# LINUX for BEGINNERS

Open-Source Operating System

Run

Run as Administrator

# What is LINUX?

- An open-source operating system modelled on UNIX.
- Just like Windows XP, Windows 7, Windows 8, and Mac OS X, Linux is an operating system.
- An operating system is software that manages all of the hardware resources associated with your desktop or laptop.
- The operating system manages the communication between your software and your hardware. Without the operating system (often referred to as the “OS”), the software wouldn’t function.

# LINUX

- Linux is an open-source operating system.
- This means that Linux is continuously developed collaboratively.
- Unlike Windows and MAC which are both tied to the respective companies (Microsoft and Apple).
- Not one company own’s Linux development and support.
- Based on statistics, there are at least 100 companies and more than 1000 developers who work together for every kernel release.

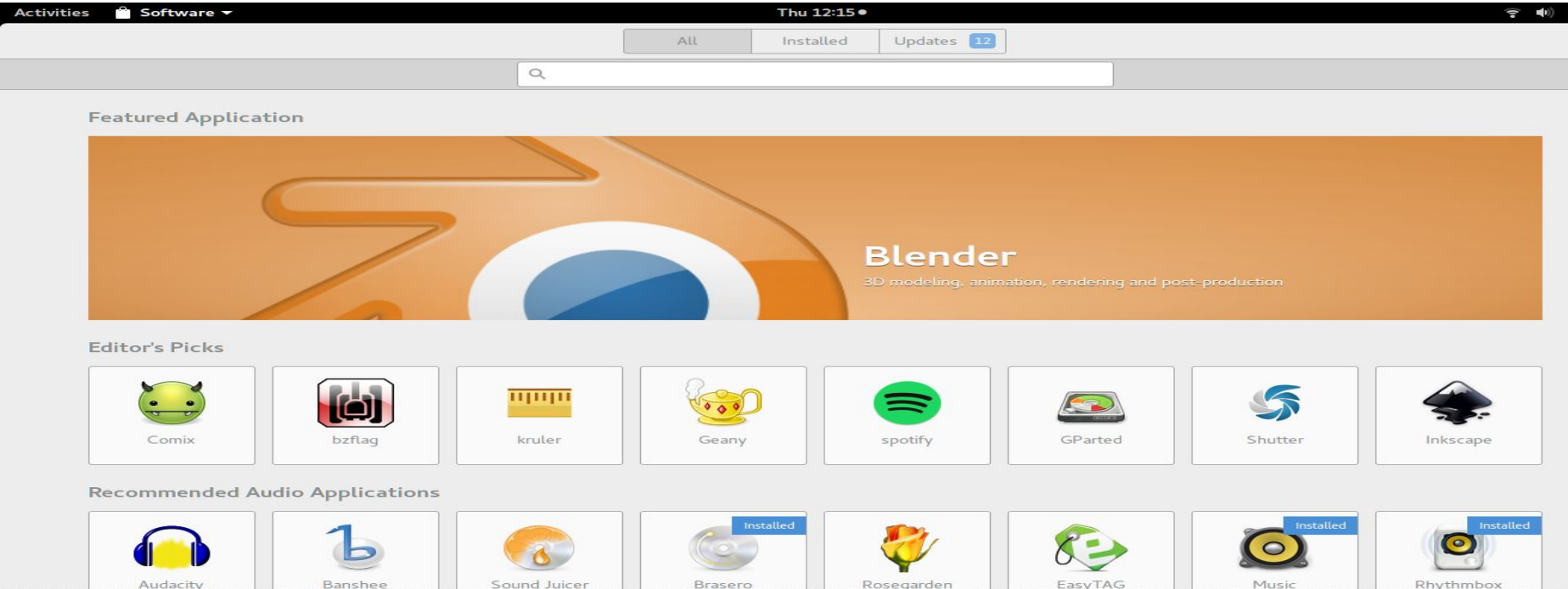
# LINUX

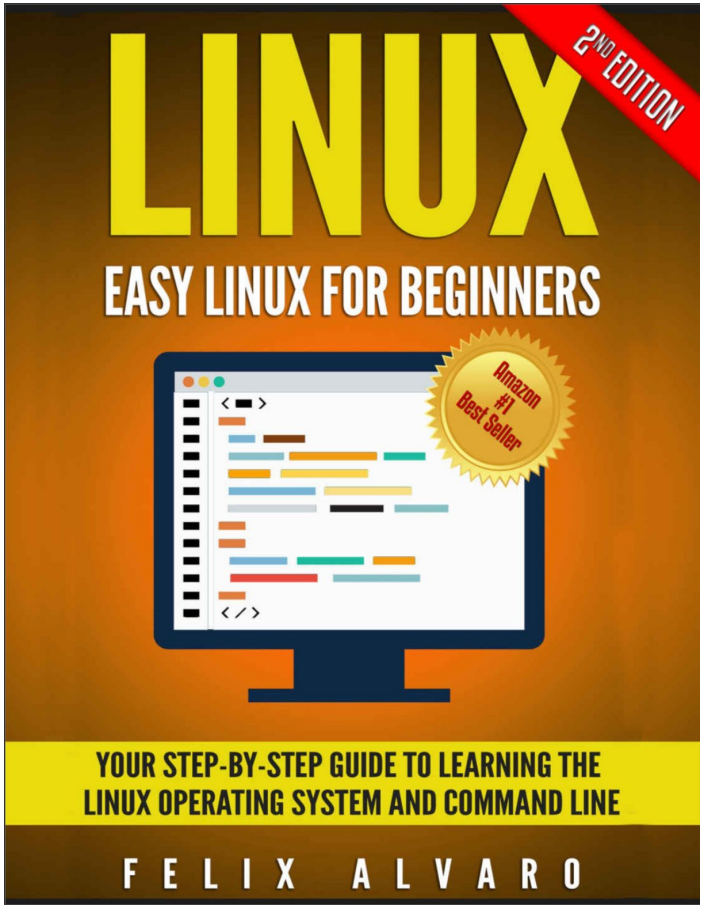
- Linux is composed of a kernel.
- The core control software, plus plenty of libraries and utilities that provide different features.
- Linux is available through many distributions.
- These are what we can call Linux flavours.
- The most popular ones include Arch, SUSE, Ubuntu, and Red Hat.

  https://distrowatch.com/

- Linux has the largest market share when it comes to server OS.

