Memory and Storage Management for "Draw It or Lose It"

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**Memory Management**

To effectively manage memory in the Draw It or Lose It application, several considerations and approaches are necessary. Firstly, optimizing the image rendering process to minimize memory usage is crucial. This can be achieved by implementing efficient algorithms for loading and displaying images, as well as by caching frequently used images to reduce the need for repeated loading from storage. Implementing memory management techniques such as garbage collection can help reclaim memory resources used by images that are no longer needed, ensuring optimal performance and responsiveness of the application.

**Storage Management**

Successful storage management for "Draw It or Lose It" hinges on carefully determining the necessary capacity for its image library. First, accurately estimate the total storage needed by considering the individual image file sizes and the overall image count. Don't forget to factor in other essential game data like player usernames, passwords, past scores, and potential future features as these will expand storage needs.

While the utilization of a local storage solution is one option, exploring a cloud-based solution merits consideration. The cloud offers easy synchronization across devices, greater flexibility, and the potential for "pay-as-you-go" cost savings, minimizing the need for up-front hardware investments. Additionally, optimizing storage usage through data compression and efficient file organization will help keep the application streamlined, regardless of whether local or cloud storage is chosen.

**Comparison**

The main difference between memory and storage management in terms of “Draw It or Lose It” functionality lies in their respective roles and usage patterns within the application. Memory management primarily focuses on optimizing the allocation and usage of volatile memory resources, such as RAM, to ensure efficient operation of the application during runtime. In contrast, storage management is concerned with the long-term storage of data, such as image files, on non-volatile storage devices, such as hard drives or solid-state drives (SSDs), to ensure persistent access to game assets across multiple sessions and devices. While memory management primarily impacts the performance and responsiveness of the application during gameplay, storage management plays a crucial role in preserving and managing the game's assets over time.

**References**

Arsov, K. (2018). Microservices vs. SOA — Is there any difference at all? Medium. https://medium.com/microtica/microservices-vs-soa-is-there-any-difference-at-all-2a1e3b66e1be

Bashir, F. (2023). What is serverless architecture? What are its pros and cons? https://www.freecodecamp.org/news/what-is-serverless-architecture-what-are-its-pros-and-cons/

Chapel, J. (2019). Cloud storage cost comparison: AWS vs. Azure vs. Google. ParkMyCloud. https://jaychapel.medium.com/cloud-storage-cost-comparison-aws-vs-azure-vs-google-844dfff3d324

OpenSource.com. (2018, May 31). What is a Linux Server and why does your business need one? https://opensource.com/resources/linux