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CS 230 Operating Platforms 6-1 Memory and Storage Management

Memory is stored in essentially two locations, on disk, or a cloud based hard drive, and Random Access Memory, or RAM. Disks such as a hard drive, cloud, thumb drives, or a CD-ROM can store data in physical form. This ensures that information will not get lost due to lost connection, power outages, or data error causing a crash of the system. RAM uses a different approach and can use cache to temporarily store data. This allows for faster response times and shortened latency when running an application. The fallback with RAM is running the risk of losing data in the case of power loss or system failure. Since both forms of memory are limited, effectively managed storage of memory is crucial. Since cloud storage would be available in the Draw It or Lose It game, Swapping data would be an effective way to manage memory. This would take processes and information and “swap” them in and out of memory as needed. This could lower the amount of actual memory needed by the user but may increase latency.

When considering storage management, two factors come into play, the client-side, and the server-side. While RAM would play an important role in the Draw It or Lose It game, it would still be a cloud-based game. The Gaming Room will have 200 high-definition image files, each approximately 8 megabytes in size. This means that the server would need to handle a minimum of 2 gigabytes of memory just for the photos, not including the actual game application. On the client-side of the application, cache and virtual memory can swap a photo into memory to be used by the game, and deleted when no longer in use, freeing the space for another photo in the next round. While this may cause latency during the game, it would significantly shorten the initial run time of the game.

The difference between memory and storage in terms of the game application functionality is that storage is what the game is, and memory is how it is going to be played. We can store a game on a hard drive, but that would not run the application. Memory can hold information like usernames, high scores, and so on. Virtual memory like cache can temporarily hold this information locally, allowing the client to hold information and not need to make a call to the server, which would increase the overall speed of the application and lower the need for such storage on the server side. Storage on the server side would allow bigger information, like the photos and the code for the actual game, to be stored remotely. This is less time the client needs to “install” the game and start playing.