# SOFTWARE CENTER



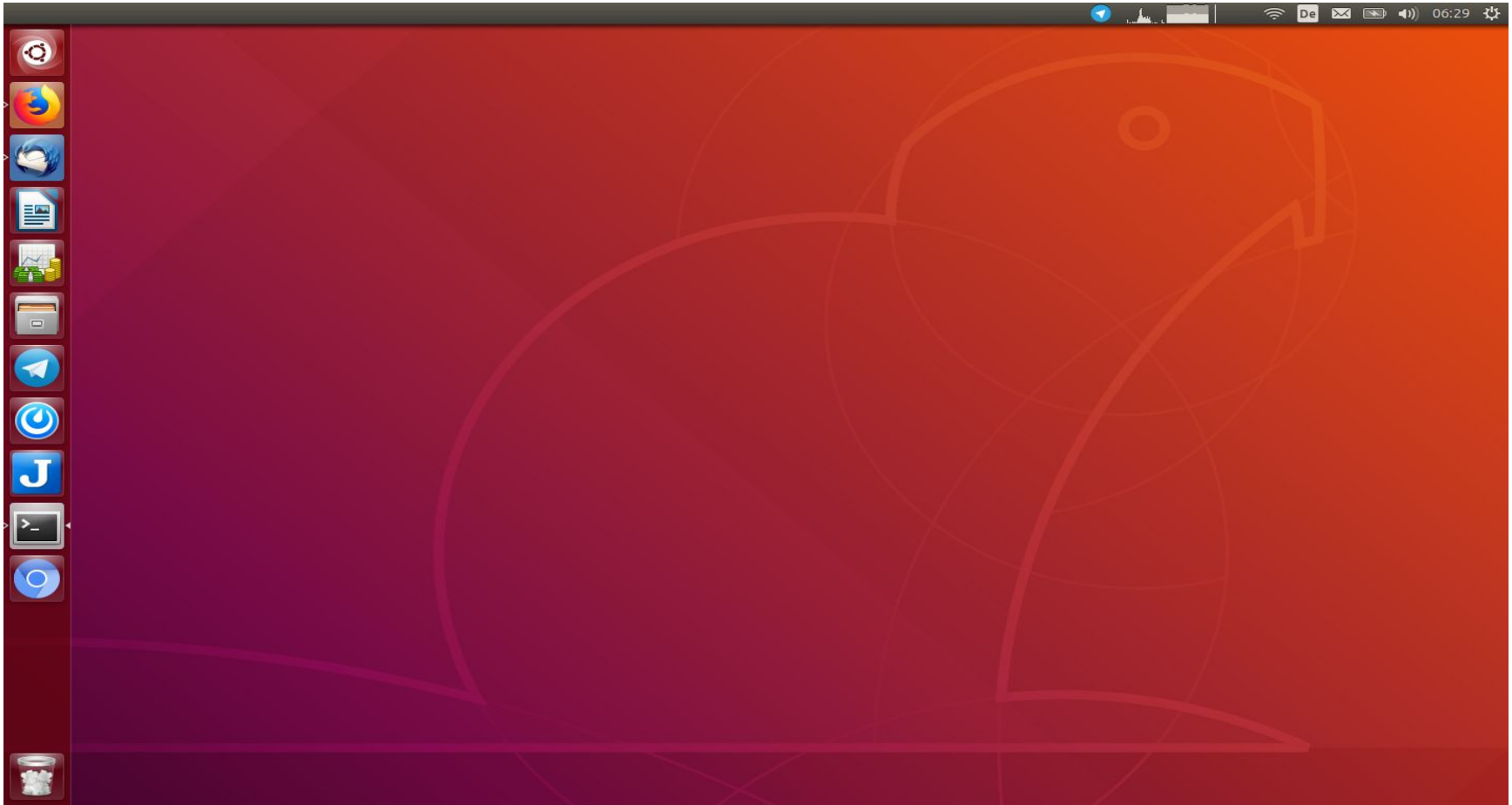

2ND EDITION
LINUX
EASY LINUX FOR BEGINNERS
Amazon #1 Best Seller
YOUR STEP-BY-STEP GUIDE TO LEARNING THE LINUX OPERATING SYSTEM AND COMMAND LINE
FELIX ALVARO

# Files System

- Linux organizes files using a hierarchical system.
- Files are stored in directories and these directories can also contain other directories.
- When you compare the Linux filesystem to Windows, you will find that there are no drive letters in Linux.

| Top-Level Directory | Files that the directory contains |
|---|---|
| / | Single root directory – file system base |
| /bin | Executable files such as Linux commands cat,cp,ls |
| /boot | Files that the boot loaders access during start-up – including the Linux kernel |
| /dev | Files for the different hardware/devices |
| /etc. | Initialization scripts and system config files |
| /home | User directories |
| /lib | Library files which includes driver modules |
| /lost+found | For lost files |
| /media | Mounting removal media filesystems |
| /mnt | Temporary directory for mounted filesystems |
| /opt | For storing application packages |
| /proc | Information on Linux processes |
| /root | Root user home directory |
| /sbin | Executable files for commands used by root user |
| /srv | For services hosted by the system (e.g. FTP, web) |
| /tmp | Temporary directory – deleted during system reboot |
| /usr | Contains subdirectories for program files |
| /var | Log files |

# Ubuntu



# TERMINAL COMMANDS

- The shell is where you can run executable files and shell scripts.
- The shell is also what we call the command line. Commands are written using the general syntax below:
    - command option1 option2 . . . optionN

**FEW COMMANDS BELOW:**

- uptime
    - uptime is the command that shows the duration that the computer has been up.

