FA2022 Week 01

Setup

Anusha and Nathan

Slide Styling Guidelines

- Remove this slide once you have read the guidelines
- Do not put "SIGPwny" or "Meeting" or "Seminar" (or synonyms) in the title
  - Unless it is for info meetings or the Recursive Meeting :)
- Use dashes ("-") for bullet points
- Use straight quotes (""), not smart quotes (“”)
- Avoid moving text boxes for titles and headings
  - Unless they are all consistently moved!
- Stick to SIGPwny theme colors in the color picker
- Do not make text too small (font size 20 is the limit)
- Reference Brand Guidelines here:
  - https://docs.google.com/document/d/1SioiiGVKIwm0sn56YOr_ESFkqx1HeAv7JfERbeI_AoM/edit

Announcements

- CSAW this weekend
  - Free pizza! 🍕
- Fall CTF registration open
  - fallctf.sigpwny.com

What is SIGPwny?

- Computer Security Club at UIUC
- Largest Special Interest Group in ACM@UIUC

Don't talk to me or my child ever again

Two Meetings/Week!

Traditional Thursdays

15 Minutes Talking, **45** Minutes Doing

6-7PM Siebel CS 1404

Seminar Sundays

1+ hours talking, many hours doing

2-3PM Siebel CS 1404

Code of Conduct

1. **Be respectful.**
2. **Be inclusive.**
3. **Nothing illegal.**
4. **No NSFW or suggestive content.**
5. **Don't spam.**
6. **Use common sense.**

Pwny CTF (ctf.sigpwny.com)

- Create an account right now!
- Where we put our challenges for you to build hands on experience
- Solve challenges, find flags, submit flags on website

WARNING before we go any further!

(The “Don’t Get Arrested” Slide)

- We will teach you things that you could use unethically & illegally
- https://www.law.cornell.edu/uscode/text/18/1030
  - Read it!

- CFAA TLDR
  - Computer Fraud and Abuse Act
  - Attacking “protected” computers
  - Anywhere between a fine and **TWENTY** years in jail.

- If you don’t have EXPLICIT permission to break into it, **DON’T**

- We are NOT lawyers and CAN’T give you legal advice

Marcus Hutchins, Controversial Hacker who saved the internet, got arrested for past crimes.

We are NOT suggesting, telling, or implying you should actually do these things. By participating in this club and agreeing to our Code of Conduct, you agree that your actions are your own and you will deal with the consequences.

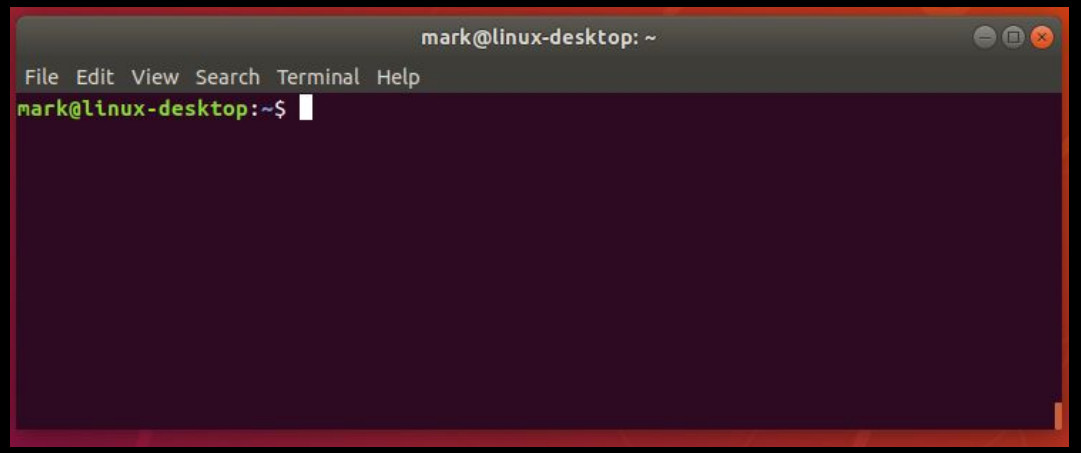
sigpwny{setup}

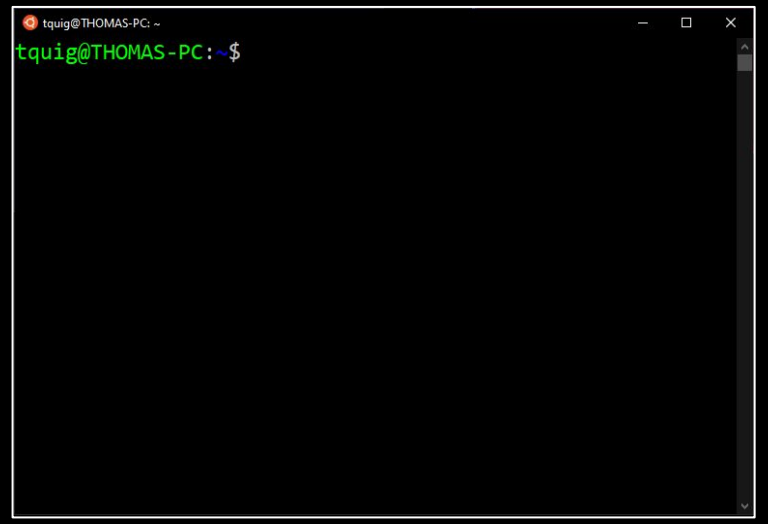
Table of Contents

> The Terminal

"It’s where things happen" - Ravi

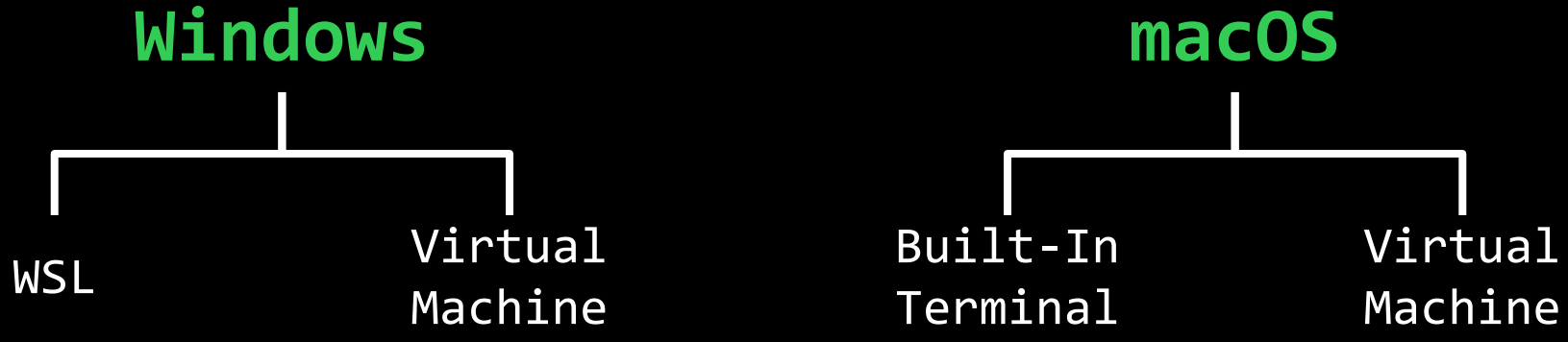

⌥⌘1
/dev/ttys000
→ CSAW2020 ls
bard grid kui_blox1_sol.png
bard.hop grid_solve.py libc-2.27.so
ezbreezy krakme.exe solve_ezbreezy.py
→ CSAW2020


mark@linux-desktop: ~
File Edit View Search Terminal Help
mark@linux-desktop:~$


tquig@THOMAS-PC: ~
tquig@THOMAS-PC:~$

Linux

You’re good to go!


Windows
WSL
Virtual Machine
macOS
Built-In Terminal
Virtual Machine

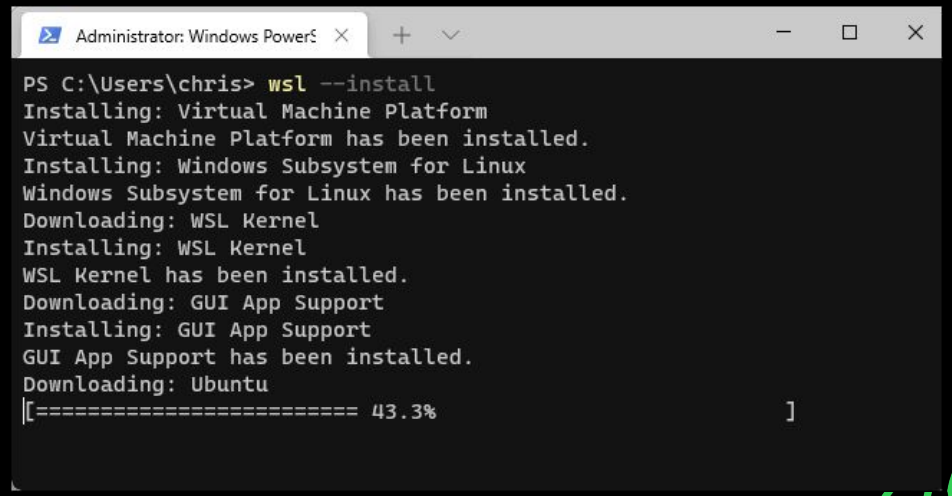
PowerShell? Command Prompt?

- Those are shells too!
- However, they're limited in tools and are Windows-based terminals, not Linux-based

Windows Subsystem for Linux

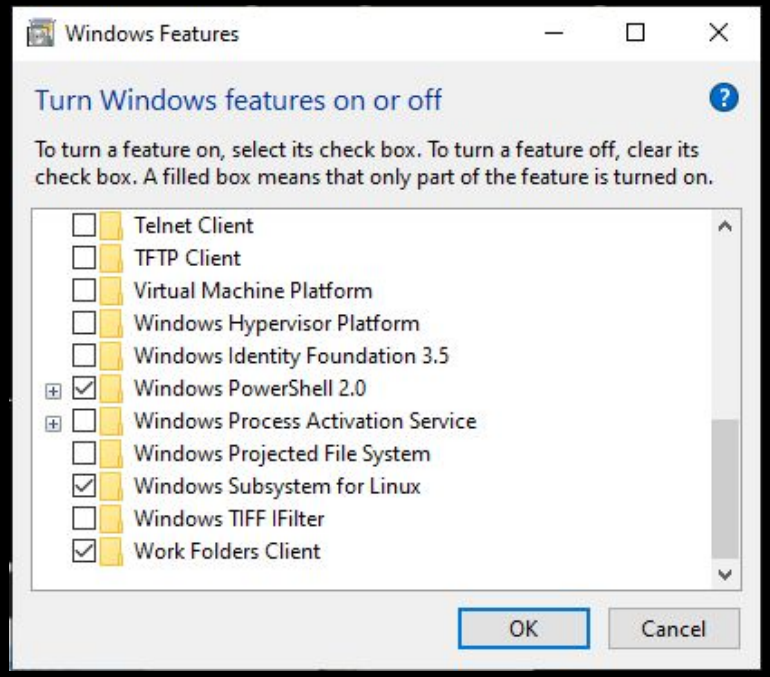
Installing WSL

- Open command prompt as administrator
  - (Start button → type **cmd** → right click → open as administrator)
- Type **wsl --install**
- Restart computer
- Open command prompt
- Enter WSL by typing **wsl**
- You now have a linux shell



WSL - Older Windows 10 Versions

- Go to the Windows search bar
- Search "Turn Windows features on or off"
- Check "Virtual Machine Platform" and "Windows Subsystem for Linux"
- Restart

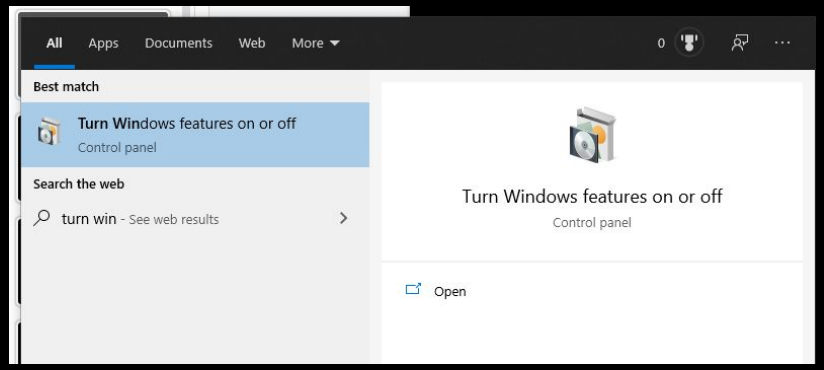


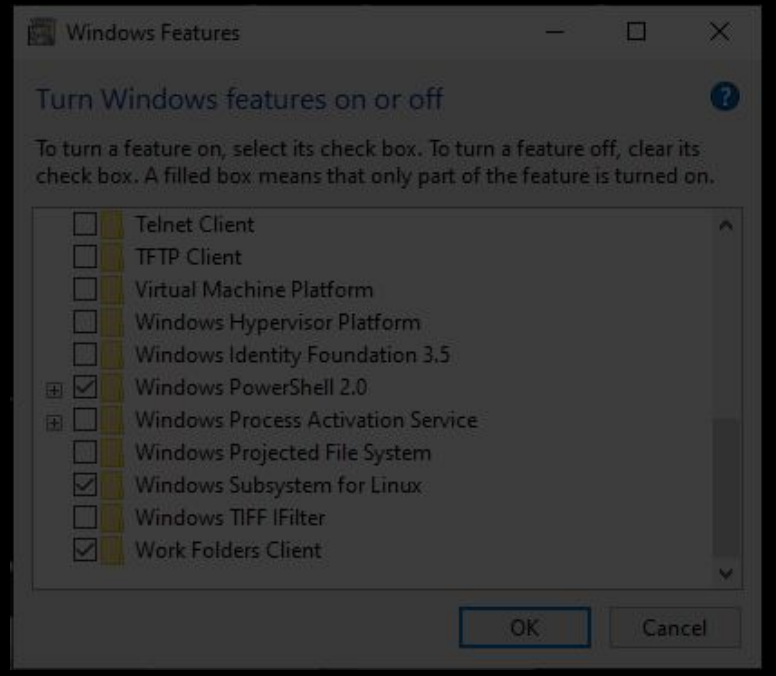
WSL - Older Windows 10 Versions

- Open the Microsoft Store and search for "Ubuntu"
-

Windows Subsystem for Linux

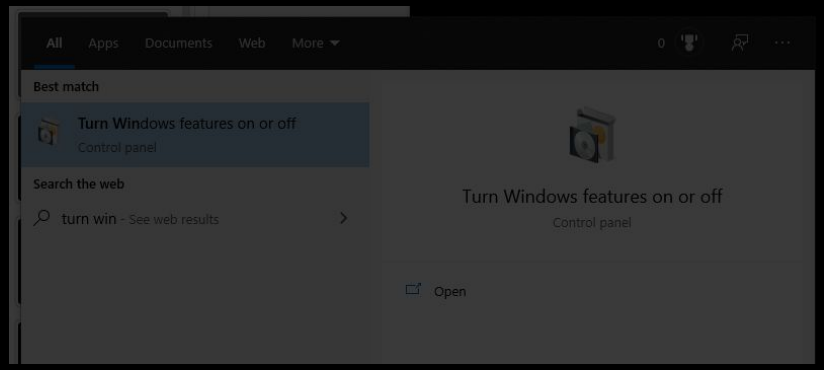
⊞ + S → Search “Turn Windows features on or off” →

