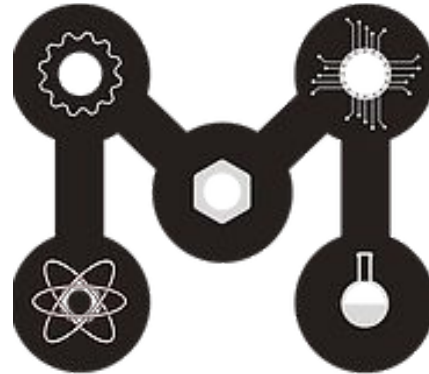


Linux 101

But I just installed Windows 10 though

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Upcoming Events

IAN ...

2 Minute History Lesson

- Unix
 - Created at Bell Labs in 1969
- Richard Stallman
 - Started the Open Source movement (1989)
 - Built programs, but no kernel
- Linus Torvalds
 - Smart dude from Finland, low key built a kernel (1991)
 - Also built git

Unix? Linux? Buzzwords?

- What is an operating system?
 - Lets hardware and software communicate
 - Handles memory and processes on CPU
- Linux is a “***Unix-like***” OS
 - Macs are ***Unix-like***, not Linux
 - Android is Unix
 - has modified Linux Kernel
 - Windows is its own monster
- Linux is just the kernel
- Unix is the methodology how it works

What makes it Unix

	Windows	Unix
Root location	C:\	/
Slash used	\ (backslash)	/ (frontslash)
Case sensitive	No	Yes
Open Source	No	Yes
Disk space required	Large	Small

Caution to all Window users

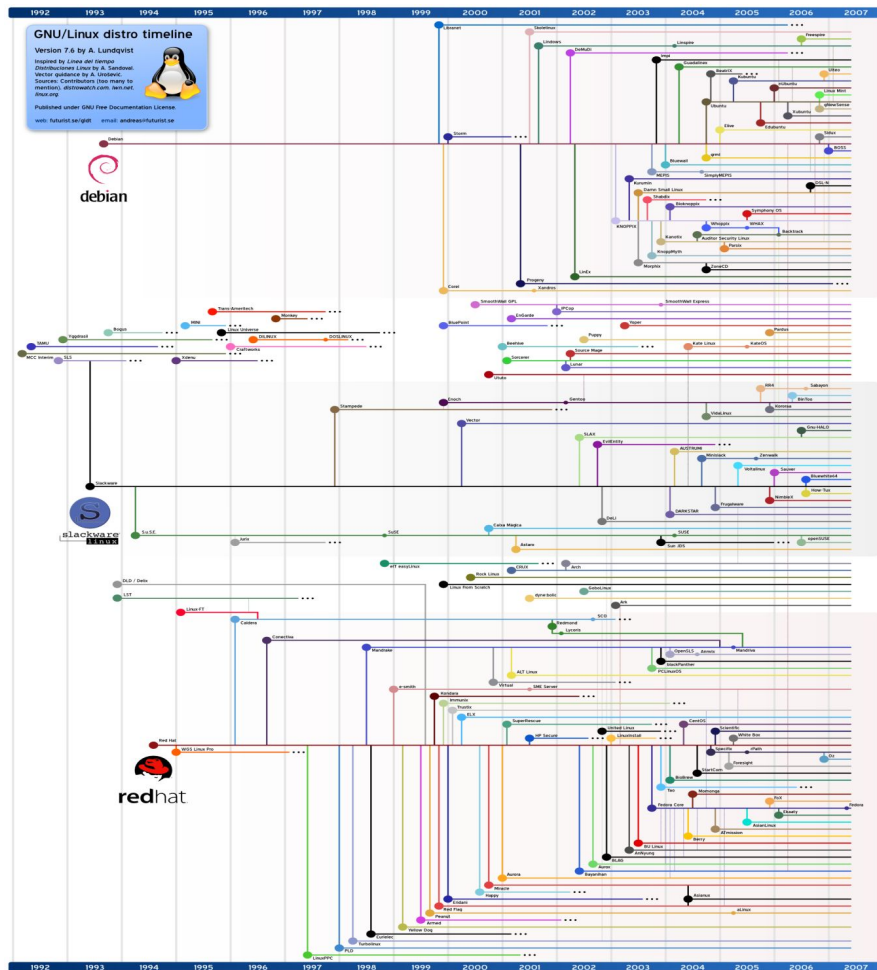
- / is not the same as \
 - / is a forward slash
 - \ is a back slash
 - **EVERYONE** uses a forward slash...except Windows
 - Also Windows is **NOT** case sensitive
 - “Test” != “test” in the unix world
- **Don't copy and paste commands in from Windows to Linux!!! #YouHaveBeenWarned**

