Deliverable 1

Introduction

Ubuntu is a Linux-based operating system. It is designed for computers, smartphones, and network servers. The system is developed by a UK based company called Canonical Ltd. All the principles used to develop the Ubuntu software are based on the principles of Open Source software development.

Project hardware and software requirements

- A virtual machine
- A laptop/Desktop computer that you can wipe.
- A Raspberry Pi 4 or other capable single board computer
- A Github account
- A Text editor. We will be using VS Code but you can use whatever you want **A decent PC that meets or exceeds these requirements:**
- Quad-Core Processor or modern Dual-Core Processor 2.5 Ghz
- 8 Gb of RAM
- Windows 10/11 or MacOS
- 100 Gb of free space

What is Linux?

Linux is an open source operating system (OS). An operating system is the software that directly manages a system's hardware and resources, like CPU, memory, and storage. The OS sits between applications and hardware and makes the connections between all of your software and the physical resources that do the work.

Think about an OS like a car engine. An engine can run on its own, but it becomes a functional car when it's connected with a transmission, axles, and wheels. Without the engine running properly, the rest of the car won't work.

Linux was designed to be similar to UNIX, but has evolved to run on a wide variety of hardware from phones to supercomputers. Every Linux-based OS involves the Linux kernel—which manages hardware resources—and a set of software packages that make up the rest of the operating system.

Short history of linux

In 1991, Linus Torvalds a student at the university of Helsinki, Finland, thought to have a freely available academic version of Unix started writing its own code. Later this project became the Linux kernel. He wrote this program specially for his own PC as he wanted to use Unix 386 Intel computer but couldn't afford it. He did it on MINIX using GNU C compiler. GNU C compiler is still the main choice to compile Linux code but other compilers are also used like Intel C compiler. He started it just for fun but ended up with such a large project. Firstly he wanted to name it as 'Freax' but later it became 'Linux'. He published the Linux kernel under his own license and was restricted to use as commercially. Linux uses most of its tools from GNU software and are under GNU copyright. In 1992, he released the kernel under GNU General Public License.

Linux distribution

- **Slackaware**: Slackware is a Linux distribution designed for maximum simplicity and stability. Throughout the era of Linux use, Slackware has been a popular choice for durable results and a codebase that does not have a lot of fragility or inherent interdependence problems.
- **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 issued an open invitation to software developers to contribute to a complete and coherent software distribution based on the relatively new Linux kernel
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> **Devian Based Linux Distributions** 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. Kali Linux: Kali Linux is an open-source, Debian-based Linux distribution aimed at advanced Penetration Testing and Security Auditing. Kali Linux contains several hundred tools targeted towards various information security tasks, such as Penetration Testing, Security Research, Computer Forensics and Reverse Engineering. Kali Linux is a multi platform solution, accessible and freely available to information security professionals and hobbyists.

- Red Hat Enterprise Linux: Red Hat Enterprise Linux is an enterprise Linux operating system, certified on hundreds of clouds and with thousands of vendors. Red Hat Enterprise Linux provides a consistent foundation across environments and the tools needed to deliver services and workloads faster for any application. Red Hat Enterprise Linux reduces deployment friction and costs while speeding time to value for critical workloads, enabling development and operations teams to innovate together in any environment.

> Fedora: Fedora is a Linux based operating system which provides innovative, free, and open-source platform for hardware, pc, laptop, cloud, and containers. Fedora is also called a Linux distribution where it uses the Linux kernel as the core of the operating system.

Open Source VS Closed Source

Open source software (OSS) refers to the software which uses the code freely available on the Internet. The code can be copied, modified or deleted by other users and organizations. As the software is open to the public, the result is that it constantly updates, improves and expands as more people can work on its improvement. Closed source software (CSS) is opposite to OSS and means the software which uses the proprietary and closely guarded code. Only the original authors of software can access, copy, and alter that software. In a case with closed source software, you are not purchasing the software, but only pay to use it.

Advantages of open source

- Freedom and flexibility.
- High quality.
- Exponentially lower costs.
- Security.
- Innovation via communities.

Advantages of closed source

- User Friendly
- Security
- Support
- Testing
- Updates
- Troubtheleshooting

The Free software movement

The idea of the Free Software Movement is that computer users deserve the freedom to form a community. You should have the freedom to help yourself, by changing the source code to do whatever you need to do. And the freedom to help your neighbor, by redistributing copies of programs to other people. Also the freedom to help build your community, by publishing improved versions so that other people can use them. Whether a program is free software depends mainly on its license. However, a program can also be nonfree because you don't have access to its source code, or because hardware won't let you put a modified version into use.

Sources: https://www.gnu.org/philosophy/free-software-intro.en.html