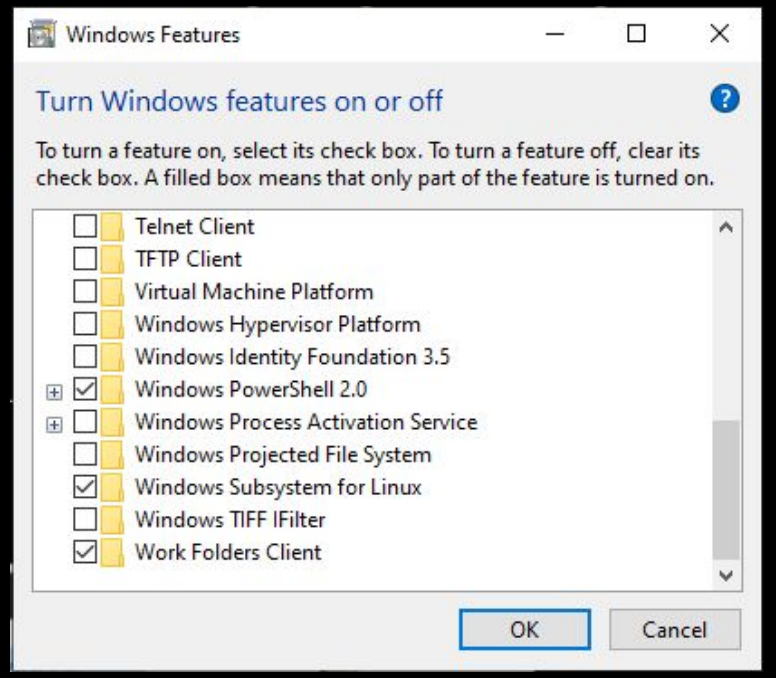




Windows Subsystem for Linux

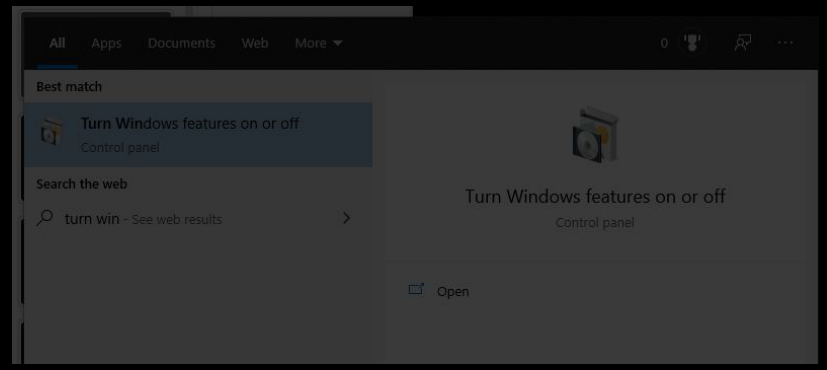
⊞ + S → Search “Turn Windows features on or off” →

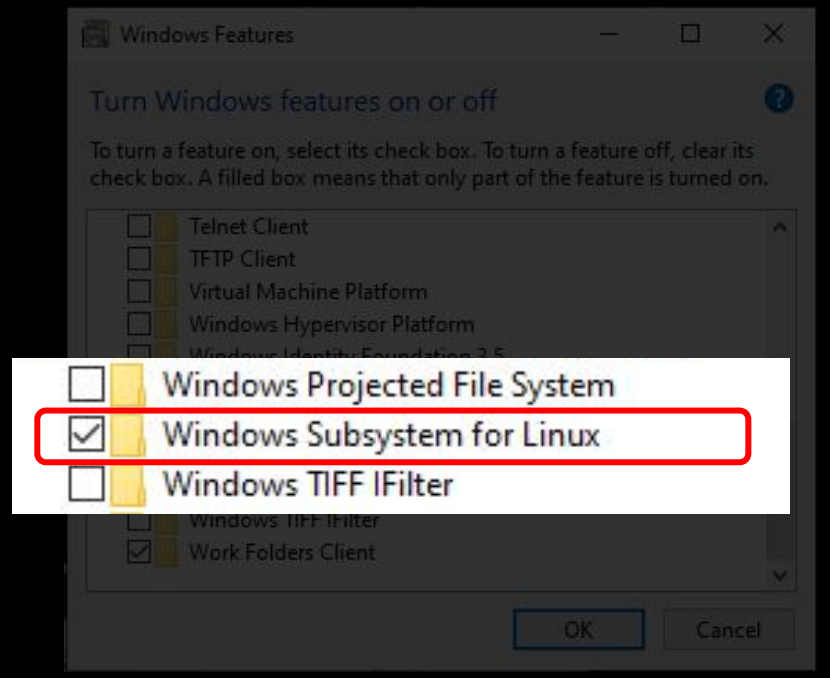




Windows Subsystem for Linux

⊞ + S → Search “Turn Windows features on or off” →



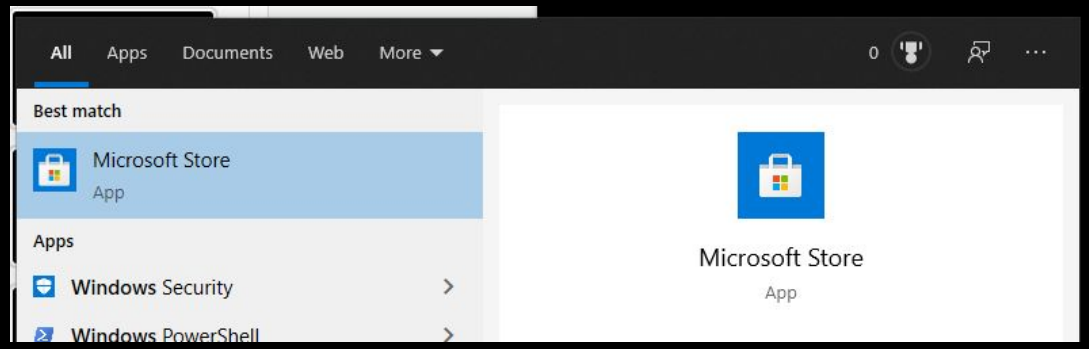


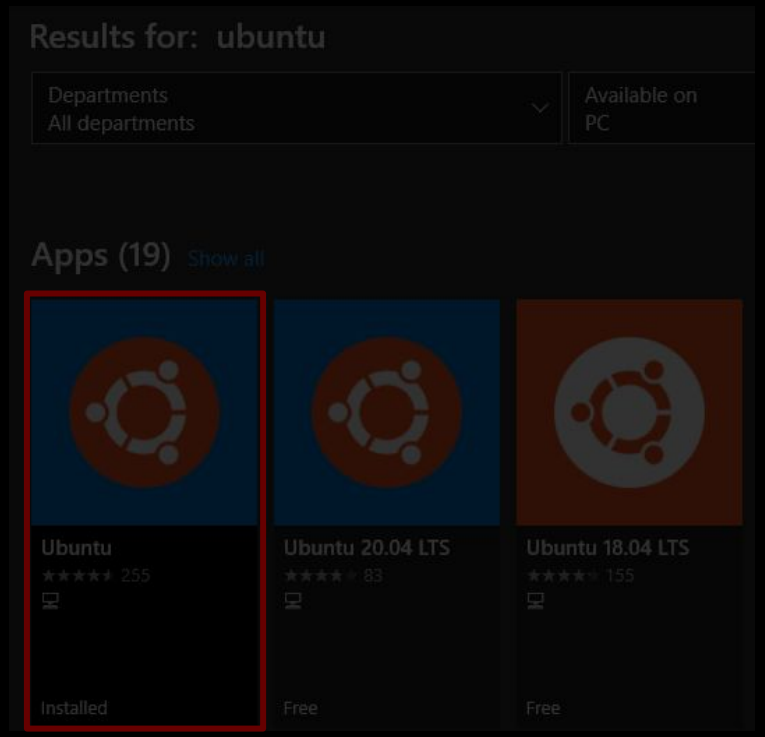
Restart!

Go set this up!

Getting A Terminal

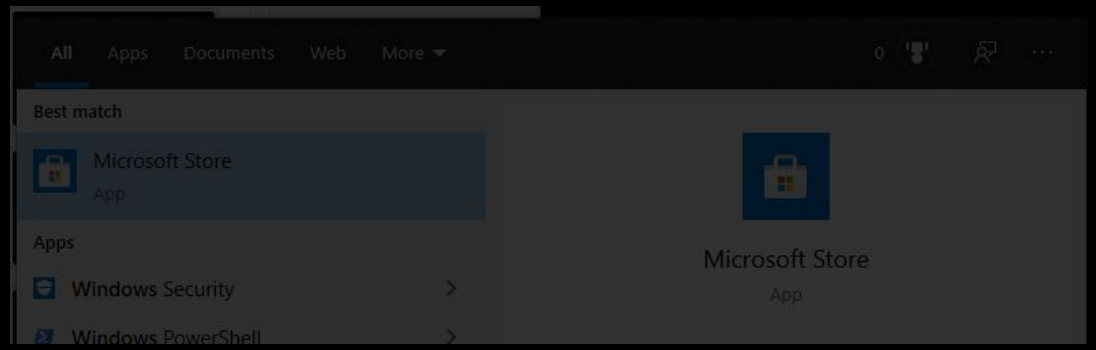
Open the Microsoft Store → Search “Ubuntu” →

