**Objectives**

1. Research information about software for a specific operating system (OS) environment. You will be assigned one of the operating systems form the list of: Windows, Mac OS, Linux. You will also be provided with a list of topics to investigate.
2. Organize your rough research information into a list of topics, sub-topics and facts. This process will involve identifying sub-topics, rearranging your rough research notes, and selecting (or highlighting) interesting facts.
3. Report a summary of your research in the form of a “concept map”. Use the PowerPoint template provided as a starting point. The concept map should only include the best and most interesting information from your organized research notes.

Your assigned operating system is:

* Windows
* Mac OS
* Linux
* iOS
* Android

A concept map can be created using the “Smart Ideas” application or PowerPoint or other applications.

**Level 1 – Rough Research**

Research information about the software for your assigned operating system (OS) environment.

* Guide your research according to the suggested topic list below
* Feel free to copy-and-paste as long as you keep track of your bibliographic references.
* Do not be too picky or concerned about formatting as you will organize this information later in step 2
* Select things that look interesting and don’t forget to include graphics images as well
* Upload your rough research notes to your repository when you are done.

Topic A – Productivity, Entertainment & Other Software Applications

Softwares that are used by linux

PDF Editor – LibreOffice Draw

LaTeX Editor – TeXmaker

Screen Recorder – Kazam

FTP Client – FileZilla

Backup Software – Bacula

Note Taking App – Simplenote

Terminal Emulator – GNOME Terminal

Code Editor – Atom

Linux Antivirus – Sophos

Linux Task Manager – Htop

Linux Security Tools

Source: <https://www.ubuntupit.com/best-linux-software-our-editorial-list-of-essential-linux-apps/>

Topic B – User Interface (Window Management & Input Devices)

Topic C – Memory Allocation, Management, & Devices

* User space API
* **Linux** system calls
* kmalloc()
* Slab **Allocator**
* Page **Allocation**
* Pages

Source: <https://www.oreilly.com/library/view/linux-device-drivers/0596005903/ch08.html>

Topic D – Process / Task Scheduling and Management (System Startup)

The Linux kernel controls the way that tasks (or processes) are managed on the system. The task scheduler, sometimes called process scheduler, is the part of the kernel that decides which task to run next.

Source: <https://doc.opensuse.org/documentation/leap/tuning/html/book.sle.tuning/cha.tuning.taskscheduler.html>

Topic E – Software Security, Updates & System Tools

Wireshark

NMAP

Malware, antivirus scanners

Snort

NIKTO

Metasploit framework

SPIKE

Ollydbg debugger

Topic F – File System & User Accounts

ext2

ext3

ext4

XFS

JFS

MTD

UBIFS

JFFS2

YAFFS

Source: <https://www.tecmint.com/linux-file-system-explained/>

Topic G – Special Features of your OS

Portable(Multiplatform)

Multitasking

Multi User

Multiprocessor (SMP) Support

Multithreading Support

Virtual Memory

Hierarchical File System

Graphical User Interface (X Window System, Wayland)

Source: <https://www.quora.com/What-are-the-some-features-of-linux>

Topic H – Limitations of your OS

Because Linux does not dominate the market like Windows, there are some disadvantages to using the operating system. First, it’s more difficult to find applications to support your needs.

Source: <https://blog.storagecraft.com/linux-advantages-disadvantages-open-source-technology/>

**Level 2 – Organized Research**

Organize your rough research information to provide more stricture and meaning.

* Re-read your rough research to identify (highlight) important sub-topics and facts
* Rearrange (cut–and-paste) your rough research so that related sub topics and facts are next to each other.
* Your finished organization should look like the template provided below.
* Upload your rough research notes to your repository when you are done.

Suggested organization template:

* Topic A – Productivity, Entertainment & Other Software Applications
  + Sub-Topic 1
    - Fact 1
    - Fact 2
    - …
  + Sub-Topic 2
    - …
  + …
* Topic B – User Interface (Window Management & Input Devices)
  + …

**Level 3 – Concept Map**

Create a “concept map” as a final report of your organized research.

Use the PowerPoint template provided as a starting point.

You can use PowerPoint or another concept mapping tool of your choice.

Select the best and most interesting information from your organized research.

Summarize and edit your information to fit on the concept map.

Share your finished concept map with Mr. Nestor at p0079141@pdsb.net

A concept map can be created using the “Smart Ideas” application or PowerPoint or other applications. A concept map template can be downloaded from the “Topic A” folder on the class GitHub repository

