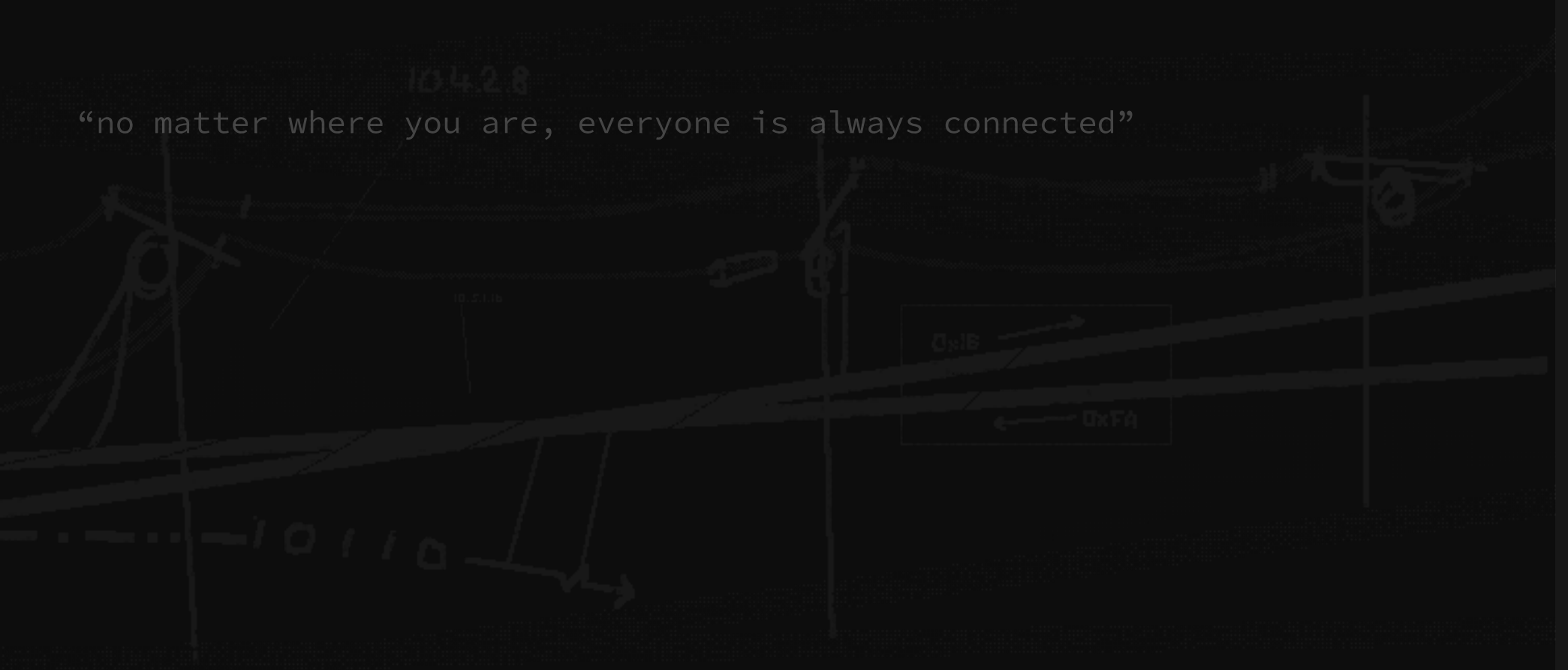


“no matter where you are, everyone is always connected”

01

Linux: A Primer

What’s a Linux?

Linux is an open-source operating system. That means that its source code is open for anyone to view and replicate.

This yields great benefits:

- Modularity
- Customizability
- Efficiency

There are many different unique distributions of Linux catered to specific needs. Linux also tends to be lightweight and usable in various devices beyond a typical desktop.

