9.1 What is an Operating System and 9.2 Operating system function: application loading, file systems & memory managment

Notebook:	How Computers Work [CM1030]		
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Cornell Notes	**Topic:** 9.1 What is an Operating System? 9.2 Operating system function: application loading, file systems, & memory management	Course: BSc Computer Science Class: How Computer Work [CM1030]-Lecture Date: November 27, 2019

Essential Question:

What is an operating system and what are the main functions of an operating system?

Questions/Cues:

- What are utilities?
- What is a GUI?
- What is the Window Manager?
- What is the Kernel?
- What is the file manager?
- What is Folder/Directory?
- What is the memory manager?
- What is paging?

Notes

- Utilities =in between OS and application. Utilities are actually apps, but they're mini-apps bundled with the OS
- GUI(Graphical User Interface) = the visual portion of OS, is the first thing most people think of when OS is mentioned, it's also a service provided by the OS
    - Often basic buttons and text entry boxes are supplied by OS or libraries associated with the OS via GUI library, but GUI library can also be third-party
- Window manager = part of OS that provides space on screen, it's a service provided by OS
- Kernel = fundamental core of OS and it's what provides most important functionality like access to hardware, networking & files
- The OS Kernel manages device drivers, provides a standard interface to all apps and behind the scenes it comms with the drivers which interact with hardware itself
- When data stored to HDD, those files managed by OS with function called the file manager
- File manager = software that manages how files and their metadata is stored on disk. Also looks after folders

- Folders also called directories, terms are interchangeable
- Folder or Directory = contains files; way of grouping files together, can also contain folders/directories it creates a hierarchy
- Each app on comp needs some memory to function, that's where app stores all data it's working on
- When app starts, OS or part of OS called memory manager allocates app some memory or rather gives it range of memory address it can work with. OS can stop one app from accessing memory area of another app
- Memory manager = allocates memory to apps & makes sure that one app can't interfere with memory area of another app.
    - When memory fills up, a new app starts or an app asks for more memory then memory manager takes app not active at present moment & moves it memory area of app from main memory onto HDD. App is still loaded, data still there, could be reloaded into memory whenever, but it's stored on HDD. Data will be slower to access, but frees up space for other apps.
- Paging = process of copying memory to HDD. A page is chuck of memory attached to an app that is saved to disk.
    - When we use disk space as memory, we called it virtual memory, disk space is acting as if it were memory

Summary

In this week, we learned about what an Operating system is, the different functionalities/services it provides. Also, we delved deeper into what functions of the kernel (core of OS) are, for example file and memory management.