# COMMANDS

- uname –srv
  - uname is the command to show the operating system name. –s (print the operating system name), -r (print the operating system release), and –v (print the operating system version) are options that you can use for the uname command.
- man
  - The man command is extremely useful, especially for beginners. This displays all the options that you can use. Try to use the command for every Linux command that you encounter.

# Navigation In Directories

- To navigate in the directories on Linux, you can either use the GUI, using the universal text-based search function, or by using the command line.
- You can use the following useful commands in your terminal to:
    - **ls**
        - List down all the contents of a director
    - cd
        - Changes directory

# Navigation In Directories And Commands

- You can use the following useful commands in your terminal.
  - cd ~
    - the tilde (~) sign signifies the user’s home dir – change dir to home directory.

# Navigation In Directories And Commands

- You can use the following useful commands in your terminal.
    - cd ..
        - Means to change directory one level up. For example, you are currently /home/daniyal/, using the command will take you to /home/

# Navigation In Directories And Commands

- You can use the following useful commands in your terminal to: (cont ..)
  - mkdir
    - A command used to create directories.

# Navigation In Directories And Commands

- pwd
  - Short for present working directory. This command will display the directory where you are currently in.
- touch
  - This command creates the file.

# Navigation In Directories And Commands

- You can use the following useful commands in your terminal to: (cont ..)
  - cat test.txt
    - Command to print all the contents of test.txt in the screen
  - cp text.txt /home
    - Copy contents of text.txt to /home

# Navigation In Directories And Commands

- mv text.txt /home
  - Move the file text.txt to the /home/ directory. You can also use this command to move the entire directory to another directory.

~ $ sudo rm -rf /

# Navigation In Directories And Commands

- You can use the following useful commands in your terminal to:

  (cont ..)

  - rm text.txt
    - Delete the file text.txt.
  - hostname
    - System host name

# Navigation In Directories And Commands

- hostname -I
  - Display the IP addresses of the host
- man
  - This command displays all the options that you can use. Try to use the command for every Linux command that you encounter.

- find / -name “linux*”
  - This command is use for searching using the command line. The command here will search for any file or directory with a name that starts with linux
- uname -a
  - This command displays information about the machine, the processor architecture, and the operating system details.

- lscpu
  - This command returns more information about the system such as the number of CPUs and the CPU speed.
- df -h
  - This command displays the disk space usage in all of the mounted devices. The -h option presents the results in a human-readable output, using G for gigabytes or M for megabytes sizes.

- du /home/edulaney/files/
  - This command displays all the files inside the specified directory and their corresponding file sizes. You can also specify a filename.
- du -s /home/edulaney/files/
  - The –s option provides the total file size of the specified directory.

# Navigation In Directories And Commands

- You can use the following useful commands in your terminal to: (cont ..)
  - date
    - Show the current date and time
  - cal
    - Show this month's calendar

# Navigation In Directories And Commands

- w
  - Display who is online

# Commands

- apt-cache search .
  - To get a list of all packages.
- info
  - Shows online information about a command
- whatis
  - Shows a short description of a specific keyword
- type
  - Shows the location of a command file

$

$ sudo

# Commands

- apt-get install package-name (advanced package tool)
  - This command use to install packages to your computer.
- apt-cache search keyword
  - This command will download the specific package name that you want to install. In case you do not know the package name, you can search for a keyword.