The Linux Family

Some typical Linux Distributions include

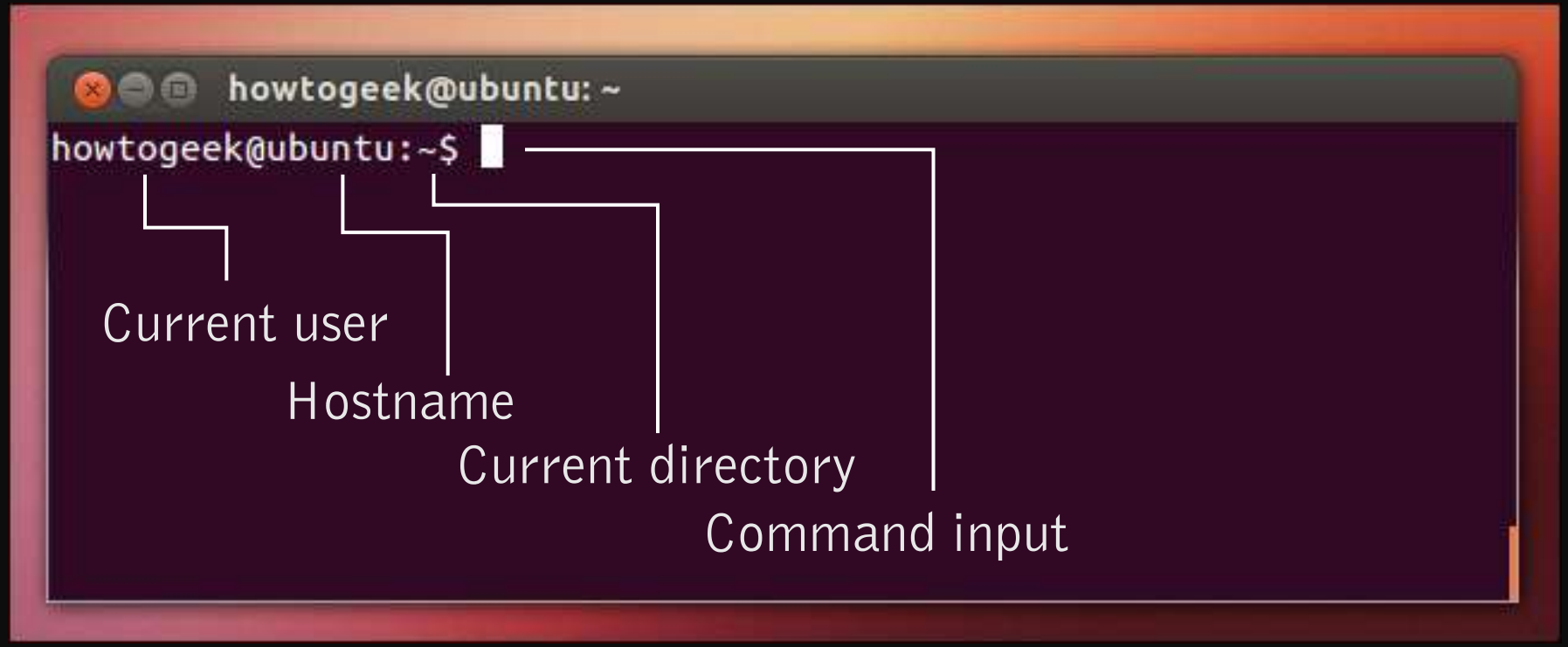
- Ubuntu
- Debian
- Mint
- Redhat
- Fedora

Though they vary in appearance and functionality, they all use the same underlying Linux kernel.

You'll encounter a few of these Linux distributions in CyberPatriot, so it's good to get familiar with them.

Enter the Terminal

Linux's terminal is highly powerful. Most of your tasks will be done here.