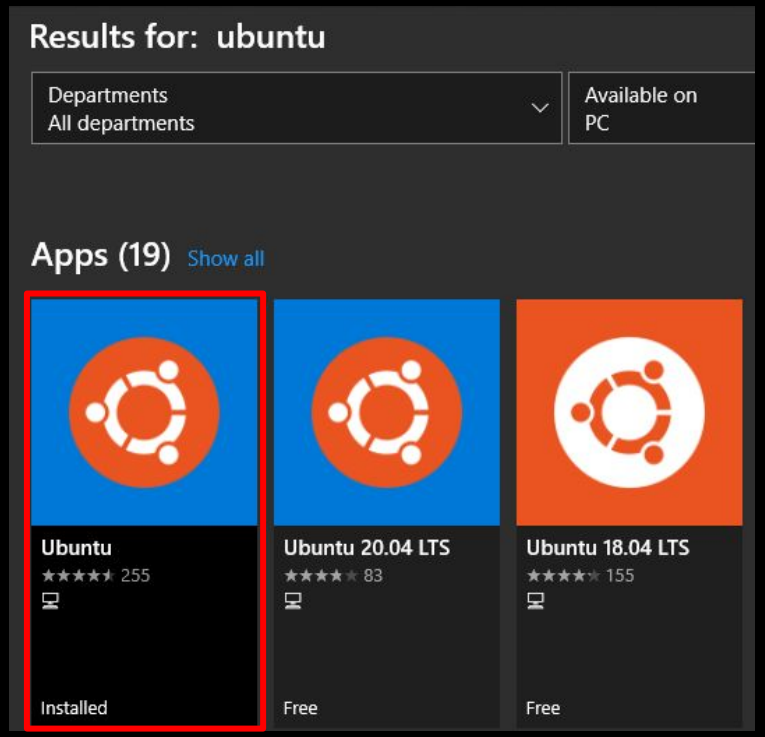




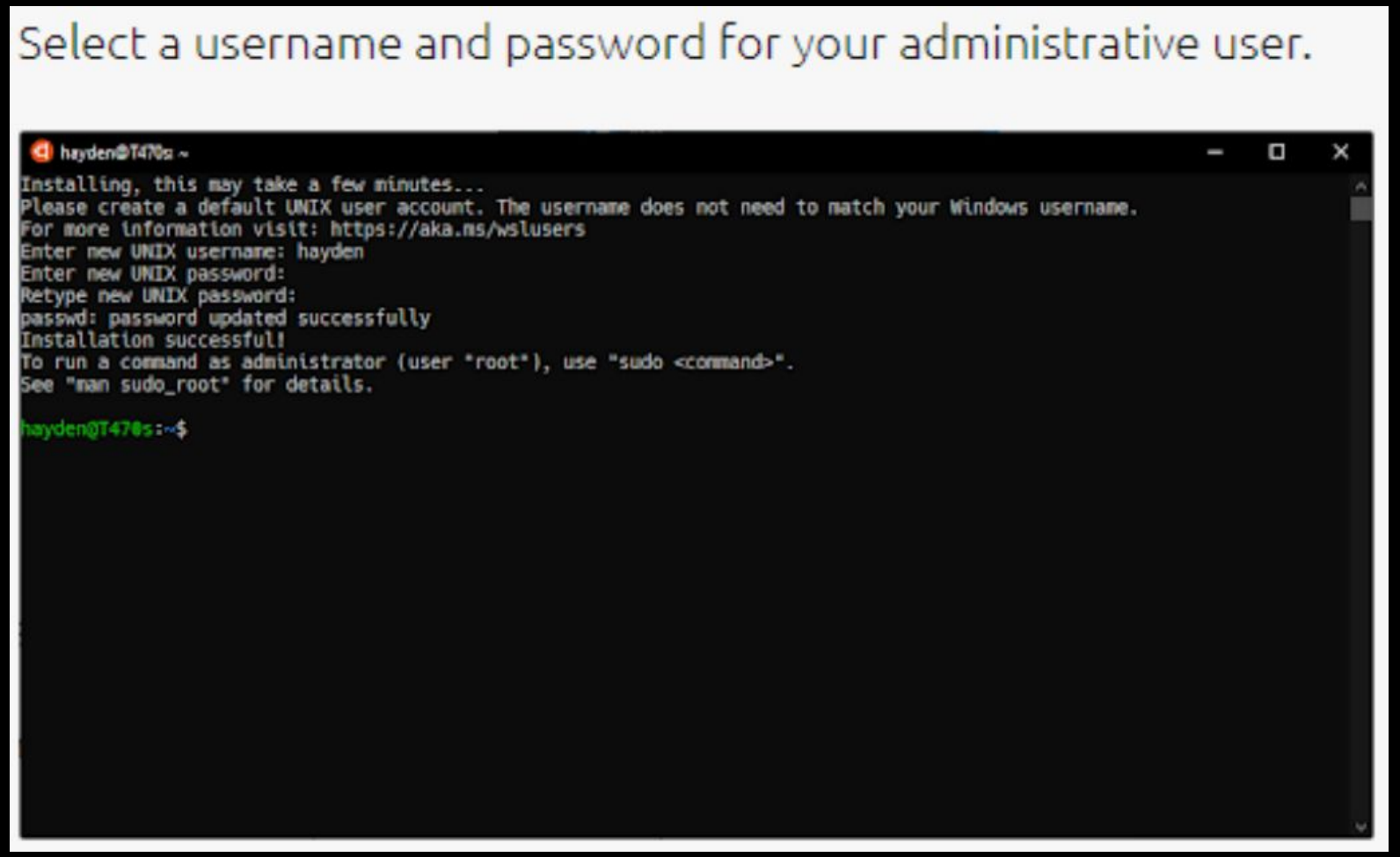
Getting A Terminal

Open the Microsoft Store → Search “Ubuntu” →





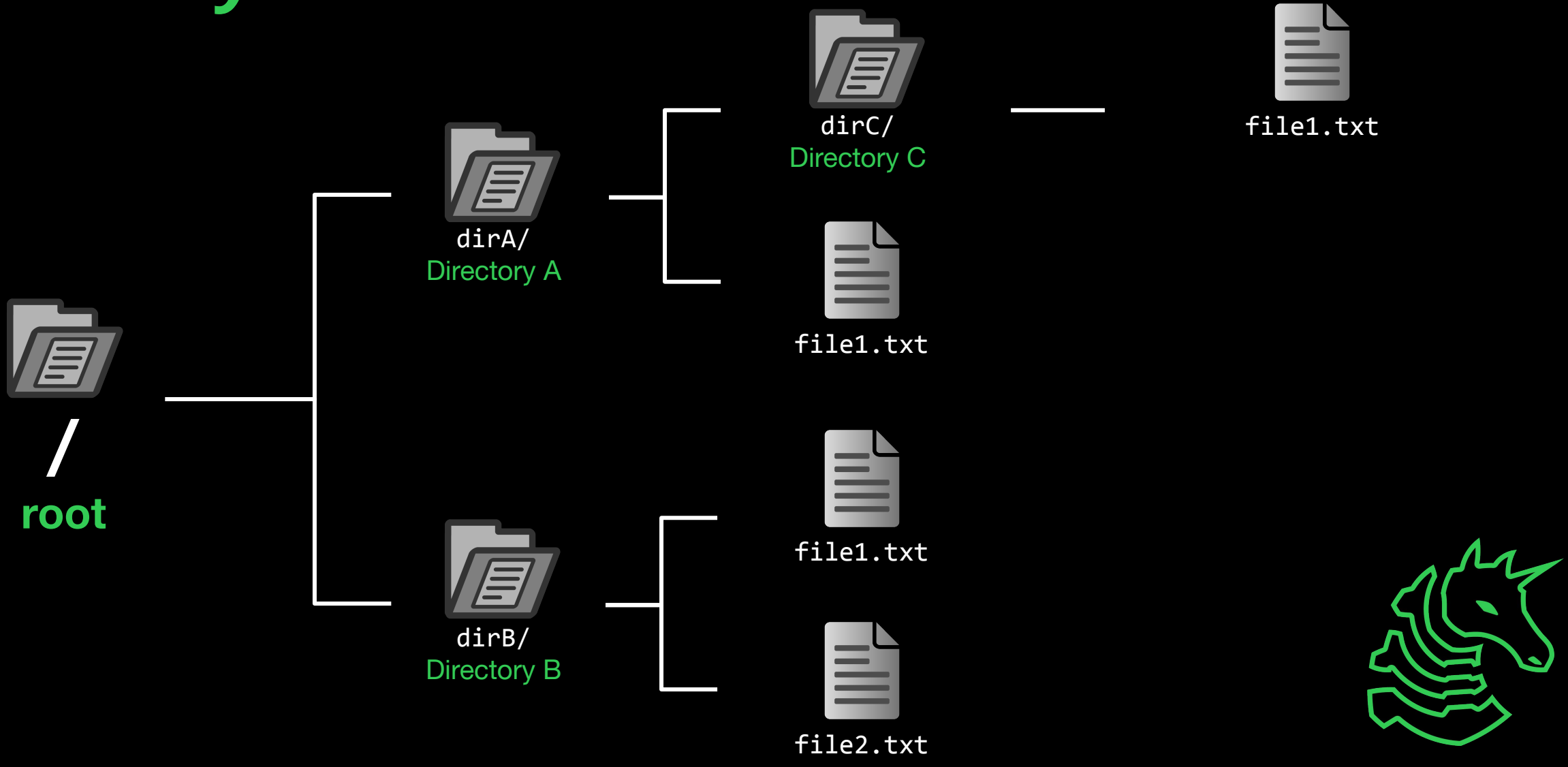
Set a "root" user



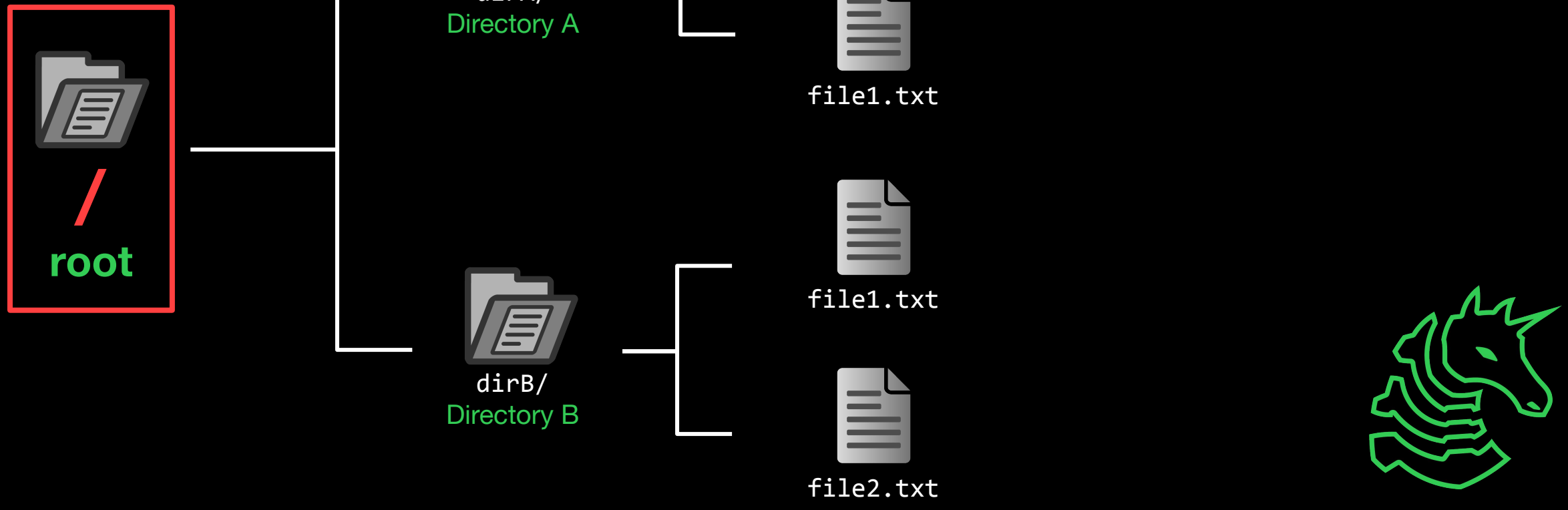
macOS Terminal

Command
+ Space → Search “Terminal” →

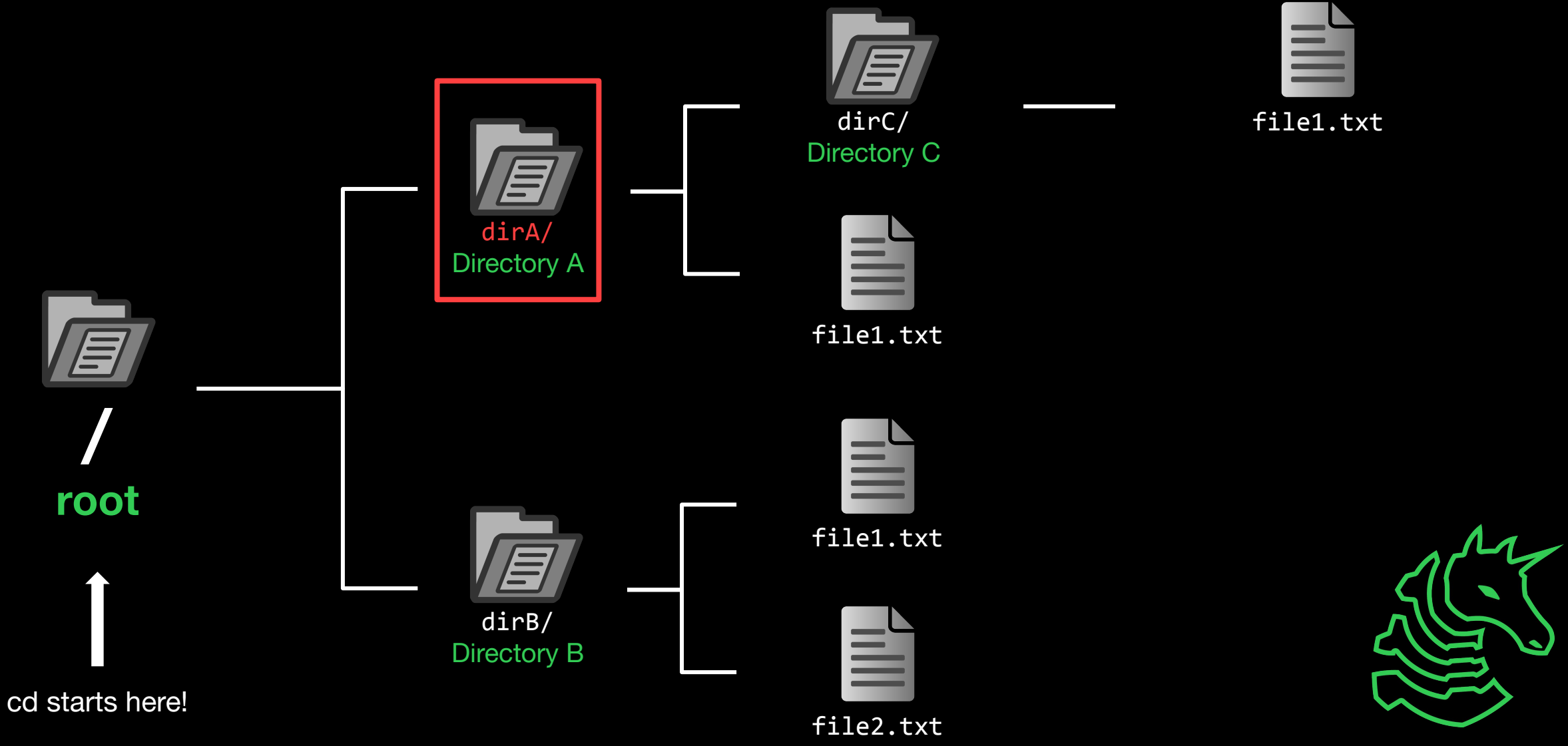
Filesystems



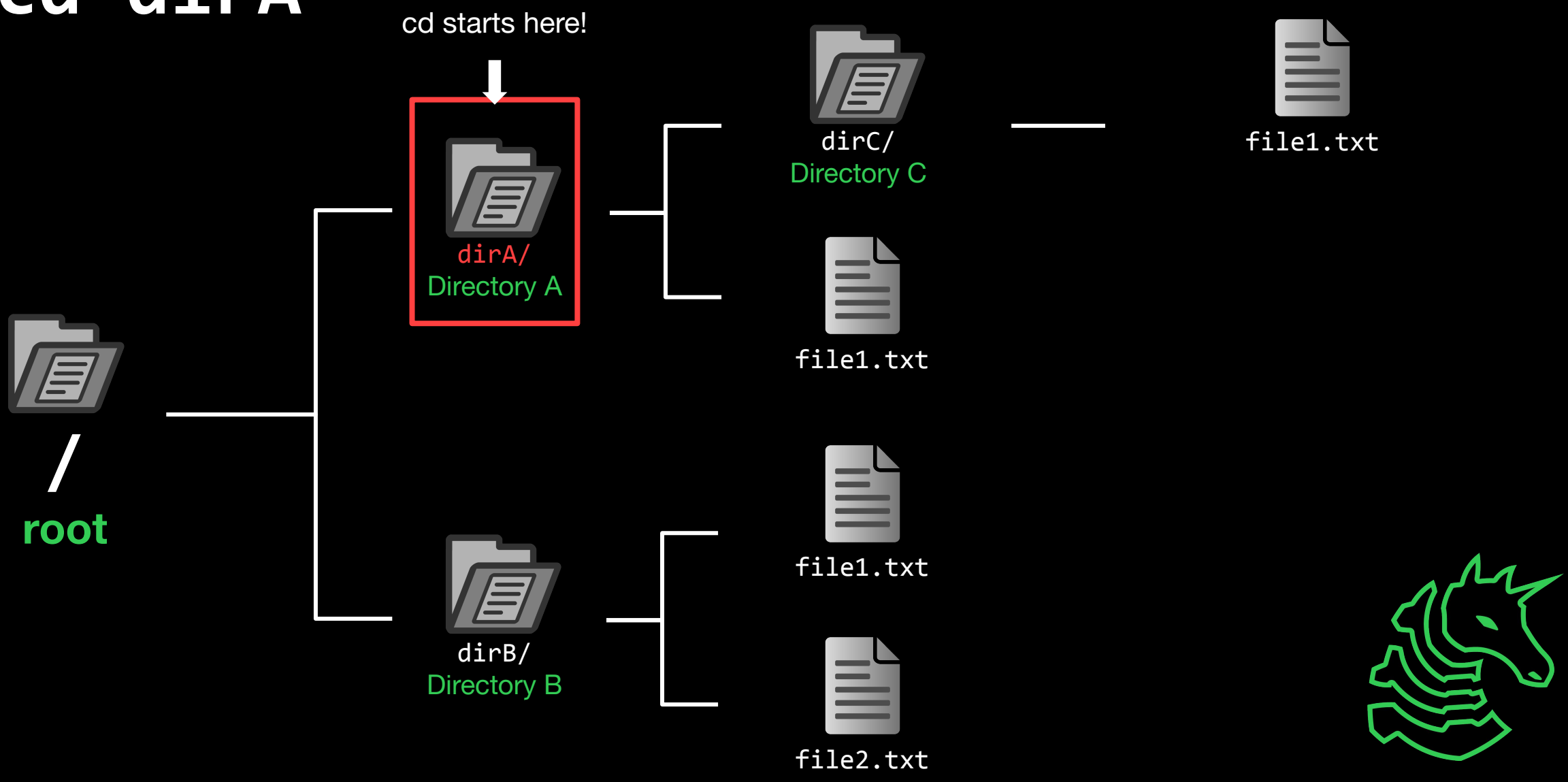
cd /

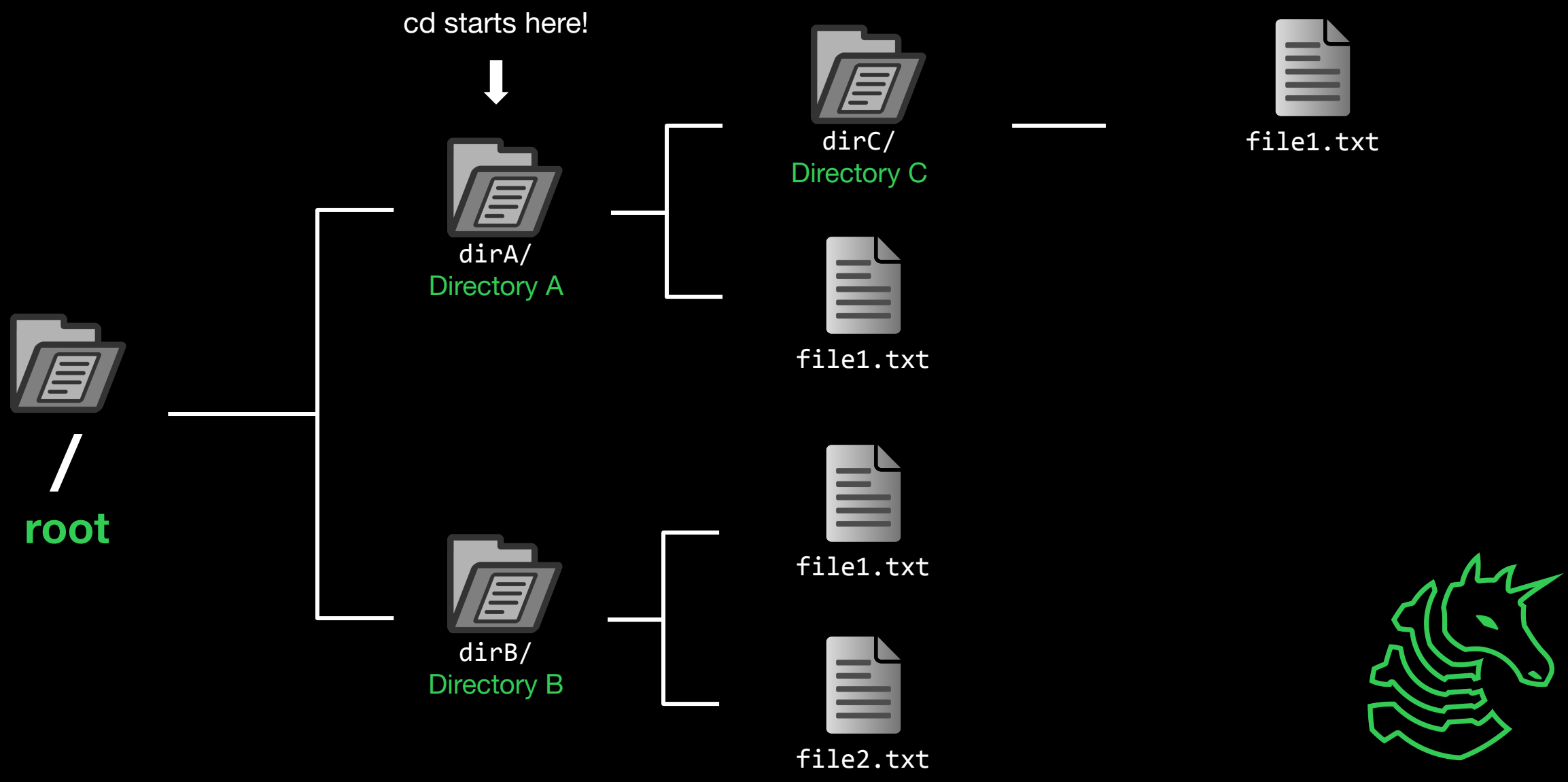

