but not any.txt.
* Use of the Control key may be described in many ways, including Ctrl-X, Control-X, and ^X.
* The shell does not have a trash bin: once something is deleted, it’s really gone.
* Most files’ names are something.extension. The extension isn’t required, and doesn’t guarantee anything, but is normally used to indicate the type of data in the file.
* Depending on the type of work you do, you may need a more powerful text editor than Nano.

Pipes and fitters

* wc counts lines, words, and characters in its inputs.
* cat displays the contents of its inputs.
* sort sorts its inputs.
* head displays the first 10 lines of its input.
* tail displays the last 10 lines of its input.
* command > [file] redirects a command’s output to a file (overwriting any existing content).
* command >> [file] appends a command’s output to a file.
* [first] | [second] is a pipeline: the output of the first command is used as the input to the second.
* The best way to use the shell is to use pipes to combine simple single-purpose programs (filters).