

# GNU/Linux Introduction

Bhashithe Abeysinghe

- Bhashithe Abeysinghe
- T M M B B Abeysinghe
  - Big names are a thing of back in our part of the world
- I'm from Sri Lanka



Figure 1: Sri Lanka Map

- Is famous for spices
- Tea
- Beaches
- Whales
- Rich history, 2500 written!



Figure 2: Spices





Figure 4: Whales



Figure 5: Kandy Perahara





Figure 6: Kandy Perahara

- Operating System
  - System software
- Other operating systems?
  - Unix
  - BSD
  - Windows
  - MacOS
  - Android
  - iOS
  - etc.

**GNU** is **Not** **U**nix

A recursive acronym

- PHP: ?
- TikZ: TikZ ist kein Zeichenprogramm

- Little history of operating systems
  - GNU, FSF was creating an operating system called GNU
  - Linus Torvalds used components from GNU eco system to build a kernel and an OS
  - FSF claims Linux is not an operating system without the components from GNU
  - GNU/Linux or GNU+Linux

- Doesn't mean free as not costing anything
  - Maybe licensing fees, training etc.
- But most Free and Open software are free for personal and commercial use
- Free means **free as in freedom**
  - no proprietary licensing
- Linux is Free and Open

# Choosing an operating system

- Lots of people involved in creating and maintaining
- Too many cooks?
- Different varieties to choose from

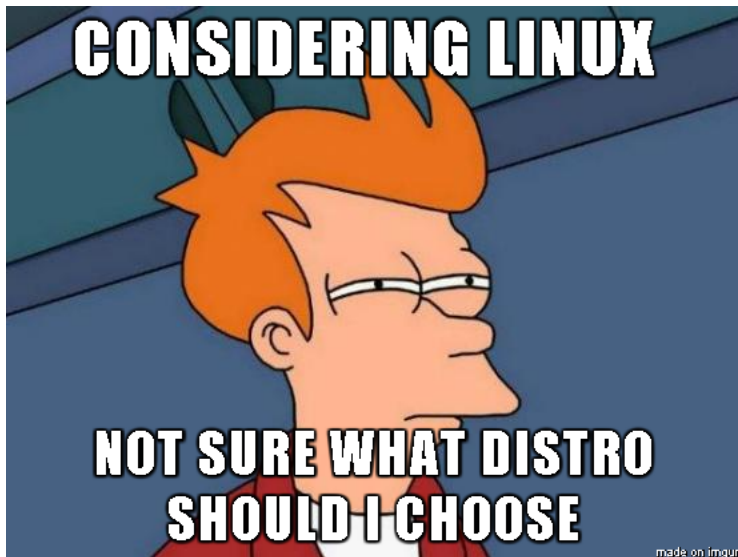


Figure 7: Distros – distributions

- Debian
- OpenSUSE
- ArchLinux
- Slackware
- RedHat
- etc.

Graphic of distributions

*tinman* has CentOS, which is the commercial free version of RedHat Linux.

*Better to have a Linux distribution installed in your computer*



# Logging in to tinman

- *tinman* is a server
- Runs CentOS
- Has 2 Nvidia 1080ti GPUs 18GB
- 96GB RAM
- Almost 13TB HDD

# Logging in to tinman

## SSh

- Secure Shell
  - if you use windows you need a separate software *PuTTY*

```
ssh username@tinman.cs.gsu.edu
```

*Asks whether the connection is secure, of course it is*

## SFTP

- FileZilla
  - an SFTP client, works with any OS
- WinSCP
  - FTP client for windows
- If you use linux, your file browser is enough for everything

- Mode of interacting with the operating system
  - Graphical shells
    - Windows UI, MacOS UI, Gnome, X Windows system, i3
  - Command Line Interface
    - Terminals, TTYs

# Shell

Since most of our work will be on a remote server, we will heavily rely on a terminal application or a TTY



- What are your day to day tasks?
  - Programming
    - Creating files
    - Editing files
    - creating directories
    - etc.
  - Reports

We will learn the basic commands to do these

# Before that, some basic file system hierarchy

- Linux has a specific file system
- Important because most of it is common across Linux distros
- look at the following directories
  - /
  - /root
  - /usr
  - /bin
  - /sbin
  - /home
  - /mnt
  - /media
  - .
  - ..
  - ~

# Your home directory

In a typical system your home directory would reside in, `/home/<username>`

*Note that here if it is my user account, `/home/bhashithe`*

- is a CLI Shell available for \*nix systems
- sh, zsh etc.
- Using this we can interact with the OS
  - But we need to know what commands to use
  - depending on the shell type you are using the commands can be different
  - but most basic level commands are same for all the shells
  - Check your shell using the following command

```
echo $SHELL
```



# Shell Commands

- ls: list directory
- pwd: show working directory path
- mkdir : create a folder with
- cd: change directory
- touch: create file
- cat: show contents of the file
- more: file paging filter
- less: more but with additional capabilities
- head/tail: file content handling
- echo: print to terminal
- grep: filter terminal output

- nano: easy
- vi/vim: extensible but hard to learn
- emacs: extensible, more like an IDE

# Minimizing and Maximizing

- Use the SIGSTP, or Ctrl+Z to temporarily stop a service
- to bring it back up fg
- Check what programs are stopped jobs

# Show my current workflow

Demo, kind of