Week Report 1

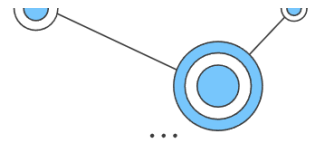## Summary of Presentation: Introduction to Linux

What Is an Operating System?

An operating system provides all fundamental software features of a computer. An OS enables you to use the computer's hardware providing you the basic tools that make the computer useful. All of those features relay on the OS's kernel. Other OS features are owed to additional programs that run atop the kernel.

What Is a Kernel?

An OS kernel is a software component that's responsible for managing low-level features of the computer, including the following managing system hardware, memory allocation, CPU time, and program to program interaction.

Examples of Devices That Use Linux

Samsung Galaxy S10
Android

Samsung Galaxy Watch
Tizen

Nokia 8110
KaiOS

Google Pixelbook
Chrome OS

LG Smart TV/Web OS

Chromecast
Chrome OS

Amazon Fire Devices
Fire OS

Amazon Kindle
Kindle Firmware

Roku Stick
Roku OS

Servers

Laptops

Raspberry PI

Tesla Model 3

What Is a Distribution?

A complete Linux system package is called a Linux Distribution.
The following elements make up a Linux Distribution:

- **A Linux Kernel**
  - Different distributions use different versions of the Linux Kernel
- **Core Unix Tools**
  - For instance, the GNU tool set, the X Window System, a Desktop Environment, disk partitioning tools, etc ..
- **Supplemental Software**
  - For instance, server applications, user applications, and more.
- **Startup Scripts**
  - These are scripts that differentiate different distributions they range from launching dozens of programs at startup to even modify the way the desktop environment behaves.
- **An Installer**
  - Different distributions use different installers and manage software differently as well. One of the key elements is the package manager a distribution uses.

Components of the Linux Architecture

Ubuntu

Ubuntu is a **Linux distribution**, freely available with both community and professional support.
The Ubuntu community is built on the ideas enshrined in the Ubuntu Manifesto:

- The software should be available free of charge,
- The software tools should be usable by people in their local language and despite any disabilities,
- People should have the freedom to customize and alter
- their software in whatever way they see fit

This is how Ubuntu Looks like

Ubuntu – Included Software

Ubuntu includes thousands of pieces of software such as:

Full Productivity
Suite
(Libre Office)

Web Browser
(Firefox)

Email Client
(Thunderbird)

App Store
(Software
Center)

What is Debian?

Debian is an all-volunteer organization dedicated to developing free software and promoting the ideals of the Free Software community.

The Debian Project began in 1993, when Ian Murdock compiled a group of developers to create a coherent linux distribution
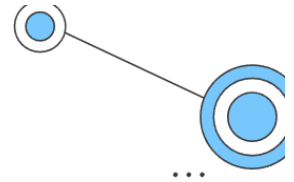
Debian is known to be the Grandfather of all linux distributions alongside Slackware and Open Suse.

Ubuntu was created to be a user friendly version of Debian and with time it has become a Major distribution of its own with other Distribution using it as its base.
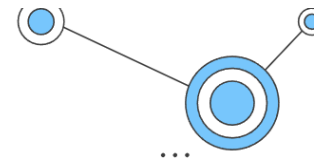
Software Licensing

- Software is a type of intellectual property that is governed by copyright laws and, in some countries, patent laws.
- Open source software, however, relies on licenses, which are documents that alter the terms under which the software is released.
- Types of licensing agreement:
  - **Open Source:** the software may be distributed for a fee or free. The source code is distributed with the software.
  - **Closed Source:** the software is not distributed with the source code. The user is restricted from modifying the code.
    - **Freeware:** the software is free but the source code is not available.
    - **Shareware:** the software is free on a trial basis.
  - **Free software:** the software is distributed with the source code. The software can be free of charge or obtained by a fee.

Software Licensing

- The Free Software Foundation (FSF) is a critical force in the open source world.
- Founded in 1985 by **Richard Stallman,** the FSF is the driving force behind the **GNU project**.
- The FSF has a certain philosophy which manifests itself in the GPL, which is FSF's favored software license.
- The FSF defines four specific software freedoms:
  - **Freedom 0**: use the software for any purpose
  - **Freedom 1**: examine the source code and modify it as you see fit
  - **Freedom 2**: redistribute the software
  - **Freedom 3**: redistribute your modified software
    - Learn more about the implications of these freedoms here: https://www.gnu.org/philosophy/free-sw.html
- These freedoms are enforced by the FSF's GPL License (sometimes called the GNU GPL).
- Two versions of the GPL are common: version 2 and version 3.
- Derivative works must also be released under the GPL if the original work was released using GPL V1-3.
  - *For instance, many companies make Linux distributions, and some use Linux kernels that incorporate bug-fix "patches." These kernels, like the mainstream Linux kernel, are all available under the GPL. No company could legally release a distribution based on a patched Linux kernel and then refuse to make its kernel patches available.*

Final Project Research Questions and answers

- **What is Linux?**

Just like Windows, iOS, and Mac OS, Linux is an operating system. In fact, one of the most popular platforms on the planet, Android, is powered by the Linux operating system. An operating system is software that manages all of the hardware resources associated with your desktop or laptop. To put it simply, the operating system manages the communication between your software and your hardware. Without the operating system (OS), the software wouldn't function.

- **What is a Linux distribution?**

Linux has a number of different versions to suit any type of user. From new users to hard-core users, you'll find a "flavor" of Linux to match your needs. These versions are called distributions (or, in the short form,

"distros"). Nearly every distribution of Linux can be downloaded for free, burned onto disk (or USB thumb drive), and installed (on as many machines as you like). LINUX MINT MANJARO DEBIAN UBUNTU ANTERGOS SOLUS FEDORA ELEMENTARY OS OPENSUSE

- **What is Ubuntu?**

Ubuntu is a complete Linux operating system, freely available with both community and professional support. The Ubuntu community is built on the ideas enshrined in the Ubuntu Manifesto: that software should be available free of charge, that software tools should be usable by people in their local language and despite any disabilities, and that people should have the freedom to customize and alter their software in whatever way they see fit.

- **What are the system requirements for installing Ubuntu 20.04**

2 GHz dual-core processor, 4 GiB RAM (but 1 GiB can work), 25 GB of hard-drive space, VGA capable of 1024×768 screen resolution, Either of the two: a CD/DVD drive or a USB port for the installer media and Optionally, Internet access is helpful.