/
root
dirA/
Directory A
dirB/
Directory B
dirC/
Directory C
file1.txt
file1.txt
file1.txt
file2.txt
file1.txt

cd dirA

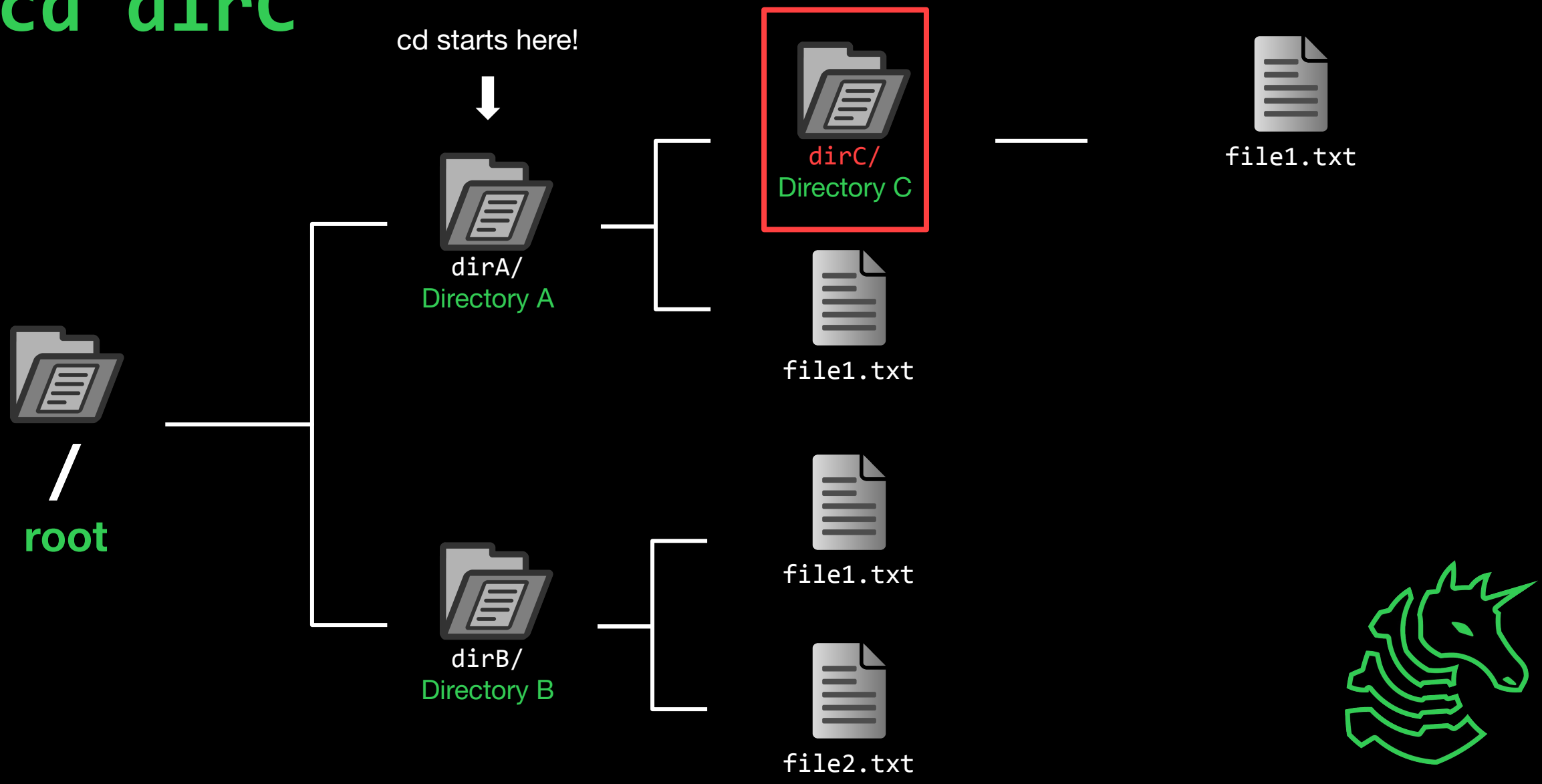

/
root
cd starts here!
dirA/
Directory A
dirB/
Directory B
dirC/
Directory C
file1.txt
file1.txt
file1.txt
file2.txt

cd dirA

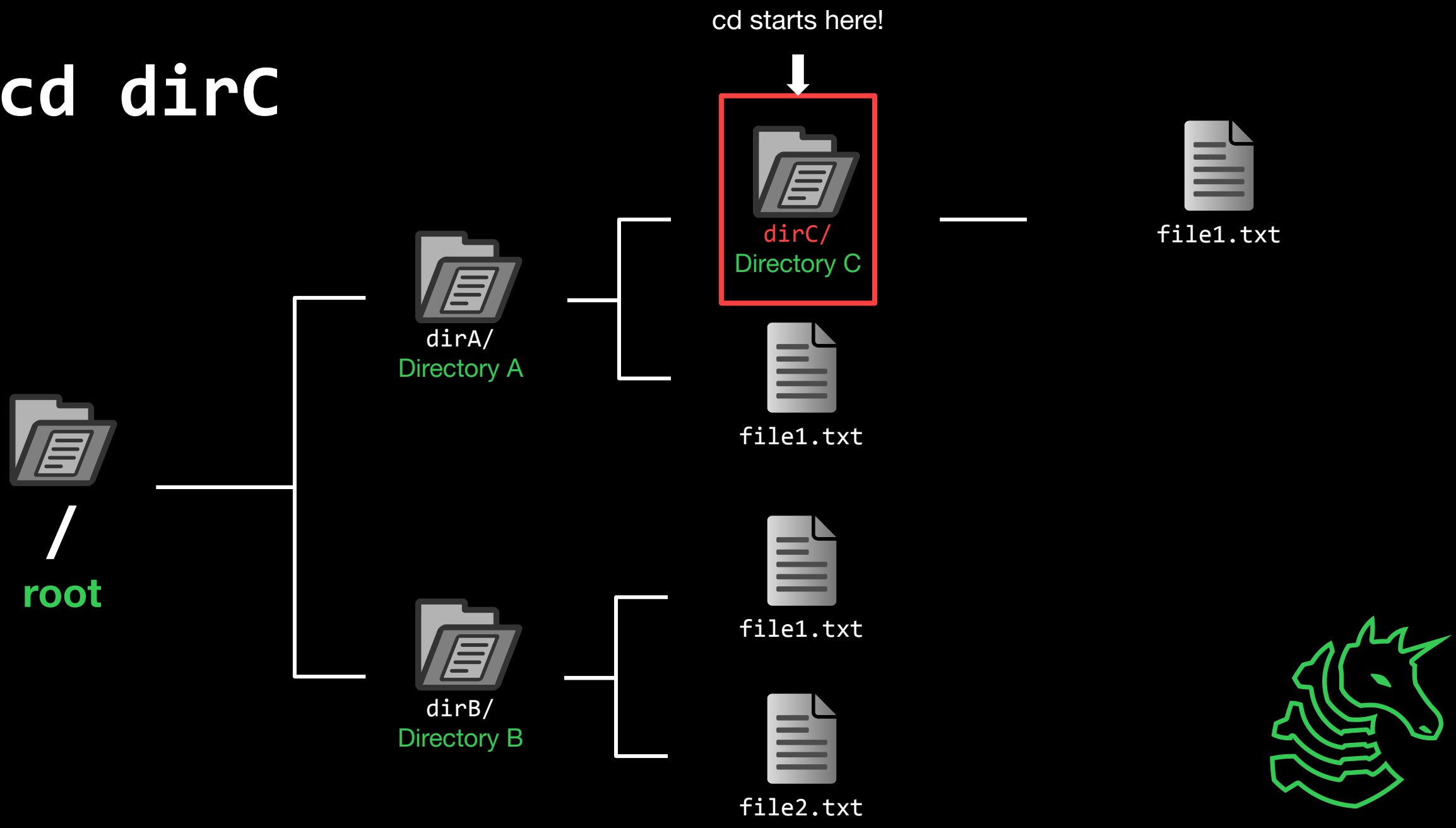

cd starts here!
dirA/
Directory A
dirC/
Directory C
file1.txt
file1.txt
/
root
dirB/
Directory B
file1.txt
file2.txt

