**aObjectives**

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

* FocusWriter. FocusWriter is a text processor that creates a distraction-free environment for writers. It supports popular text formats and uses a hide-away interface to block out all distractions. You can select any visual and sound theme that works best for your productivity, and focus on your work.
* actiTIME. actiTIME is a time-tracking and work management tool for companies of any size and self-employed individuals. Alongside with its cloud-hosted version, a self-hosted edition for Unix systems is available that can be installed on a personal computer or on a company’s internal server.
* Timeshift. Timeshift provides users with the ability to protect their system by taking incremental snapshots which can be reverted to at a different date – similar to the function of Time Machine in Mac OS and System restore in Windows.

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

* A Linux desktop environment or graphical desktop is a set of essential tools and utilities running on top of your operating system.
* Linux is basically a command-line operating system. However, many distributions (distros) come with a desktop environment (DE) that provides a GUI for Linux users. One of the most popular distros for casual users is Ubuntu.

Topic C – Memory Allocation, Management,& Devices

* Memory allocation in the Linux kernel is complex, because there are significant constraints involved—and different ways of allocating memory have different constraints.
* Device files are also known as device special files. Device files are employed to provide the operating system and users an interface to the devices that they represent.

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

* A process refers to a program in execution; it’s a running instance of a program. It is made up of the program instruction, data read from files, other programs or input from a system user.
* The croon daemon on Linux runs tasks in the background at specific times; it’s like the Task Scheduler on Windows.
* Want to start, stop, and manage services on your Linux box? Then you need to familiarize yourself with Upstart and take control of your startup and boot processes on Linux.

Topic E – Software Security, Updates & System Tools

* Firejail. Firejail is a c-based community SUID project that minimizes security breaches by managing the access that applications using Linux namespaces and seccomp-bpf run.
* ClamAV. ClamAV antivirus is open-source and it is excellent at detecting viruses and trojans among other security and privacy threats.
* John the ripper. John the Ripper is among the fastest password crackers and it is available for multiple platforms including OpenVMS, Windows, DOS, and several Unix flavor’s.

Topic F – File System & User Accounts

* Image result for Linux File Systemwww.linux.com Linux supports numerous file systems, but common choices for the system disk on a block device include the ext\* family (ext2, ext3 and ext4), XFS, JFS, and btrfs.
* Linux is multi-user system. This means more than one person can use the Linux. With the help of various software servers, configurations, and commands, multiple users can use Linux.

Topic G – Special Features of your OS

* **Portable** – Portability means software’s can works on different types of hardware’s in same way. Linux kernel and application programs supports their installation on any kind of hardware platform.
* **Shell** – Linux provides a special interpreter program which can be used to execute commands of the operating system. It can be used to do various types of operations, call application programs etc.
* **Multiprogramming** – Linux is a multiprogramming system means multiple applications can run at same time.

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.
* One main issue with Linux is drivers. Before you can install any hardware component in your computer, you must make sure the hardware has drivers available.

**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
  + Productivity
    - FocusWriter. This software is a text processor that makes writes like us be distraction-free.
    - It also supports popular text formats and also has a feature that hides-away all distractions.
    - You can use any sound or visual theme that helps with your focus on work.
  + Entertainment
    - actiTIME. This software is used for time-tracking and also for work management tool for companies.
    - ActiTIME can be downloaded onto your personal computer or on a computer in a company’s internal server.
  + Other Software Applications
    - Timeshift has the ability to protect a system by taking incremental snapshots.
* Topic B – User Interface (Window Management & Input Devices)
  + Widow Management
    - A Linux desktop environment or graphic desktop has many essential tool and many utilities running on your operating system.
  + Input Devices
    - One input device is GUI for Linux users.
    - One popular distros user is Ubuntu.
    - Linux is like a command-line operating system.

Topic C – Memory Allocation, Management, & Devices

* + Memory Allocation
    - Memory Allocation are significant constraints involved.
    - Memory Allocation also have different ways to allocating memory.
  + Management & Devices
    - Device files are named as device special files.
    - The Device files help the operating system and the users an interface to the devices.

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

* + Process
    - It is made up of the program, it reads data from files, input from a system user, or other programs.
    - A process refers to a program that runes instance of a program.
  + Management (system startup)
    - The cron daemon on Linux runs many things in the background at a time.
  + Task Scheduling
    - You need to understand the task scheduling to use it.
    - It helps you take control of your startup and processes on Linux.

Topic E – Software Security, Updates & System Tools

* + Software security
    - Firejail is a c-based community that uses SUID project that minimizes security breaches.
  + Updates
    - ClamAV. This software helps with the updates of Linux.
    - It also helps with privacy threats.
  + System tools
    - John the ripper. This software is available for multiple platforms including OpenVMS, Windows, DOS, and Unix flavors.
    - It also is the fastest password crackers.

Topic F – File System & User Accounts

* + File system
    - Common choices for the system disk are the ext\* family (ext2, ext3 and ext4), XFS, JFS, and btrfs.
  + User Accounts
    - For Linux it is a multi-user system.
    - With the various software server, configuration, and commands.

Topic G – Special Features of your OS

* + Special Features of your OS
    - Portable – Linux has an installation on any hardware platform.
    - Shell – Shell uses various types of operations, call application programs etc.
    - Multiprogramming - Linux runs multiple application at the same time.

Topic H – Limitations of your OS

* + Limitations of your OS
    - One big issue of Linux is the drivers.
    - Before anything you must make sure that the drivers are available.

**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

