Deliverable 1

Project Description

My Final Project is To Build a portable Raspberry Pi mini-computer with a battery pack and a small display. When completion of this project i will be able to turn on a Raspberry Pi with the battery pack i attached to it. The small display will be touchscreen so i will be able to navigate and browse around with just the tap of my finger. To put it into simpler terms i will be turning a Raspberry Pi to a "portable mini tablet".

Project hardware and software requirements

- Raspberry Pi
- Small display
- Batter pack
- sd card
- Case for the Raspberry Pi

What is Linux?

Linux is an open source Operating system. Unlike windows and mac os you can personalize the os to your liking. Linux has many distributions but the most popular ones are Debian, Fedora, and ubuntu. Linux consists of a kernal, libraries, and utilities that make up the OS. It is also free of charge.

Many businesses and nonprofit organizations rely on Linux for their day to day operations. Some examples of devices that use linux are a google chromecast, firestick,servers, teslas and the list goes on and on. You can install Linux on almost any system.

Short history of linux

- Linus Torvalds developed Linux further. He began to work on linux in 1991.
- Linus released version 1.0 of linux in 1994. Red Hat and SUSE published this version of linux.
- In 1996 version 2.0 of linux was released. The kernal was now able to serve several processors at the same time.
- In 1998 IBm, Compaq, and oracle announced that they were supporting linux.
- In the year 2000 Dell announced that it was the number 2 provider and the first manufacturer.
- Oracle released its own distribution of Red Hat in 2006.
- in 2007 Dell started releasing laptops with Ubuntu installed on them.
- Android smartphones are all using some type of linux in the software.
- In 2019 the fifth version of the kernal was released.

Linux distribution

- **Slackaware:** Slackware aims for design stability and a user friendly experience. It is one of the oldest distributions that is still maintained. Slackware automatically boots into a command line interface meaning that it has no graphical viewing.

- **Debian:** An All volunteer organization dedicated to developing free software and promoting ideals dor the free software community. Debian is the grandfather of all linux distributions alongside slackware. DEbian is the basis of many other famous distributions since its the one of the oldest ones.

> **Debian Based Linux Distributions** Ubuntu:Ubuntu is a Linux distribution based on Debian and composed mostly of free and open-source software. Ubuntu is officially released in three editions: Desktop, Server, and Core for Internet of things devices and robots. All the editions can run on the computer alone, or in a virtual machine. Ubuntu is a popular operating system for cloud computing, with support for OpenStack. Kali Linux: Kali Linux is a distribution based on Debian. It is an Open source Distribution that is geared towards computer Forensics, security research and engineering. **Red Hat Enterprise Linux** RHEL is a Linux distribution developed by red hat. Red hat is an ibm software company that provides open source products to other companies. RHEL was developed by red hat for the commercial market. fedora: Fedora is another linux distribution developed by the fedora project which was By Red Hat. This distribution includes software distributed under many open source licenses. It is on the leading edge of open source technologies.

Open Source VS Closed Source

Open source refers to the user of a computer being able to access and use the software. The user is able to customize the software to there own liking using code. Code has been distributed freely on the internet and it can be modified by any other users. In other words the user does not have any restrictions. Closed source on the other hand is when the computer software code is closed. The general public and user is not allowed to see the code. The only person who can change the code is the company who created it. Users are put on many restrictions in closed source softwares. Closed software needs to have a license before installing .

Advantages of Open Source

- Customizable to your liking
- Freedom/Not being restricted from your device
- Cost effective - there is no licensing fees required

Disadvantages of Open Source

- Open source being difficult to use may confuse many people that are not familiar with the software. Since Open source comes in many different ways it may confuse users.
- Open source does not come with support like closed source products do. Yes the user can fix the code and so on but they can not hold anyone liable to the troubleshoot.
- Security risks may play a part here also. While this not being common people can code a virus and put the user on the other end risk of getting hacked.

Advantages of closed source

- It is user friendly - The Gui is easy to read to the people in the norm.
- There is less risk of getting hacked since only providers with permission can touch the code.
- The support for closed source is easier than open source because whenever a user would have a problem they would contact the provider.

Disadvantages of closed source

- The cost for buying a product and not being able to read the code is not fair. Products with Closed sources tend to cost more while having to limit the user experience.
- Unlike in open source where if somebody sees a problem in a code they can fix it. In closed source software you wont be able to do that. Some fixes or issues of the software may never be fixed.
- Not being able to customize the software to your own liking is a disadvantage. Buying a product that is closed source you are basically stuck with what they give you in the GUI.

The Free software movement

The Free software movement was first started in 1983. Richard Stallman launched a project called GNU to replace the UNIX operating system. The project was to find a replacement of having users have freedom to there own software. GNU stood for "GNU's not unix".

The 4 Freedoms of software

- The freedom to inspect or view.
- The freedom to run the software
- The freedom to modify or improve the software
- The freedom to Distribute the software.