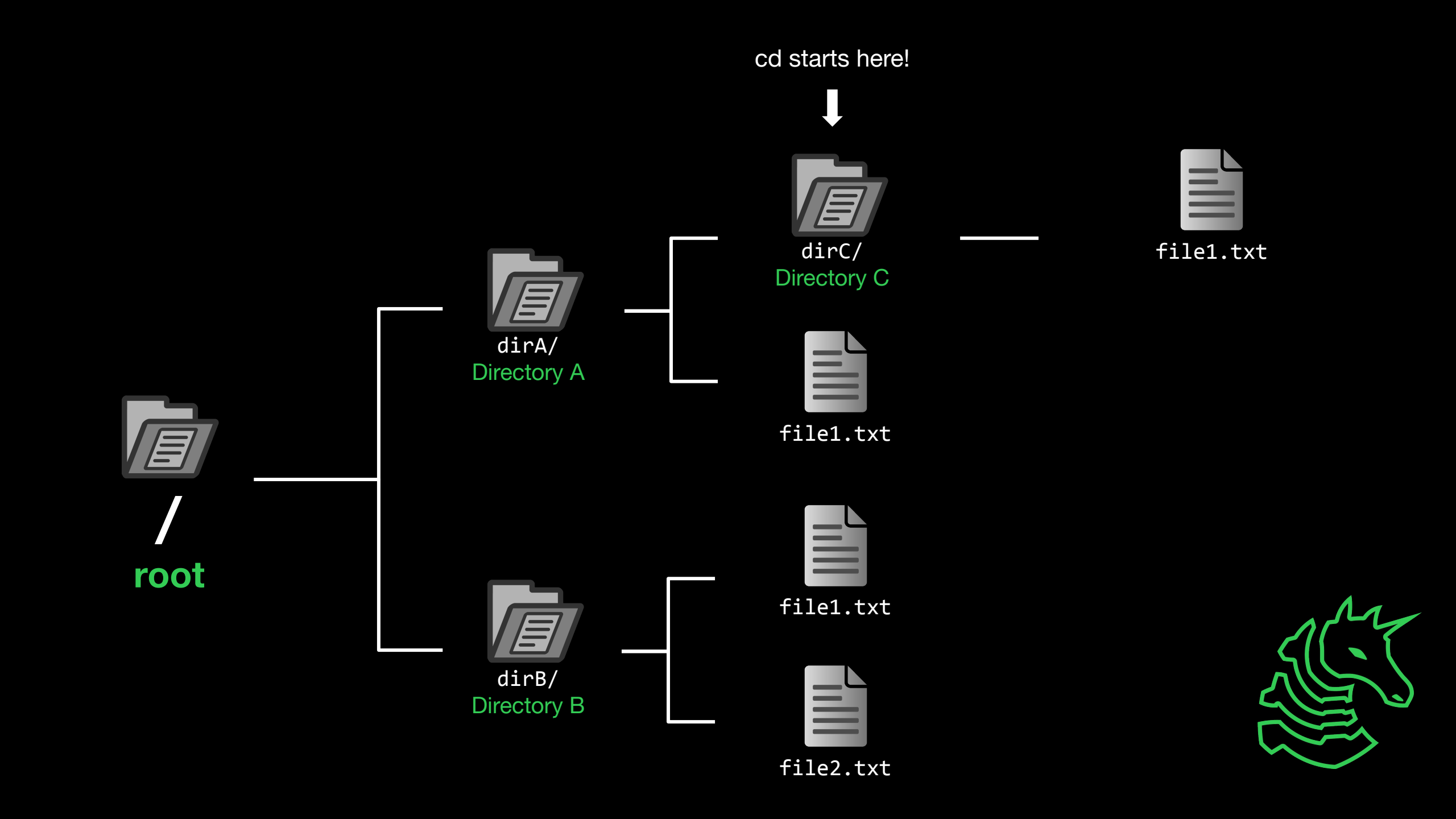

cd starts here!
/
root
dirA/
Directory A
dirB/
Directory B
dirC/
Directory C
file1.txt
file1.txt
file1.txt
file2.txt
file1.txt

cd dirC

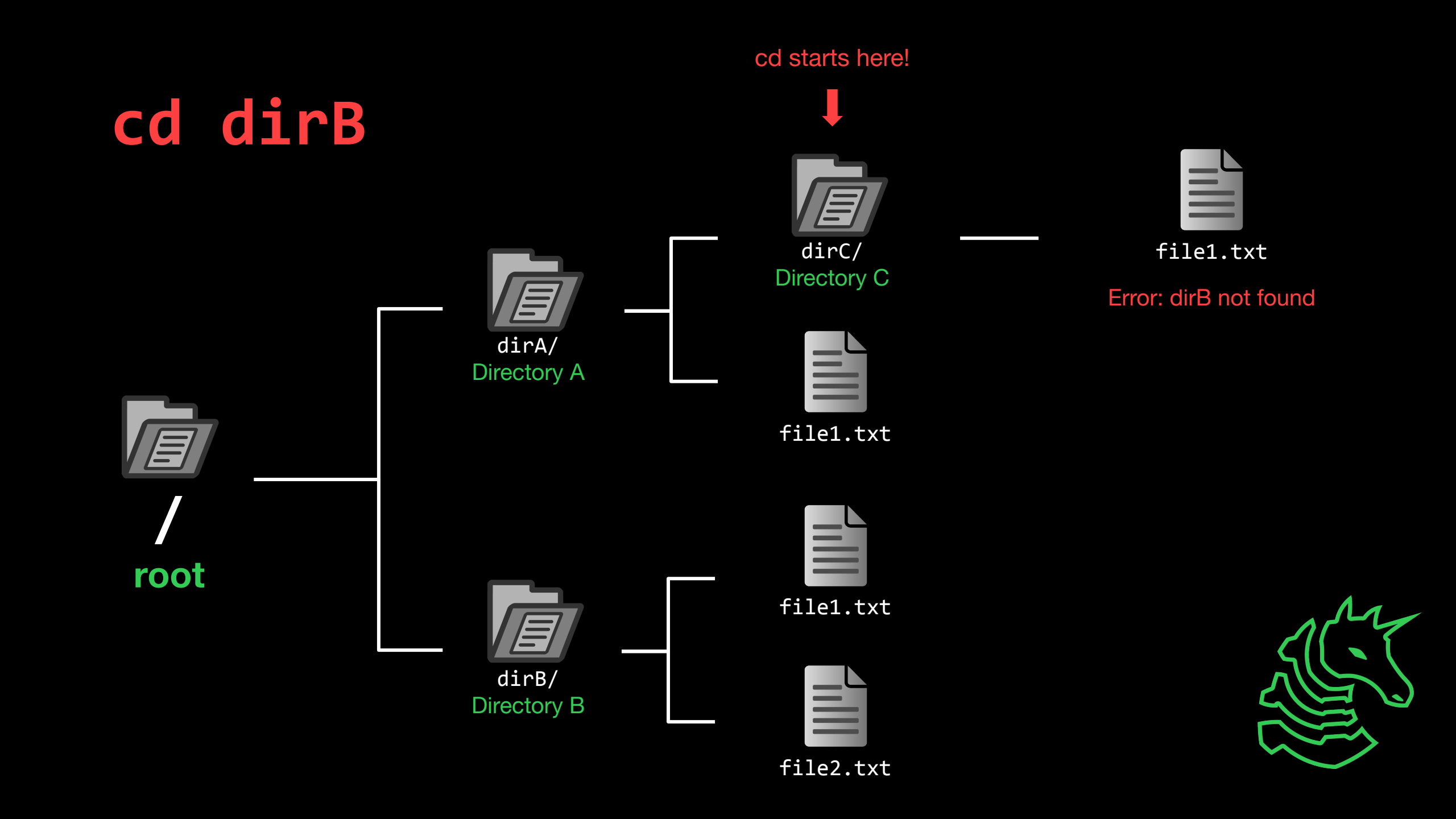

cd starts here!
/
root
dirA/
Directory A
dirB/
Directory B
dirC/
Directory C
file1.txt
file1.txt
file1.txt
file2.txt

cd dirC

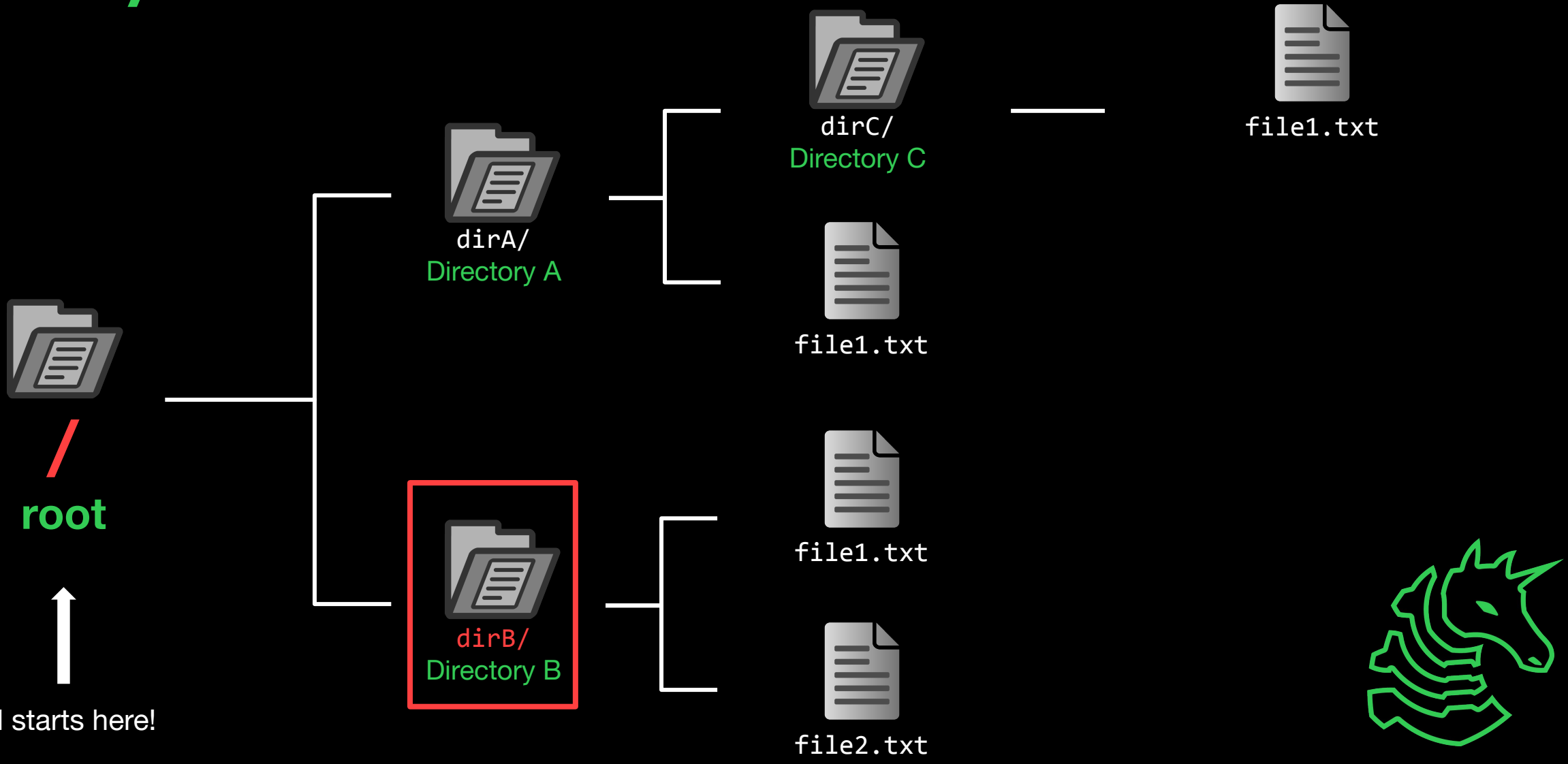

cd starts here!
/
root
dirA/
Directory A
dirB/
Directory B
dirC/
Directory C
file1.txt
file1.txt
file1.txt
file2.txt


cd starts here!
dirC/
Directory C
file1.txt
dirA/
Directory A
file1.txt
/
root
file1.txt
dirB/
Directory B
file2.txt