# Commands

- bg
  - Run a program or a process in the background
- free
  - Check for the free memory
- kill
  - Stop a process

# Commands

- nice
  - Run a program with a low priority.
- ps
  - Show current running processes
- top
  - Show list of CPU and memory utilization of processes

# Commands

- su -
  - To switch to root while in the shell,  input your root password. Changing to root password while in the shell environment will allow you to run tasks that only administrators and superusers can do.
- shutdown
  - Turn off computer

# COMMANDS

## USERS ROLES AND SUDO

sudo su <switch to root user>
sudo apt-get install <package-name>

# COMMANDS

## COMMAND COMPLETION AND COMMAND HISTORY

- Unam and enter tab
- Arrow Up/Down
  - Display the previous commands from the more recent going to the oldest entered
- Arrow Right/Left
  - Moves the cursor one character to the right/left
- CTRL key + A
  - Transfers cursor to the beginning of the line

# COMMANDS

- CTRL key + E
  - Transfers cursor to the end of the line
- Delete key
  - The character under the cursor is deleted
- Backspace
  - The character to the left of the cursor is removed
- CTRL key + R
  - Search for a particular command from the command history. After you use CTRL key + R, type the first few letters of the command that you want to use

# COMMANDS

## FILES, DIRECTORY AND EDITOR

Touch, ls, mkdir and vi

## SCRIPTING

A script is a program that can be interpreted by a shell or a compiled program. We call them shell scripts in Linux because most scripts are run in bash or in any other shell. Scripts are useful in automating and simplifying administrative tasks, log monitoring of the system, and data processing.

# FILES PERMISSIONS

chmod 777 <filename>

0 No permission

1 Execute Permission

2 Write Permission

4 Read Permission

# COPY, MOVE AND REMOVE

cp filename path

mv filename path

mv filename

# LOAD AVERAGE

- uptime
  - uptime is the command that shows the duration that the computer has been up.This command prints the load average for the last one, five, and fifteen minutes.
- uname –srv
  - uname is the command to show the operating system name. –s (print the operating system name), -r (print the operating system release), and –v (print the operating system version) are options that you can use for the uname command.

## SEARCH USING COMMAND LINE

find <path> “search-value”*

## CPU INFORMATION

uname -a

lscpu “The command lscpu prints CPU architecture information from sysfs and /proc/cpuinfo as shown below”

cat /proc/cpuinfo “You can simply view the information of your system CPU by viewing the contents of the /proc/cpuinfo file with the help of cat command as follows”

# CHECK DISK SPACE

df -h

du /home/edulaney/files/

du -s /home/edulaney/files/

# Install, remove and search software with package manager.

apt-get install <package-name>

apt remove <package-name>

apt-cache search <keyword>

# ESSENTIAL COMMANDS

Info (Shows online information about a command)

Man (Shows details of a command) (ls, cat)

Whatis (Shows a short description of a specific keyword) (ls, cat)

Type (Shows the location of a command file) (man , cat, touch)

Alias (Assign a command alias – especially useful for long commands)

Unalias (Remove command alias)

# ESSENTIAL COMMANDS

Ln (Create links to files and directories) (14)---------

Whereis (Search for executable files)

Which (Search for files in the directories part of the PATH variable)

Dd (Copy lines of data)

Diff (Display the results of comparing two files)

More (Show a text file one page at a time – display can only go forward)

Less (Show a text file one page at a time – display can only go forward and backwards)

# ESSENTIAL COMMANDS

Wc (Display the count of the number of characters, words, and lines in a file)

Cut (Get sections of text in a file)

Grep (Display results of finding expressions in a file)

Sed (Perform editing commands, then copy to a standard output)

Split (Specify a size to break a file into)

Sort (Arrange the lines in a file)

Uniq (Keep unique lines in a file and delete duplicates)

# ESSENTIAL COMMANDS

Compress (Use to compress a file)

Uncompress (If a file was compressed with a compress command, use this to decompress)

Gunzip (Use GNU Zip to decompress files)

Gzip (Compress files with GNU Zip)

Tar (Archive files with one or more directories)

Bg (Run a program or a process in the background)

Free (Check for the free memory)

# ESSENTIAL COMMANDS

Kill (Stop a process)

Nice (Run a program with a low priority)

Ps (Show current running processes)

Top (Show list of CPU and memory utilization of processes)

Reboot (Restart the computer)

Shutdown (Turn off computer)