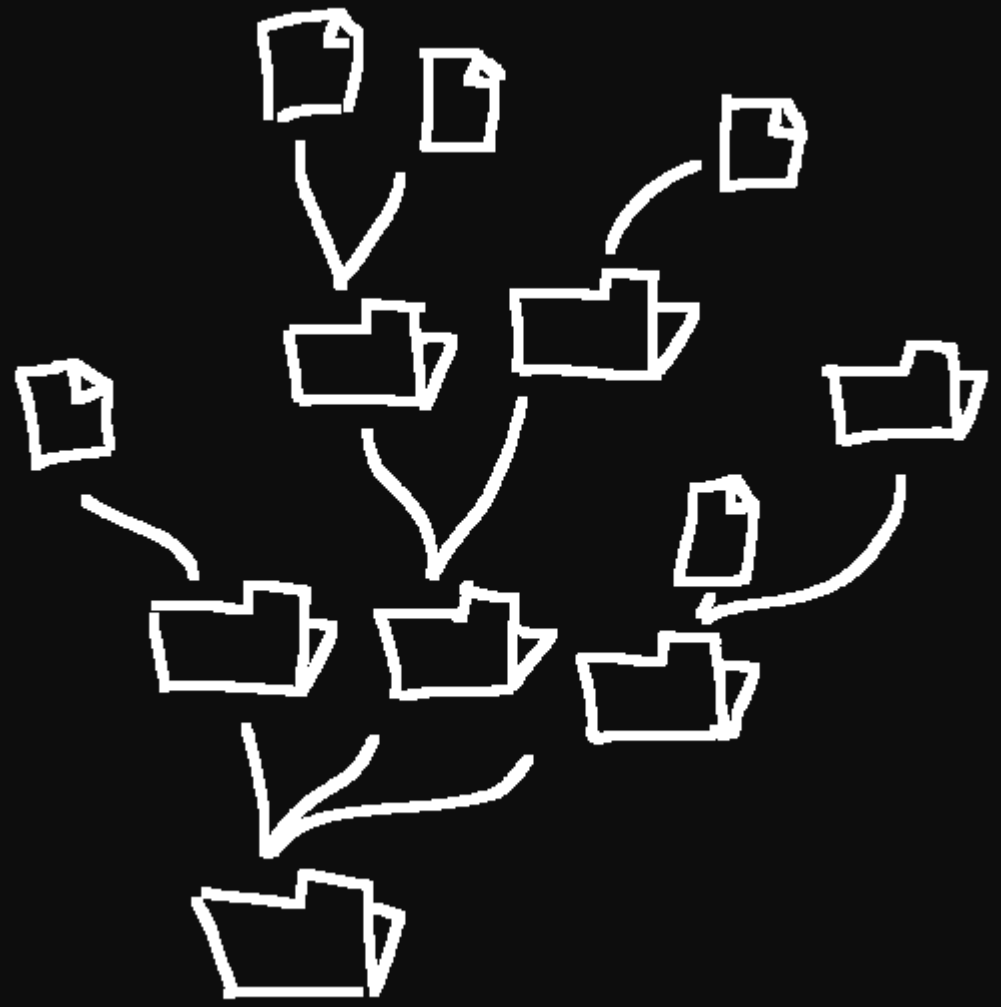


The Right Path

In Linux, every “thing” is a file.

Imagine these files organized in folders, in folders, in folders...

These folders are called “directories.”

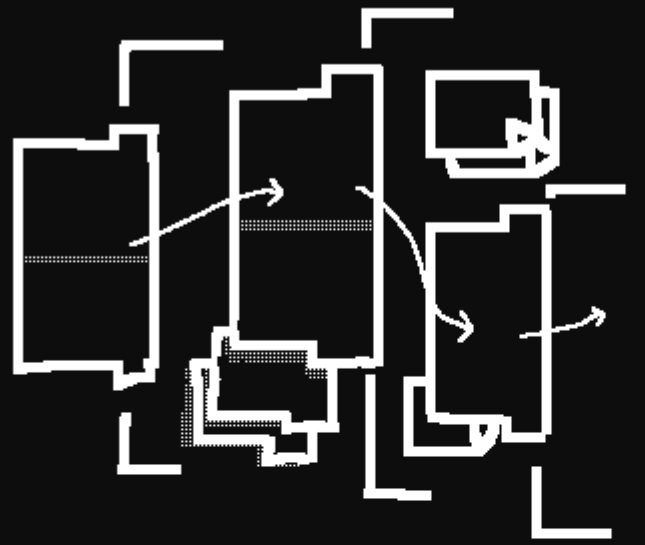


The Right Path

A file path is denoted using the names of the folders that encapsulate that file, with slashes indicating “the next folder down”

- The current folder that you are looking at is denoted by a single dot: “.”

- The next encompassing folder up is denoted by two dots: “..”



/ home / sebastian …

Finding Your Way Around

in terminal

```
# cd [directory]

# cd /var/spool/

# cd /home/

# cd ..
```

Every time you use the terminal you are “looking” at a directory. This directory is called the working directory.

To change which directory you are looking at, use the *cd* command, which stands for “change directory.”

Looking Inside

in terminal

```
# ls
file1     file2     file3     folder
```

To see which files and folders are contained in the directory you are looking at, you can use the *ls* command, meaning “list”.

Often the terminal will show files and folders in different colors (but not always!)

Looking Longer

in terminal

```
# ls -l
total 8
-rw-r--r-- 1 acirr acirr    8 Jul  1 18
drwxr-xr-x 4 acirr acirr 4096 Jun 29 15
```

Commands have additional options that are toggleable by including its flag.

Here, we use the -l flag to list in a long format, showing more details such as file permissions or last-touch dates.

Looking Deeper

in terminal

```
# ls -a
.           ..          .hiddenfile
file1       file2       file3
folder
```

The -a flag lists files that are hidden. Hidden files begin with a “.” and include the special . and .. directories mentioned previously.

Acts of Creation and Destruction

in terminal

```
# rm [file]
# rm -r [file]

# touch [file]

# mkdir [directory]

# rmdir [directory]
```

We now are looking at more commands dealing with creating and removing stuff.

- *rm* removes a file
- *rm -r* removes “recursively” enabling it to remove folders
- *touch* creates files
- *mkdir* and *rmdir* create and remove empty directories

Reading and Editing

in terminal

```
# nano [file]

# cat [file]

# less [file]
```

nano is an intuitive option for editing text files. It is one of many line editors.

If all you need is to view the file contents, *cat* is another option.

For larger text files, consider using *less*.

Searching

in terminal

```
# locate [name]

# find [path] [expression]
# find / -type f -name “lost”
```

These commands can help you find certain files by their name.

Gaining Power

in terminal

```
# sudo [command]
[sudo] password for acirr:
sudo: a password is required

# su [username]

# sudo su
[sudo] password for acirr:
sudo: a password is required
```

Sometimes an action cannot be performed with simple user permissions.

To run a command with elevated (“root”) permissions, run *sudo* before the command.

To log in as the “root” user, or the user with the highest perms, run “sudo su”

What Does *x* Do Again?

in terminal

```
# man [command]
```

If you at all forget what a command does, use the manual!

Each command has its own manual page. You can use the “man” command to open the manual page for a certain command.

Recap

You should know how to use the following commands and their options:

cd
ls
rm
touch
mkdir
nano
cat
less
sudo
su

You should know how interpret file paths such as /home/acirr/Desktop/README.txt

You should know how to gain “root” permissions.