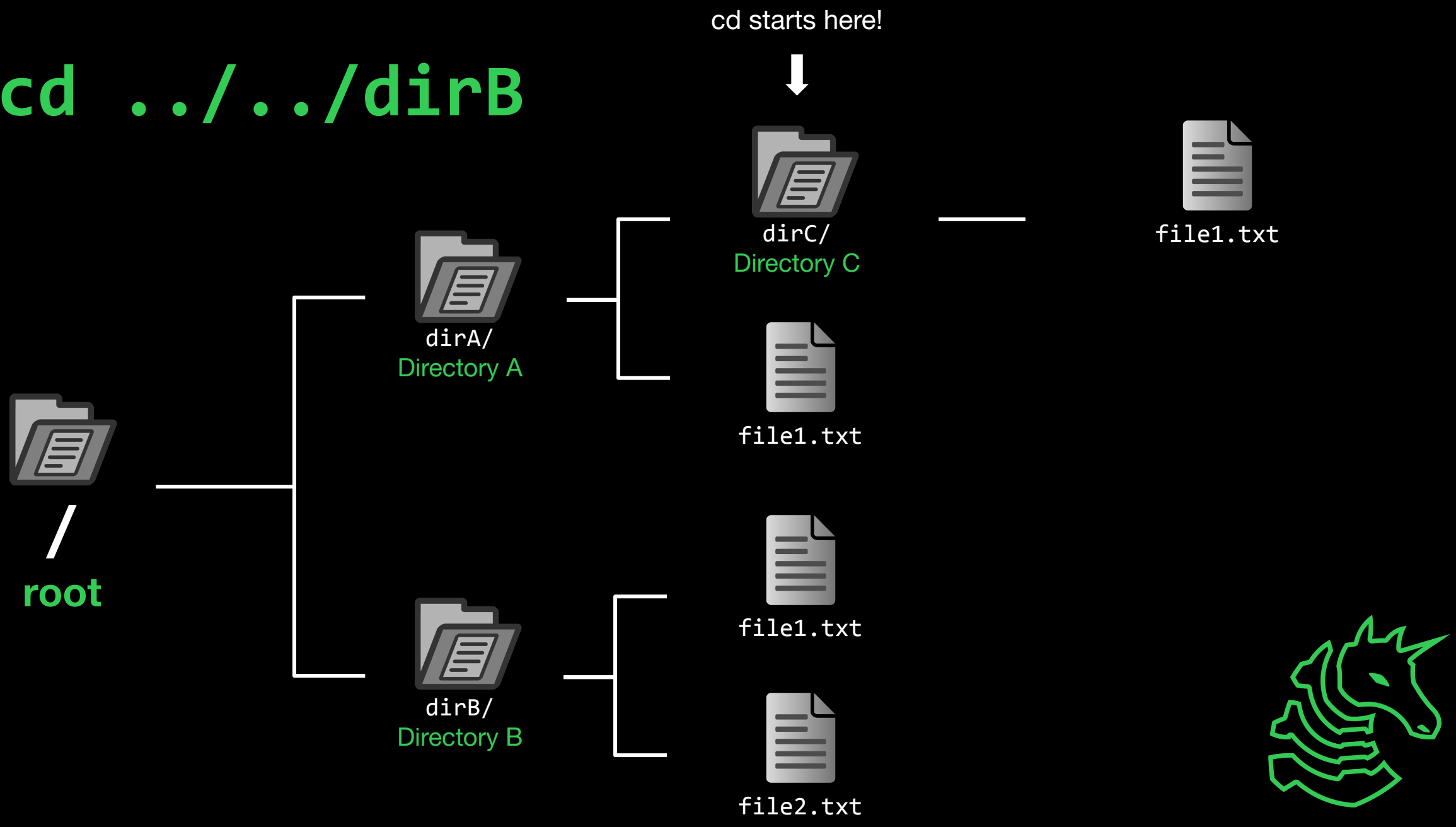
cd dirB


cd starts here!
/
root
dirA/
Directory A
dirB/
Directory B
dirC/
Directory C
file1.txt
file1.txt
file1.txt
file2.txt
file1.txt
Error: dirB not found

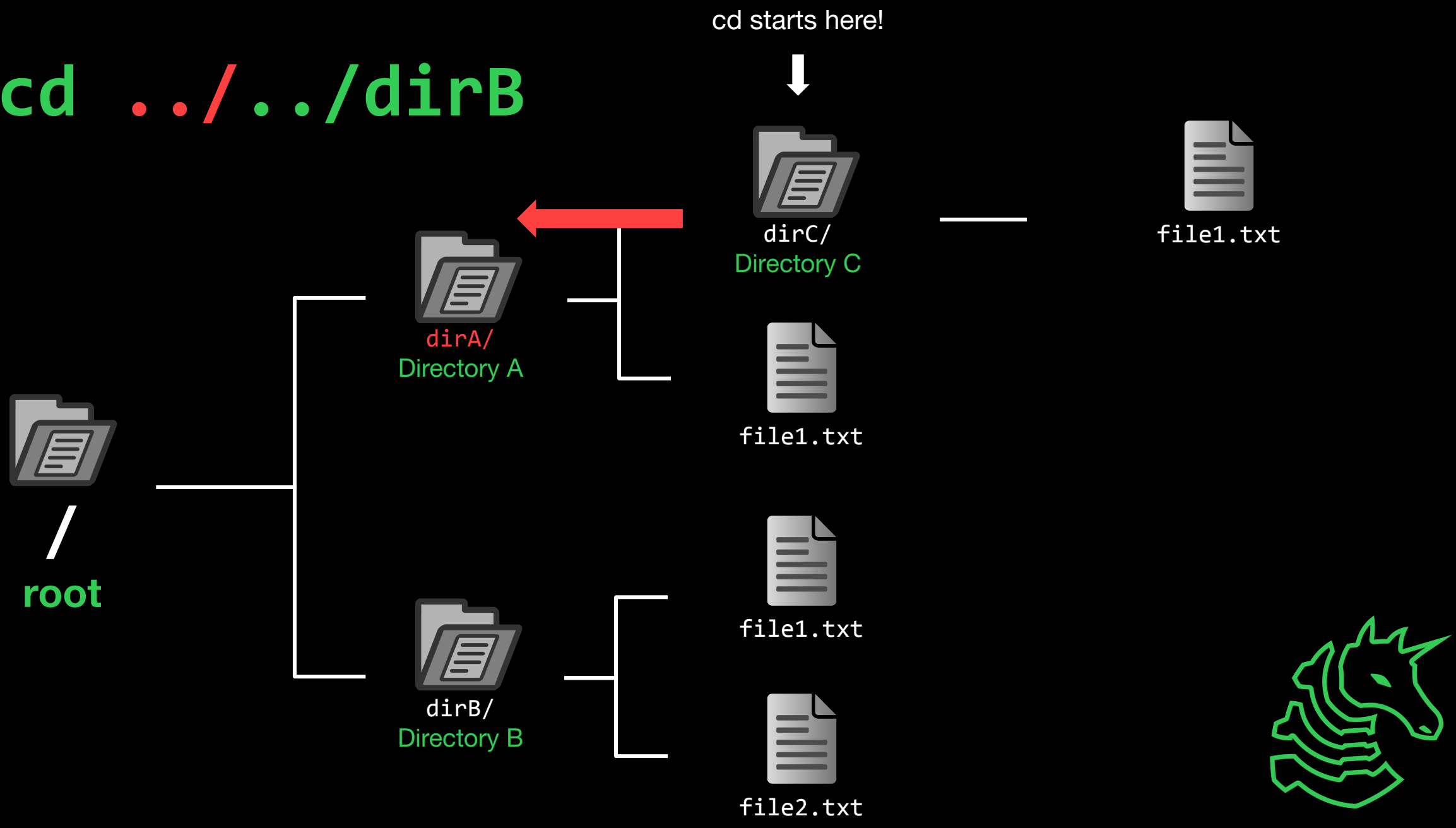
cd /dirB


/
root
cd starts here!
dirA/
Directory A
dirB/
Directory B
dirC/
Directory C
file1.txt
file1.txt
file1.txt
file2.txt
file1.txt

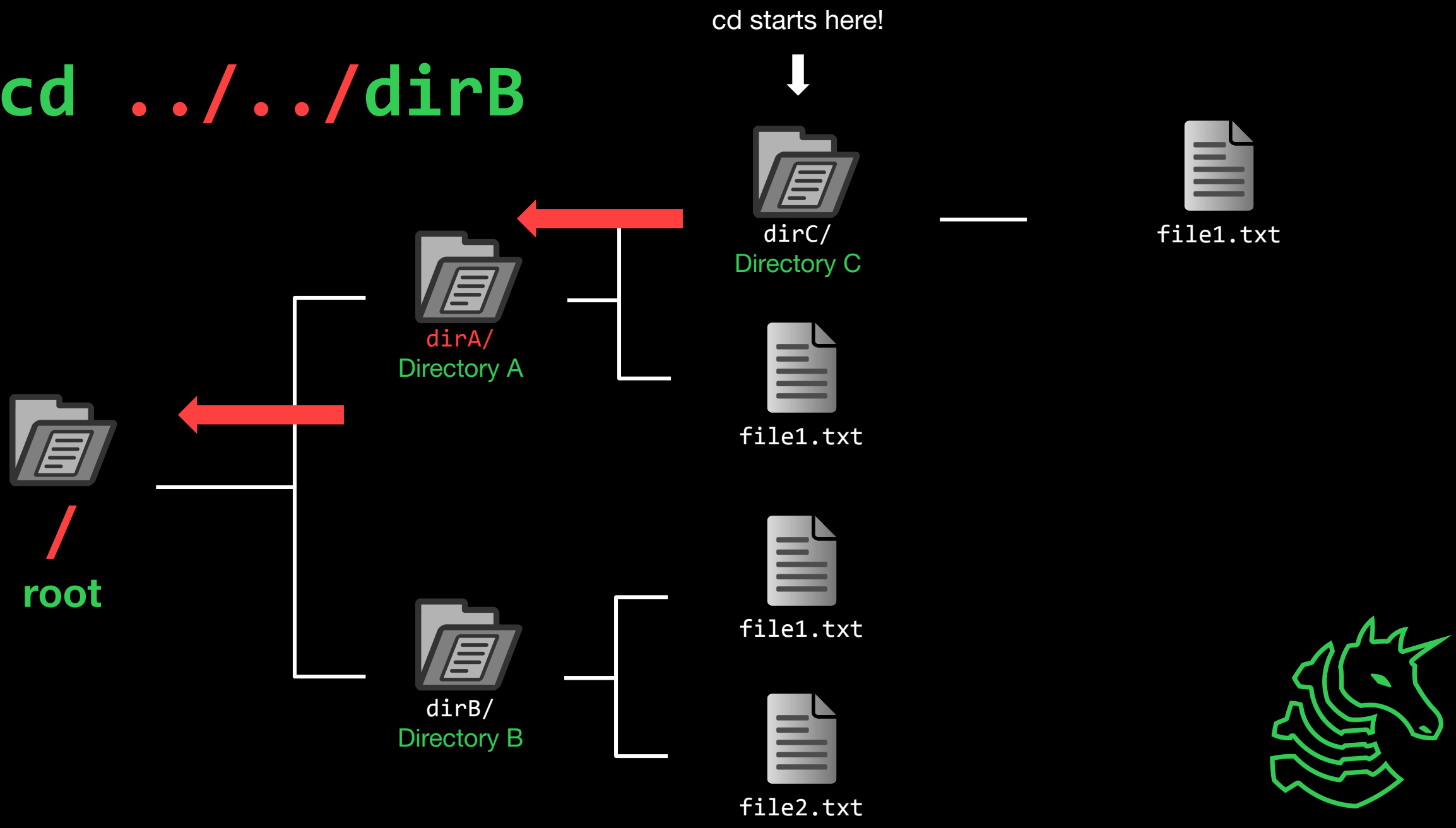
cd ../../dirB


cd starts here!
dirC/
Directory C
file1.txt
dirA/
Directory A
file1.txt
/
root
file1.txt
dirB/
Directory B
file2.txt

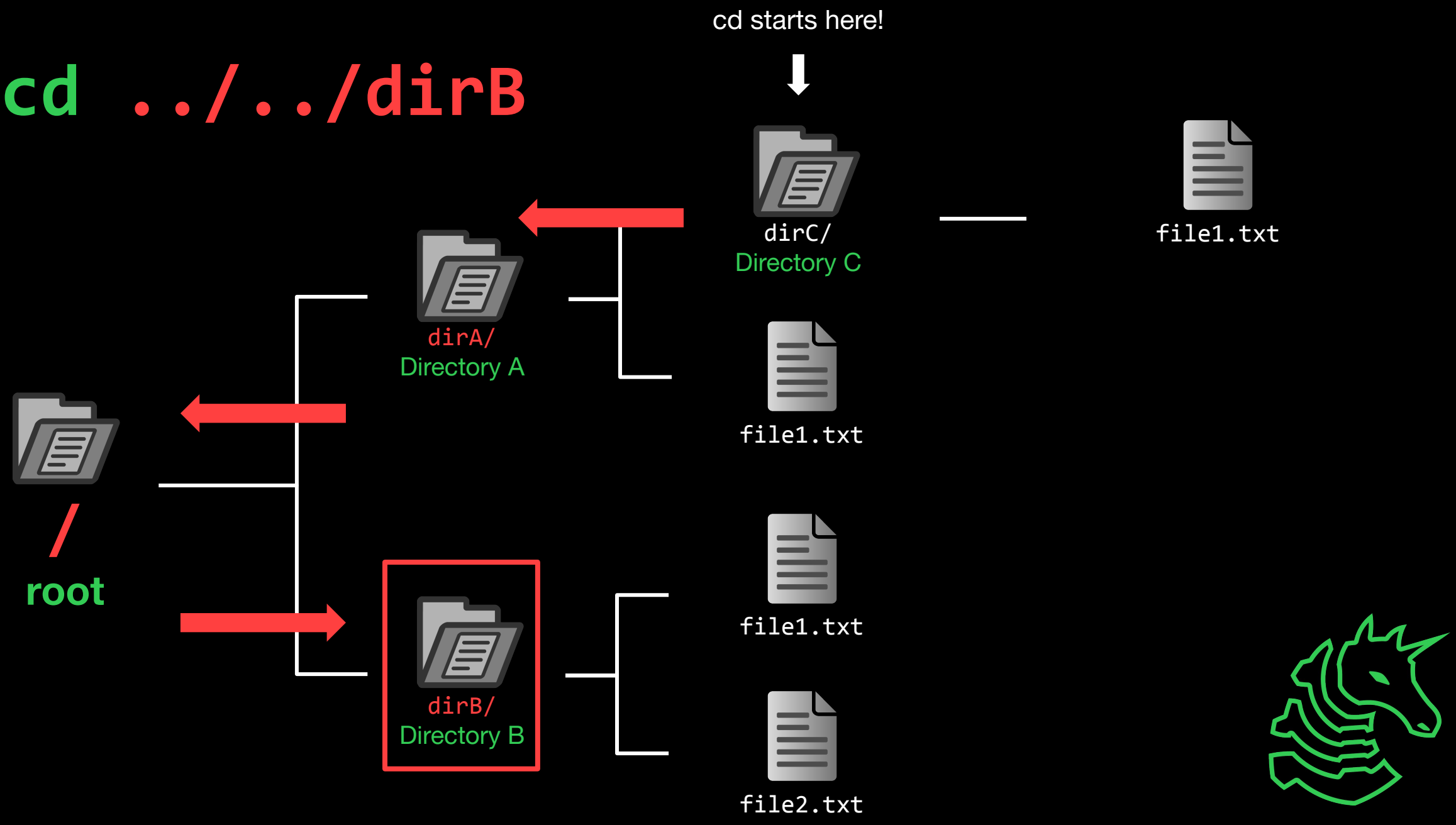
cd ../../dirB


cd starts here!
dirC/
Directory C
file1.txt
dirA/
Directory A
file1.txt
/
root
file1.txt
dirB/
Directory B
file2.txt