Acronyms Frenzy Uno

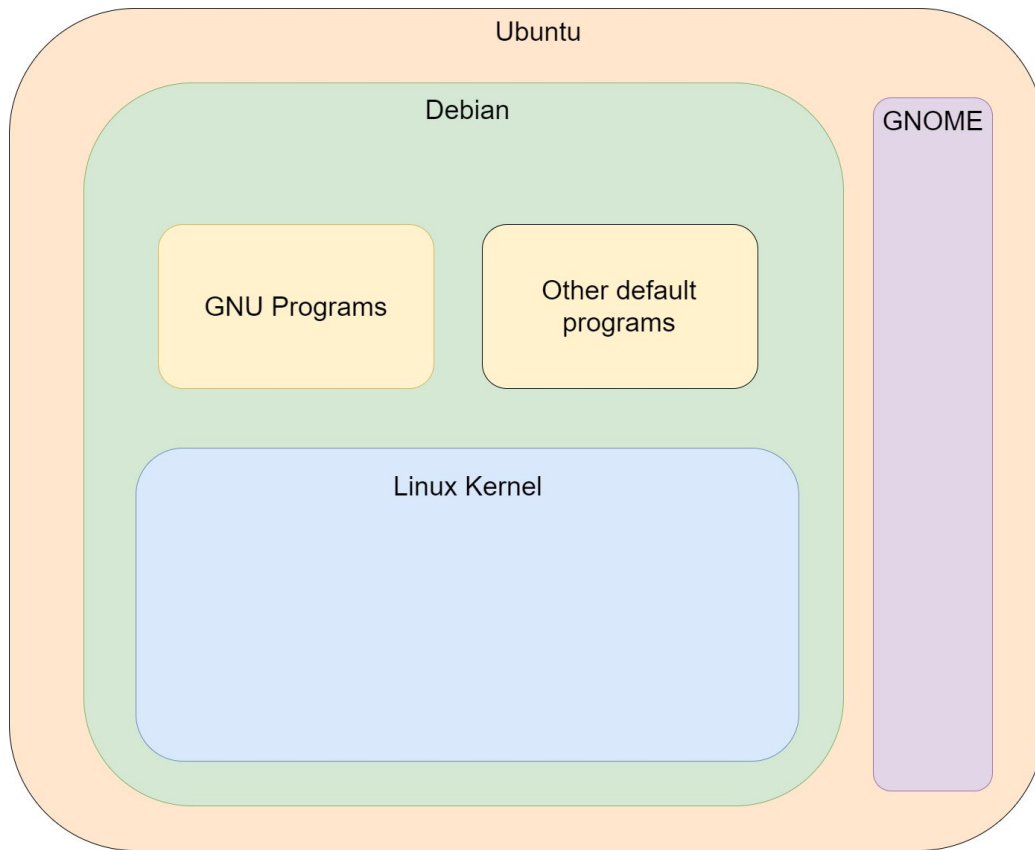
- GNU
 - GNU's Not Unix!
 - Recursive jokes, ECE majors try to be funny when possible
 - Most programs found on Linux
 - GCC, Emacs, Bash, Git, etc.
 - Like Unix programs, but written from scratch under GPL
- POSIX
 - A set of IEEE standards
 - Mainly because of the number of Linux/Unix distros that popped up

