This video helps you get started using Linux.

This video will cover the following topics:

Why should you learn Linux?

Where can you get a machine running Linux?

If you are a Purdue student, how can you use Linux with Purdue's thin linc system?

One of the reasons why Linux is very useful is the command line in terminal. I will tell you how to use command line.

A few frequently used commands will be explained.

Finally, the concept of pipe is described. Pipe allows you to connect several programs together. It is one of the reasons why Linux is very flexible.

E C E two six four uses Linux. If you use any other operating system, it will not be possible to grade your submitted programs. You will definitely receive F in this class.

Let's begin.

Linux is a UNIX like operating system. Since its creation, Linux has been ported to many different types of systems, from supercomputers to embedded systems. Two popular operating systems, eye O S and Android are also UNIX like. In November 2017, the fastest 500 supercomputers in the world were all running Linux. Some autonomous vehicles use Linux after it has been modified to incorporate the real-time functions. Based on wired dot com, at least two thirds web servers run Linux.

A very practical reason for you to learn Linux is that many courses use Linux because grading can be easier.

Linux is supported by Microsoft. Linux is also a critical part of the popular Android operating system used in many mobile phones.

How do you get a computer running Linux? There are many different methods.

The first option is to get a brand new machine and install Linux on it. There are many different variations of Linux, such as Red hat, Ubuntu, and Debian.

If you already have a computer running another operating system, such as Windows, you can install Linux and make your computer dual boot. Dual boot means that the computer has two operating systems. When the system starts, also called booting, you can use one of the two systems.

Another solution is to install a virtual machine, such as Virtualbox. This method allows you to run two operating systems, such as Windows and Linux, simultaneously. This method, however, needs more memory on your computer. You should consider this option only if your computer has at least 8 giga byte of memory. 16 giga byte of memory or more would be preferred.

You can also launch cloud instances. Amazon E C two, Microsoft Azure, Google cloud all support Linux.

If you are a Purdue student, you have another option using the thin linc provided by Engineering.

What is thin linc? It connects to the computer servers managed by E C N. .

E C N means Engineering Computer Networks and it is the I T department of Purdue Engineering.

There are many advantages using thin linc. First, E C N takes care of software update. Second, security is managed by experts. Moreover, these are very fast computers. Since many courses use these computers for grading, an added advantage is that your programs will use the same tools also used by the instructors and the teaching assistants.

How can you use Linux on Purdue campus?

You can connect to E C N computers through thin linc as mentioned earlier.

You may use secure C R T or putty but they are not recommended because some tools cannot run. You can also run thin linc through this web site URL but it is not very stable.

Do not use cyg win or min G W because they are not true Linux.

Finally, do not use telnet because it is not secure.

To use thin linc, download the client program.

Then, connect to

E C E grid dot E C N dot Purdue dot E D U. .

You will see a computer desktop like this one.

Depending on your settings. You may see something like this.

This video will not teach you how to use the graphical user interface because you probably know how to do that already. Instead, this video focuses on using command line on terminal.

To get a terminal, select system tools and choose terminal.

If your desktop looks like the second settings, click the right mouse button, select Applications, System, and you can see the option for Terminal.

When you use a terminal, you will type commands. We also call this the “command line”.

A common question by many students is why to use terminals? Isn’t the graphical user interface better?

Here are several reasons.

First, G U I, graphical user interfaces, are good for humans, but not good for computers. Graphical user interfaces are too complex for computers.

Many things can be done easily using terminals. When you use G U I, the complexity of handing mouse, menu, button, and so on, makes things difficult for computers.

Terminals allow you to control many computers simultaneously. If you get a chance visiting a data center, the system administrators use terminals there.

Finally, knowing how to use terminals give you another valuable set of skills. Terminals allow you to combine multiple programs easily. We will see one example at the end using pipe. It is also easier to automate because there is no need for human to click or drag in a graphical user interface.

After you start a terminal, it looks like this. You will see the command prompt. It is the place where you can type a command.

Bash is the execution environment and it is called shell. You do not need to worry about bash or shell in this video. The number 4.1 is the version of bash.

The next few slides describes several frequently used commands in Linux.

The first command is al as. It means list. It lists the files and directories. Directories are also called folders.

If you add minus al after al as, it shows the long format, including the date and time when a file is created.

If an item starts with d, it is a directory.

If you want to create a new directory, the command is M. K. D. I. R..

It makes a new directory.

After creating a directory, use the C. D. command to enter the directory. It means changing directory.

Linux has many text editors. One of them is called vim. You can use vim to create a text file. In this example, the text file is called P. R. O. G. dot C..

Suppose this is the text file you create. It is a C program, printing 0, 1, 2, to 9. Do not worry about this C program for now. Simply treat it as a text file.

The command C. P. copies a file to another file. This command needs two file names. The first is the name of the source file. The second is the name of the destination file.

The command D. I. F. F. compares two files. If the two files are identical, this command has no output. In this example, since P. R. O. G. 2 dot C is copied from P. R. O. G. dot C, these two files are identical and D. I. F. F. shows nothing.

You can append a line at the end of a file by using the echo command. The symbol greater than greater than means appending at the end. This is called re-direction.

C. A. T. minus N prints a text file with the line numbers.

Since a line has been added to P. R. O. G. 2 dot C, if we use the D. I. F. F. command again, it shows the difference of these two files. Please notice that it shows the line number where the difference occurs.

Another very useful command is G. R. E. P. .

This command takes a word and the name of a file. It finds the word in the file and prints the lines that contain this word.

This is an example printing the lines with the word I. N. T. in the file P. R. O. G. dot C..

The command to delete a file is R. M. .

It means remove. Please be very careful. The command does not move the file to your trash can. The file is deleted permanently. It is irreversible, unless you have a backup of the file.

If you want to rename a file, use the M. V. command. It means move.

In this example, the file P. R. O. G. dot C is renamed to my program dot C. .

Earlier, we have seen using greater than greater than to append to the end of a file.

It creates a new file if the file does not already exists.

The command C. A. T. minus N. prints a text file with line numbers. The output is shown on the computer screen. If this command is followed by greater than greater than and the name of a file, the output is stored into the file.

In this example, the name of the file is output file.

al as shows that a new file is created.

Using C. A. T. minus N. shows this file. Please notice that the line numbers appear twice because the file itself already contains the line numbers.

The last concept cover in this video is called pipe. It is the vertical bar on your keyboard.

It means taking the output of one program as the input of another program.

In this example, the output of C. A. T. minus N. contains the file and the line numbers. Then, G. R. E. P. finds the lines with I. N. T. . Since the line numbers have been added by C. A. T. already, the output of G. R. E. P. also contains the line numbers.

Thank you for watching this video.

I hope you will enjoy the experience using Linux.