Introduction to Linux Masterclass

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> **whoami**

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> curriculum

Day 1: Getting Started
- Brief Linux history
- Why we should learn it
- Environment setup
- The Linux filesystem

Day 2: Command-line basics 1
- Navigating around the system
- Finding stuff
- File & directory operations
- Text editing
- Getting system information

Day 3: Command-line basics 2
- Managing software
- Networking operations
- Managing processes
- Managing users
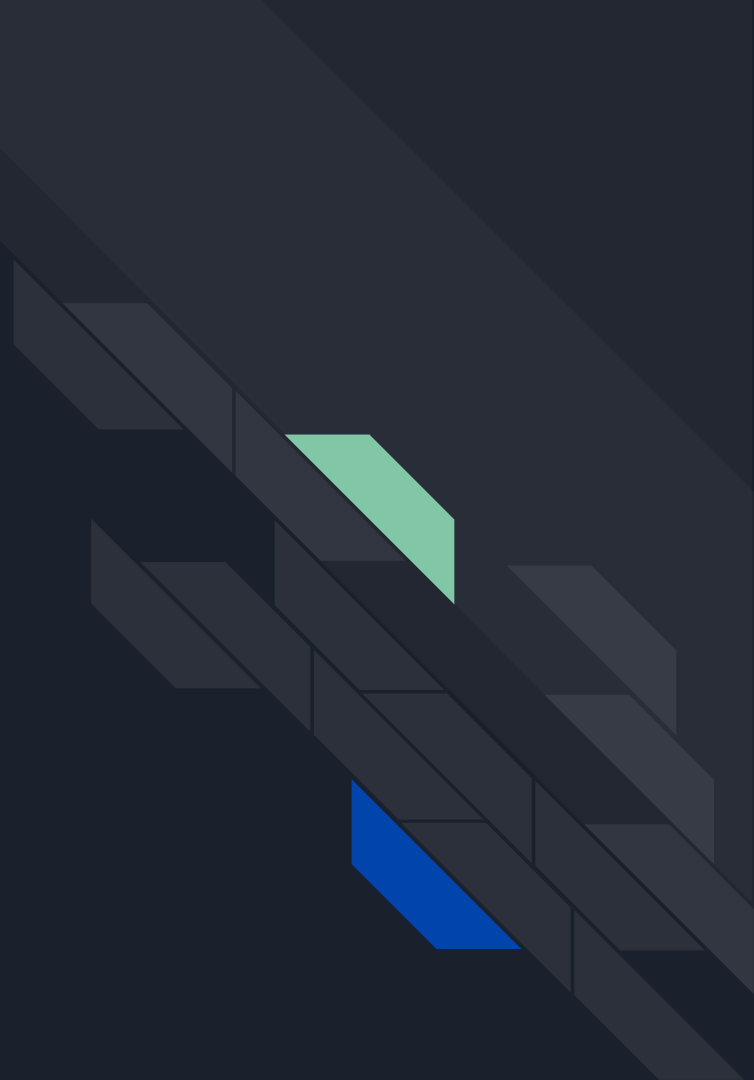- Managing permissions
- A note on Bash scripting

Day 4: Kali Linux
- Brief intro to Kali Linux
- Demo: Cracking a WPA key
- Q&A Session

> history of Linux

- Created by Linus Torvalds in 1991
- Released as a free and open-source project
- Drew attention from developers all around the world who started to contribute

- Development still in progress: https://github.com/torvalds/linux
- With the rise in popularity, came its adoption into various kinds of systems used by people

> where it is used

- Desktop systems eg. Ubuntu, Fedora, Kali Linux
- Servers eg. CentOS, Ubuntu Server
- Mobile devices eg. Android
- Embedded systems eg. Smart TVs, Automobile Infotainment systems
- Networking equipment eg. Routers, Switches

> so what then is this thing, 'Linux'?

- Linux is an operating system kernel
- An operating system serves as an interface between computer hardware and the users, facilitating interaction and doing resource management
- The kernel is to the operating system what the heart is to the human body
- It handles things like device management, process management, memory management, etc.

> comes Linux distributions …

- Just as the human heart can't do much good on it's own, the Linux kernel is useful when integrated with other things eg. a nice Graphical User Interface
- Different companies (and individuals even) have built complete Operating Systems on top of the Linux kernel eg. Canonical has built Ubuntu, Google has built Android, Offensive Security has built Kali Linux
- All these different operating systems are what we call Linux distributions (or Linux distros)
- List of Linux distros: https://distrowatch.com

> the perks of Linux

- Free and open-source (who doesn't want free things ?)
- Stability and reliability
- Performance
- Community support
- Security
- etc.

> installing Linux (or any operating system)

2 ways:

a)   On bare metal
b)   As a virtual machine

-   For starters, the second method is preferred
    1.   Download and install virtualization software eg.
         Virtualbox
    2.   Get the OS installation file (iso file)
    3.   Install it on the virtualization software and start using
         it

> practical

Virtualbox:

- https://www.virtualbox.org/wiki/Downloads

Kali Linux (what we will be using):

- https://www.kali.org/get-kali/#kali-virtual-machines

> the Linux filesystem

/ - root directory of the entire filesystem hierarchy
/bin/ - essential user command binaries
/sbin/ - system binaries
/boot/ - static files of the bootloader (**DON'T DELETE ANYTHING HERE**)
/mount/ - serves as a mount point for removable media devices
/dev/ - used by the kernel to manage hardware devices
/root/ - home directory for the root user
/home/ - user home directories eg. /home/nemuel for the user 'nemuel'
/tmp/ - temporary files
/var/ - variable files eg. logs
/usr/ - multi-user utilities and applications

NOTE: Different distributions may have other different directories

> some differences from Windows

- Directory structure is unified in Linux
- Forward slashes instead of backslashes (Windows: C:\Users\Nemuel, Linux: /home/nemuel)
- Case sensitivity eg. music is not the same as Music
- File extensions
- Command-line adoption (historical context, target audience)
- File permissions enforcement

Q&A