Distros

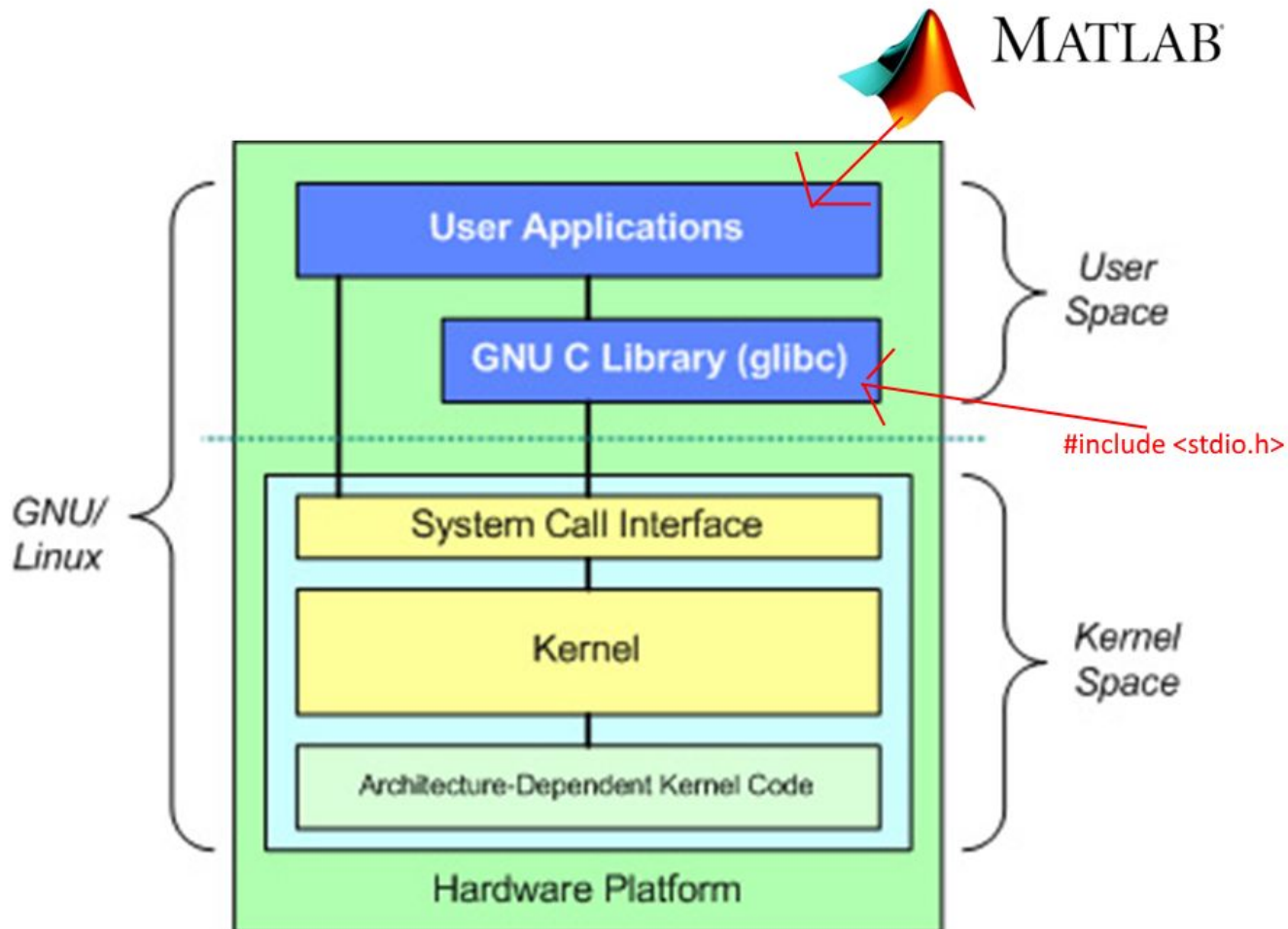
- Everyone wants something different
- Many options for many different needs
- No “best” distro



Ubuntu Example



MATLAB



GUI and what it caused

- Computers didn't always have Graphical User Interfaces
- Most “Engineering” tools are command line based
- We are only talking command line from here on out



SSH and Putty

- SSH (Secure Shell Protocol)
 - Way of gaining access to a terminal of another machine
 - Can't SSH **INTO** a Windows machine, but can SSH **FROM** a Windows machine
 - You will need a **SSH Client**
 - Putty, MobaXterm, etc
 - Macs are Unix based so can just run ssh in terminal

Before we start

- Commands are separated by spaces
 - That's why people use underscores
 - The first word is the program name

Flags

- Ways of turning on optional settings to command programs
- Will either be look like “-a” or “--off”
 - These are set by developer, not “official” system used
- When in doubt “--help” will probably list options

```
$ git commit -m "my commit"
```

User

- Everyone is a user with set of permissions
- “root” is FULLY in charge
- Sudo
 - Lets you run root commands without being root

A screenshot of a terminal window with a black background. The prompt 'pi@raspberrypi:~' is displayed in green monospace font. To the right of the prompt is a blue dollar sign '\$' representing the cursor.

```
pi@raspberrypi:~ $
```

Text Editor

- Many editors
 - Vi vs Emacs
- Nano
 - The easier cop-out for today
 - Two things to know
 - **^** means CTRL key
 - **M** means ALT key
 - **^X** means CTRL+X to quit



The File System

- Linux is much more hierarchical than Windows
 - “Folder” == “Directory”
- `/` vs `./` vs `../`
 - `/` is the root directory (the top part)
 - `./` is the current directory
 - `../` is the parent directory
 - Can compound these like `../../../../../`
- `~` == Your home directory
 - `~/` is the start of your home directory

Bash

- Is a terminal program
 - Created with GNU tools in 1989
- Can write “Bash Scripts”
 - Will do commands for you
 - `.sh` files usually
 - Stands for “shell script”

Linux and my Pi

- Whats the difference?



VS



GPIO PINS!!!

- Take ECE 353
- Way to send data
- Can interact with board
- “Raspbian” is a distro made for this

Time to get some practice!

tinyurl.com/LinuxWorkshopEEE

[Note: it's case sensitive]