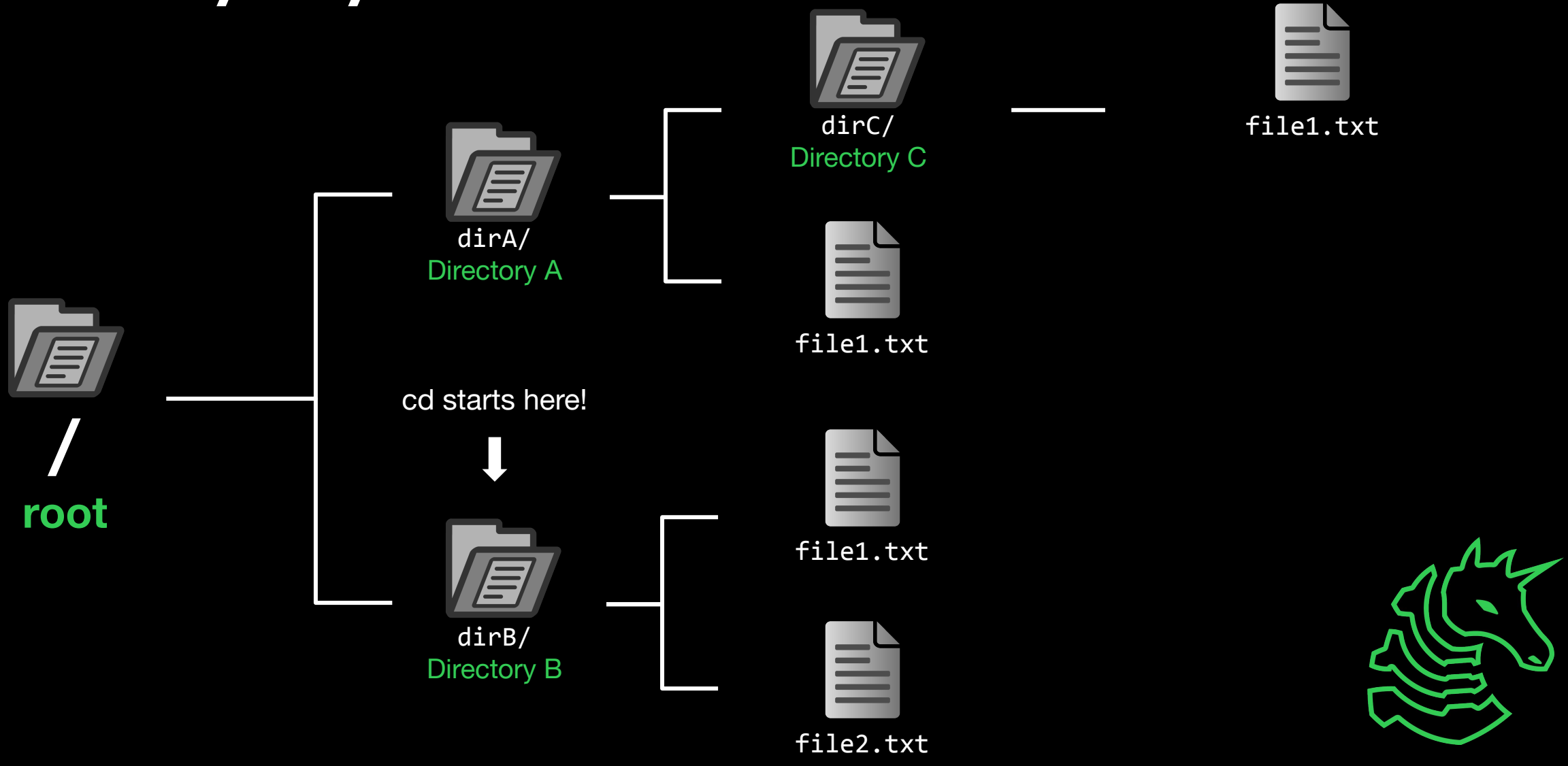
cd ../../dirB


cd starts here!
dirC/
Directory C
file1.txt
dirA/
Directory A
file1.txt
/
root
file1.txt
dirB/
Directory B
file2.txt

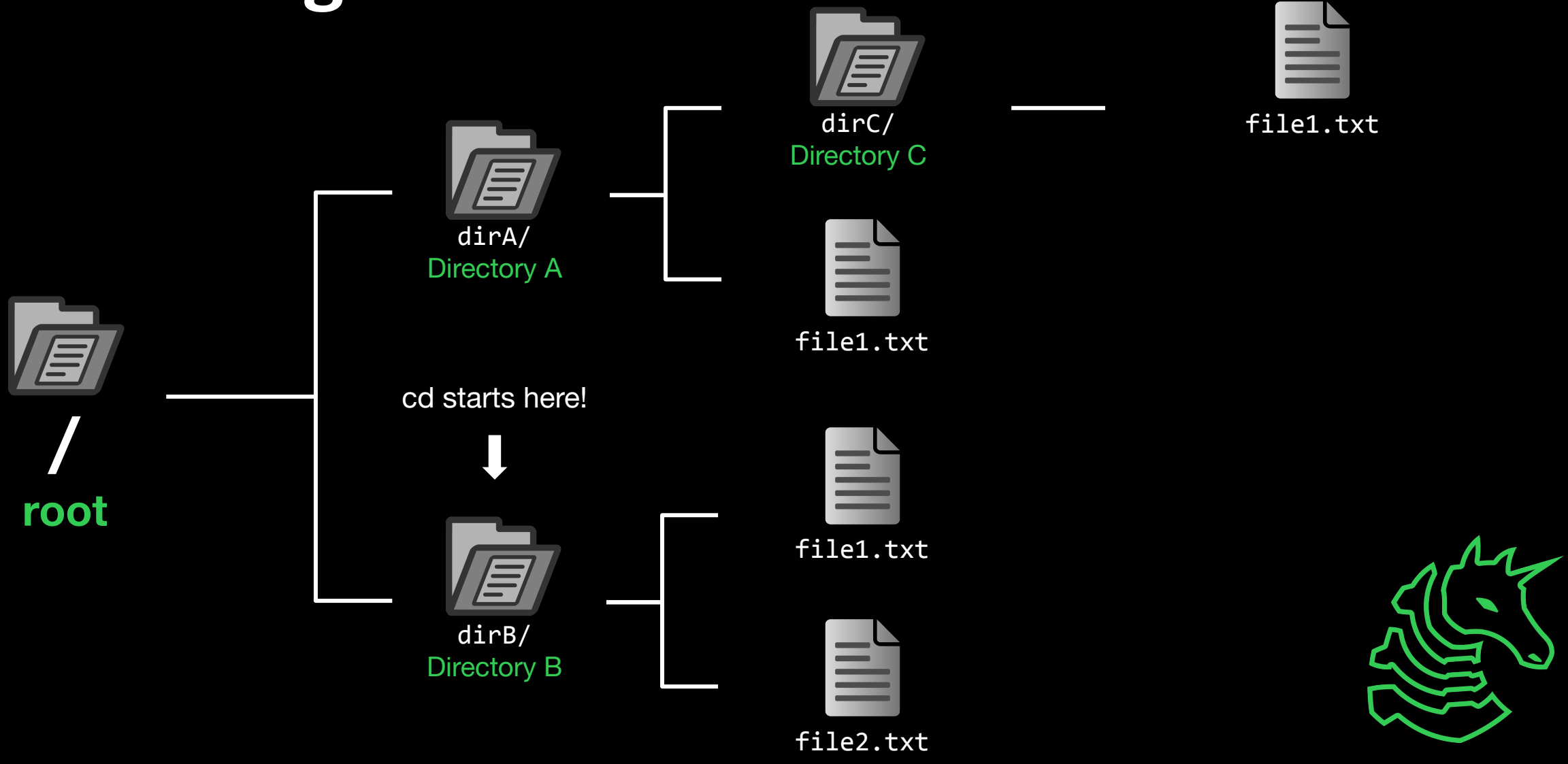
cd ../../dirB


cd starts here!
dirC/
Directory C
file1.txt
dirA/
Directory A
file1.txt
/
root
file1.txt
dirB/
Directory B
file2.txt

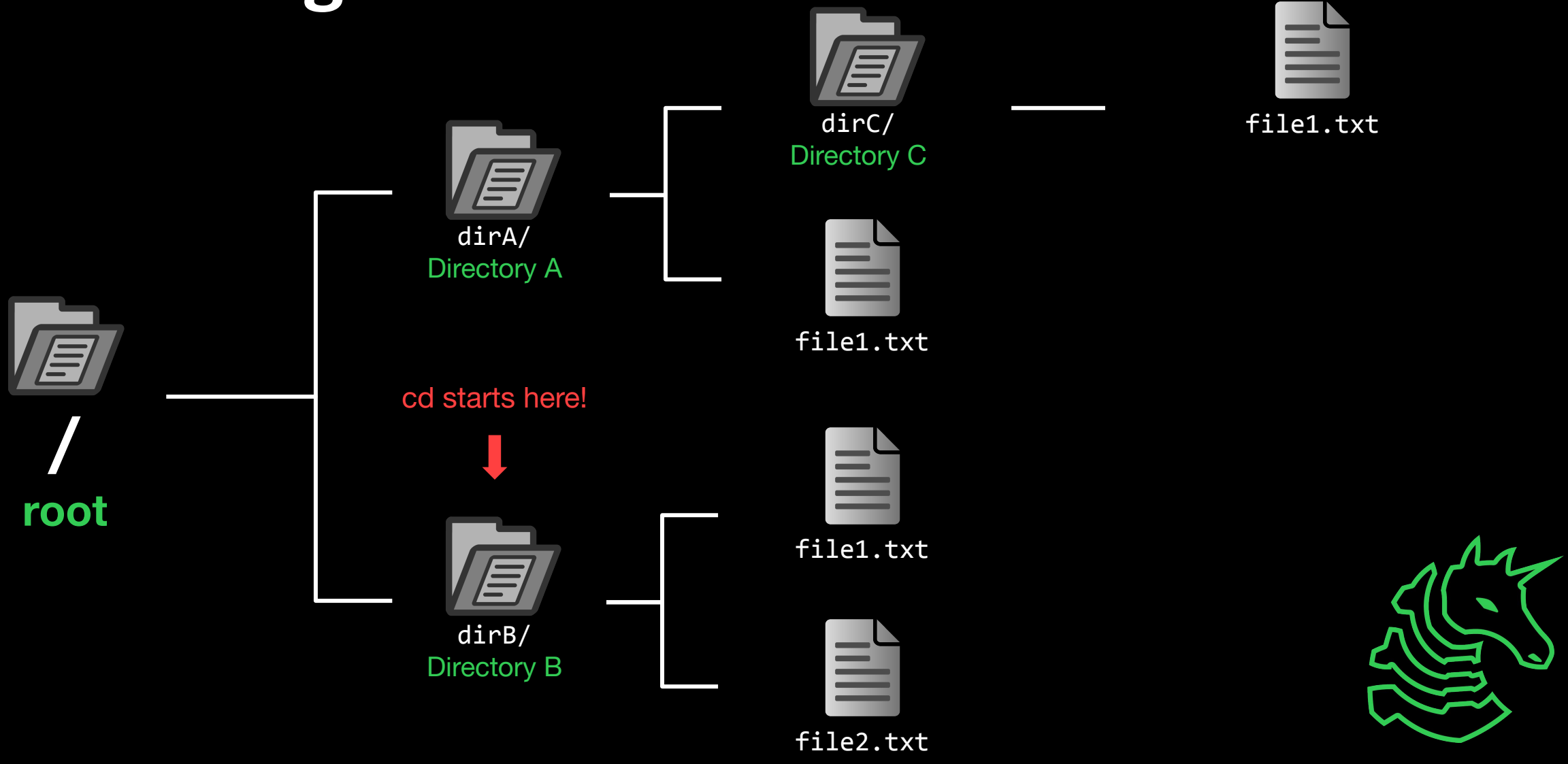
`cd ../../dirB`


/
root
dirA/
Directory A
dirC/
Directory C
file1.txt
file1.txt
cd starts here!
dirB/
Directory B
file1.txt
file2.txt

