**Pre-Journal Notes**

***Things to Read:***

*Selected sections of Chapter 7 from our A++ textbook:*

* *Storage Devices Overview*
* *Hard Drive Overview*
* *SSD Overview*
* *Hard Drive Interfaces Overview*
* *Hard Drive Preparation Overview (but ONLY look for the following definitions: cluster, sector, cylinder)*
* *Fault Tolerance*

*Storage Methods Handout*

*Secondary Storage Handouts*

***Guiding Questions:***

*(answer 2 of these in your journal entry):*

*Have you used cloud storage in the past? Do you prefer local or cloud storage of your data? Explain your answer.*

*Do you think adding more platters to a hard drive increases or decreases its mean time between failures (MBTF)?*

*Based on the storage management handout, do you think contiguous, chained, or indexed allocation is the best method for allocating hard drive space?*

*Have you encountered RAID in the past? Based on the resilience/performance tradeoffs, which level of RAID do you prefer?*

*Please reference ebook in syllabus.*

**Journal**

**Notes:**

Storage Methods:

* Contiguous
  + File blocks are stored in sequential (contiguous) order
  + Direct Access
  + Maximum file size cannot be increased after initial allocation
  + Cheap and fast (I think)
  + Buffers both internal and external fragmentation (????)
  + Can result in wasted space (fragmentation) if a file block is deleted
* Linked List (Chained?)
  + Allows for files to grow via additional links
  + No external fragmentation (????)
  + If one block is missing a pointer, the entire file gets corrupted
  + Slower than contiguous allocation but uses less space (I think)
  + unlike contiguous allocation space is not wasted when file sizes change, and space is not as limited
* Indexed
  + An index is used to track file block location directly
  + Max file size set by user

Fragmentation:

* Fragmentation is when memory blocks cannot be allocated or something (????)
  + Etextbook definition: *Occurs over time as files are saved on the hard drive in clusters not adjacent to each other, which slows hard disk access time*
  + Internal fragmentation
  + External fragmentation
  + Defragmentation is “the process of reordering and placing files in contiguous sectors”
  + A memory block is a group of one or more bytes (article mentioned something about contiguous only?)

Types of storage:

* Optical
  + CD (Compact disc)
    - Cheap
  + DVD (Digital Versatile Disk)
  + Worm (????)
  + Rewritable
  + Blu-ray
* Flash
  + SSD (Solid State Drives)
    - Don’t lose their data when power is cut
* Magnetic
  + Hard Drives
    - Lose their memory when power is cut
    - Store more data than flash drives

**Guiding question answers:**

1. *Have you used cloud storage in the past? Do you prefer local or cloud storage of your data? Explain your answer.*

* It depends on what I am storing. I have generally used local storage for most things. However, I occasionally make use of cloud storage when I want to access something across multiple devices or make sure it will not be at risk if my device is damaged or lost/stolen. I prefer local storage because I feel that it is more convenient and secure for my desired personal uses of computers.

1. *Have you encountered RAID in the past? Based on the resilience/performance tradeoffs, which level of RAID do you prefer?*

* I have little to no experience with RAID. I do not have a favorite, but I would personally lean toward RAID 10 and RAID 5 because they offer good performance but do not risk total data loss when a single disk is damaged, unlike RAID 0.

**Miscellaneous Notes:**

* A head crash occurs when the reading/writing head on a hard drive actually makes physical contact with the platter, causing permanent damage by scratching or “slashing.”
* MTBF (Mean Time Between Failures) Ebook definition: *The average number of hours before a device fails*
* MCBF (Mean Cycles Between Failures) Ebook definition: *A performance comparison measurement which is found by dividing the mean time between failures (MTBF) by the duration time of a cycle (operations per hour). The lower the number, the better the performance*

**Images:**



