Ubuntu Linux Fundamentals
Ubuntu Server - Editing System Files

Since you now know how to edit text files with `vim` and `nano`, I want to help you avoid some pain and suffering by showing you how you can keep the original of any system file you may edit, and subsequent versions as you modify it going forward.

The Pain of Experience

I wish I could tell you I read this somewhere, or learned it in a course as you are, but no. I modified a configuration file on an nginx (web) server and didn't have the original or a previous version to fall back on.

If it were a simple edit or two, no big deal, but the editing was extensive, and having saved and exited, I couldn't use the undo feature.

To get an original, you may be able to just copy from another server, or a clean build, provided it is running the same version of software, but this takes precious time.

You should also have backups of any production server, but again, restoring from backup or finding a file in backups takes time.

Simple Versioning

Short of using a full repository for your files, like `git`, how can you keep the original and versioned changes to your system files?

The solution is simple. Before you edit, make a copy!

Keeping Versions

If I wanted to edit `/etc/ssh/sshd_config`, for example, I'd first make a copy of it by typing `sudo cp /etc/ssh/sshd_config /etc/ssh/sshd_config.0`. That would make a copy of the file in its original location with a `.0` at the end. That tells me it is revision `0`, or the original file.

If I want to make changes to the present copy of `/etc/ssh/sshd_config`, I don't overwrite `sshd_config.0`, I create a new file, `sshd_config.1`, and so on for further revisions.

If you find your directory getting cluttered, you could delete some of your older versions.

I always keep the original, and the latest change though.

Why The Extra Work?

If you edit a file, which you will do on your Ubuntu Server, you may later find that your edit creates some unforeseen issue and want to look back at what you changed.

If you edited the file, and don't have a record of what you did, this can be a challenge.

If you don't have the original, you can't restore to that and start fresh.

If you do, you can use a program called `diff` to see what changed from the original, or if you have them, later versions, and the working copy.

How Does diff Work?

`diff` tells you what's different between two (or more) files. I find the output confusing if used on more than two files, but it can be done.

You type `diff <file1> <file 2>`.

`diff /etc/ssh/sshd_config.0 /etc/ssh/sshd_config`

will show you the differences between the original copy of `/etc/ssh/sshd_config` (sshd_config.0 in this examplel) and the working or current version, `/etc/ssh/sshd_config`.

Armed with that information, you can troubleshoot more quickly by undoing your changes one at a time, or restoring to a previous version, and implementing the changes one at a time.

How To Restore?

To restore to a previous version, you just use the `mv` command.

`mv` moves a file, but if you move a file to the same location and name of an existing one, the file that was there will be overwritten.

If you want to keep the present version, with the possible errors in it, for troubleshooting, just save it as the latest revision first.

Then, type `mv /etc/ssh/sshd_config.0 /etc/ssh/sshd_config`. Substitute .0 for the revision you want to restore to.

Please practice these steps as you go through the course, whenever we edit system files.

You'll likely see me do it, and remind you, when applicable, both because it's a habit for me, and because it's a habit I want you to get into.