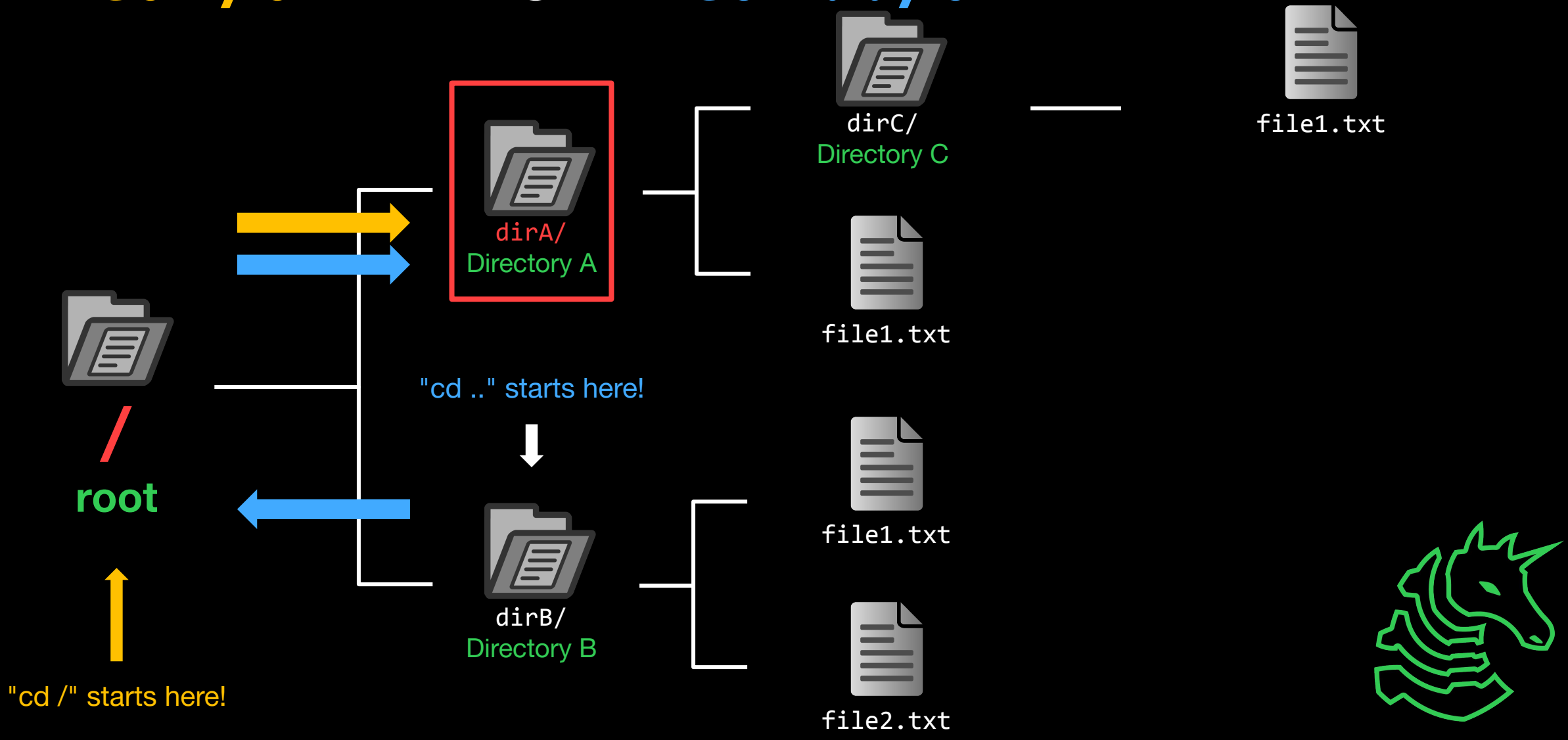
How to get to dirA?



How to get to dirA?



"cd /dirA" or "cd ../dirA"



Paths

Absolute Path

The full path that always starts at root (/)

`/dirA/file1.txt`

`/dirA/dirC/file1.txt`

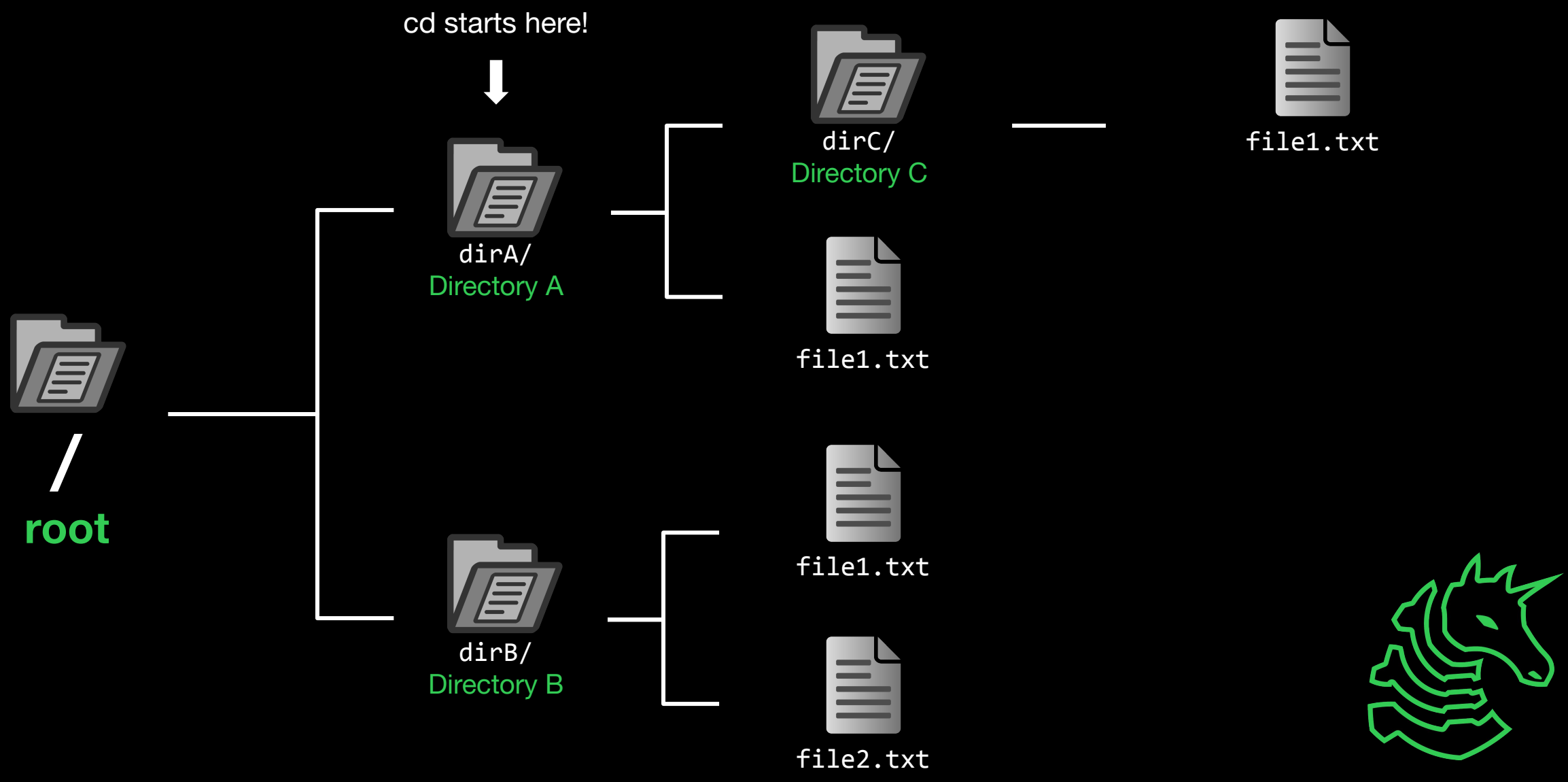
Relative Path

The partial path relative to where you are currently in the terminal

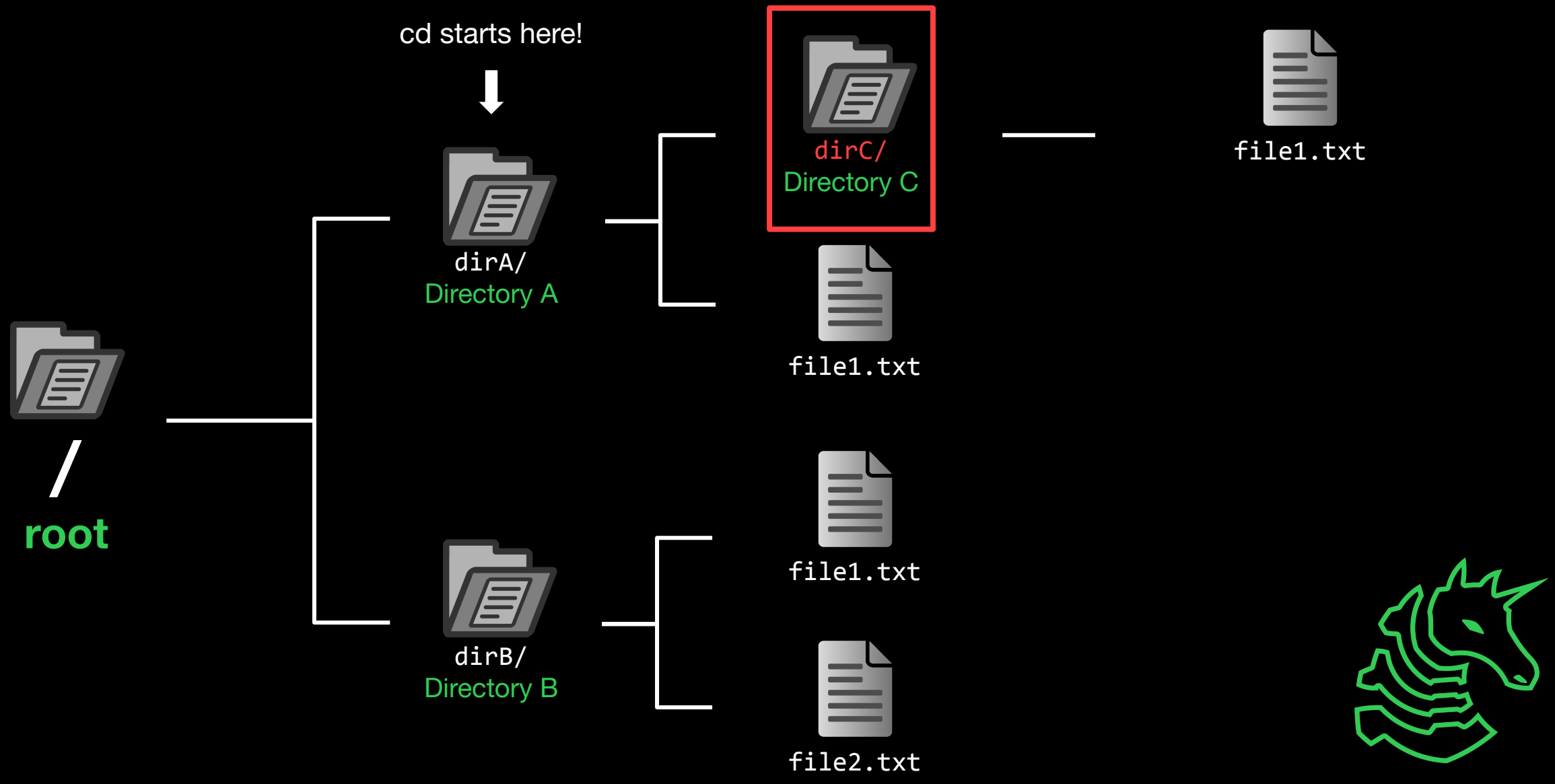
(Relative to dirA)

`file1.txt`

`dirC/file1.txt`


cd starts here!
/
root
dirA/
Directory A
dirB/
Directory B
dirC/
Directory C
file1.txt
file1.txt
file1.txt
file2.txt
file1.txt

"cd dirC" or "cd ./dirC" or "cd dirC/"



`./dirC == dirC == dirC/`

Also `././dirC` and `./././dirC` and `././././dirC` and...

These are just conventions!

Useful Commands - Filesystem

`ls [directory]`: lists files in your current directory or specified directory

`cd <directory>`: changes your current directory to specified directory

`mv <source> <dest>`: moves file from source to dest (rename), if dest is a directory, move source

`rm <file>`: removes file (**NOT REVERSIBLE**)

`cat <file>`: prints the contents of file (sometimes it prints gibberish, think why that might happen)

`./file`: executes whatever is at file

`man <command>`: lets you see info about a command and all of its parameters/options

`<parameter>` means it's a required parameter

`[parameter]` means it's an optional parameter

Useful Commands - Networking

`nc <ip> <port>`: netcat, connect to ip on port port. (First Command - netcat)

`ssh <user@ip> [port]`: secure remote shell, run an instance of a shell as user at the IP address

`ping <ip>`: see if an IP address is up using ICMP (usually blocked by firewalls)

`curl <url>`: network access tool that is mainly used to access websites from the terminal

`wget <url>`: Simplified/modern curl that downloads the file with relevant name

Networking Fundamentals

`nc -l <port>`: open a network socket to listen on specified port

`nc <ip> <port>`: open a connection to the specified IP and port

Ports - communication endpoints on your computer (1-65535)

Next Steps - Bandit

```
ssh bandit0@bandit.labs.overthewire.org -p 2220
```

Next Steps - Bandit

```
ssh bandit0@bandit.labs.overthewire.org -p 2220
```

command user IP port

Next Meetings

2022-09-08 - This Thursday

- Web I
- Intro to Web Hacking

2022-09-09 - This Friday

- CSAW CTF '22 Qualifying Round
- We will be playing in this weekend long CTF - come join us!

2022-09-11 - Next Sunday

- Web II
- Advanced Web Hacking