ComS 252 Homework 2: Files and Permissions

Individual assignment

Due September 12, 2023

1 Objectives

In this assignment, you will use file utilities, including the `vim` editor, in a command–line Linux environment. This assignment has rather specific instructions; you will be graded on files being in the correct place, with the correct contents, and having the correct permissions.

2 Build a virtual machine

1. Download the ISO file to initialize the virtual machine for homework.

2. In VirtualBox, create a new virtual machine for this assignment. The default disk size (a few GB) should be sufficient.

3. Set the ISO file as the optical disk, and boot up the VM.

4. Select "Build Hw02 virtual machine" from the boot menu.

5. After installation completes, remove the homework initialization ISO from the Optical Drive. You are encouraged to take a snapshot of the VM at this point, in case you need to roll back to a fresh install.

6. At first boot, the VM initializes itself by fetching and running a script from the server. This requires Internet access, and VPN access if you are off campus. The script will, among other things, create a user account with your ISU username, and accounts `alice`, `bob`, and `chuck`. All user accounts will initially have passwords that are the account name, followed by "`pw`".

7. When the VM shuts down after initialization, you are again encouraged to take a snapshot of the VM. That way, if you make a mistake and accidentally trash the user files, you can easily roll back to a freshly initialized VM.

3 Moving files

Login as yourself.

1. Create a directory named "Images" in your home directory.

2. **Move** all files with names ending in "`.png`" from your home directory, into the directory "Images" you just created.

4 Removing files

Login as yourself. Remove all files with names ending in "`.tiff`" in your home directory.

5 File permissions part 1

Subdirectory `WWW`, in your home directory, is a small website[1] and will be administered by users in the group `webadmin`. This group has already been set up, and currently contains you, `alice`, and `bob`. Adjust the permissions, and group settings, for directory `WWW` and everything contained in it as needed so that:

- Your permissions are unchanged (`rw-` for files and `rwx` for directories).

- Users in group `webadmin` have permission (only) to:

  - View the contents of existing files in or below `~/WWW`.
  - Modify the contents of existing files in or below `~/WWW`.
  - List items in or below `~/WWW` (using `ls`).
  - Create items in or below `~/WWW`.
  - Delete items in or below `~/WWW`.
  - Change into `~/WWW` or any directory below it.

- All other users have permission (only) to:

  - View the contents of existing files in or below `~/WWW`.
  - List items in or below `~/WWW` (using `ls`).
  - Change into `~/WWW` or any directory below it.

6 File permissions part 2

Login as `chuck`. Set the "other user" permissions as needed so that any user may copy `chuck`'s directory `mylib` and any items contained within it. This requires read and execute permission on all directories within the pathnames, and read permission on the files. The owner permissions should remain unchanged (`rw-` for files and `rwx` for directories), and no extra permissions should be granted. The file owner and group should remain `chuck`. The group permissions are irrelevant.

7 Copying a directory

Login as yourself. Copy (recursively) directory `/home/chuck/mylib` into your home directory, but name it `chucklib` instead of `mylib`.

8 A quick `vim` tutorial

There are several useful text editors in Linux. For this assignment, you are forced to use `vim`. For later assignments, you may use `vim` or other editors (such as `nano` or `joe`), but keep in mind that most VMs will not have a GUI. As such, you are encouraged to make yourself a "cheat sheet" for `vim`.

`vi` is a classic, UNIX text editor. `vim` stands for "vi, improved", and is mostly backward compatible with `vi` but has many improvements. On some systems, `vi` is simply a link to `vim`. The main thing to know about `vim` is that it has several *modes*. You can read about these in `vim` by typing

```
:help vim-modes
```

while `vim` is in *normal mode* (`vim` starts in this mode). From most modes, you can get back to *normal mode* by pressing ESC twice (and usually, *once* is enough). To edit a file with `vim` from the command line, use:

```
vim file-you-want-to-edit
```

---

[1]This is just a motivating example. Incidentally, the files are part of the site http://zapatopi.net/treeoctopus/.

Similarly, you can open a file with `vim` in read–only mode with:

```
view file-you-want-to-view
```

Do the following to complete the tutorial.

1. Copy the file named `tutor.txt` from **/usr/share/252** into your home directory.

2. Edit the file with `vim` and follow the instructions. You will be graded on changes you make to the file, so for best results, make only the changes specified in the instructions.

This tutorial is a shortened and adjusted version of the `vimtutor` tutorial, which was designed for 80×25 character displays. The VM display is slightly larger, so you will see more than one lesson at a time.

9   Submitting your work

From your user account, run "`sudo Turnin`" to submit your work. Again, this requires Internet access (and VPN access, from off campus), as this will collect and upload your work to the homework server.

Feedback on your submission is collected in a text file, that you can view later using "`cat submit.log`" or "`less submit.log`".

To shutdown the VM cleanly, run "`poweroff`".