# [CS-230-12398-M01 Operating Platforms 2025 C-1 (Jan - Mar)](https://learn.snhu.edu/d2l/home/1798770)

# 7-1 Project Three Submission

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Operating Platforms

To see an overview of the operating system architectures provided by file systems components, memory storage management, memory management techniques, distributed systems, and networks interconnect them. I recommend using Windows-based server platforms because Windows is a versatile and highly customizable OS that is well suited for server support, as well as a wide range of programming languages and development tools that are best for developing games and their updates. Windows has a larger market capacity than all the other combined. For example, Amazon Web Services (AWS) has a global presence and extensive services for hosting and scaling applications.

Operating System Architecture:

The Windows operating system offers a modular and flexible architecture that supports multi-users with multi-tasking, ensuring a stable and responsive environment. Operating System Architectures There are three primary operating systems architectures, with all systems service users running into the same address or spaces, with high performance and a high risk of system crashes, provided by Monolithic architecture. When operating systems that are divided into small modules or components are running in different spaces, reducing the risk of system lack or crashes is monitored by Microkernel architecture. It combines monolithic and microkernel architecture built of system service, whereas monolithic kernels are separate modules called hybrid architecture. The different OS systems provide their own unique and complete architecture system; for example, Windows and Linux have built hybrid architecture. However, macOS has taken a completely different route using a Microkernel architecture. Many operating systems need different ways of running their software to provide their platforms. For example, Windows provides a Microsoft Store, macOS provides an App Store, and Google provides a Play Store.

File System Components:

File system components are a collection of given or provided data that is organized in a specific way to allow for easy access and can quickly retrieve file components, including:

**File:** The file units of data stored in the file system can be accessed and modified by its user or admin at any moment.

**Directories:** The directories contain files, which allow for data organization.

File attributes: File attributes are metadata associated with it, such as its name, size, creation, and permissions.

File systems drivers: The file drivers are software components that provide an interface between

operating systems and within file systems.

Different operating systems provide different file system components. For example, Windows uses NTFS file systems, which support file permissions, whereas MacOS uses HFS+ file systems, which allow for case-insensitive file names.

The Storage Management:

Given that Windows-based platforms have scalability and potential and high volumes of user-generated content in "Draw It or Lose It," a distributed file is essential. This will make the game distribute and replicate data across multiple servers, ensuring data availability and cheating tolerance. Memory and storage management are very crucial components for an operating system, which is responsible for managing the computer memory and storage resources such as:

Memory management involves allocating and redistributing memory processes to ensure that resources are available to run. It also includes virtual Memory, which allows the OS system to use the hard disk with additional Memory.

Storage management: The storage management of computers' hard disk space organizes files and directories so that there is enough space for new files.

Different operating systems use their own memory and storage management systems. For example, MacOS uses swap files, while Windows uses a page file-sys file to manage virtual Memory.

The Memory Management Techniques:

Windows offers efficient memory management techniques for games and software. It employs demand paging and virtual Memory, where it optimizes the allocation of physical Memory and its memory fragmentation, with Windows configuring sufficient Memory to support the game requirements. However, we should consider implementing application-specific optimizations to manage the game servers efficiently. The memory management techniques used to optimize the use of memory resources include:

**Paging:** This paging involves dividing Memory into fixed-size pages and allocating them as needed.

**Segmentation:** Segmentation can be different depending on the context of use. In this case, segmentation memory is divided into varying sizes and allocated as needed.

**Virtual Memory** is one of the best memory management techniques used by operating systems. OS systems use complex disk spaces as additional Memory, providing more resources than a computer's physical Memory. They continuously use hardware and software to achieve their goals.

The best memory management lies in its systems requirements, speed, memory access patterns, program sizes, performances, etc. If you buy after-market parts for your systems' performance requirements and try to run the heavy program, it will eventually crash and face consequences.

Distributed Systems and Networks:

Communication between various platforms is essential for a distributed architecture to ensure Draw it or Lose It Co. The game-distributed systems should consist of multiple client devices such as PCs, mobile devices, macOS, etc. It is crucial in enabling online multiplayer experiences with synchronization and resources distrusted across multiple servers and client devices. Distributed systems are collections of computers that combine to perform a task. Systems are interconnected by networks where computers can communicate with each other. Distributed systems improve performance, scalability, reliability, and interconnection and provide smooth experiences to their user base to play our games. The networks that interconnect these systems include:

Local area networks (LANs) connect computers in a local area, such as a building.

Wide-area networks (WANs): These are networks that connect computers over large areas, such as cities, countries, and the world.

Wireless Networks allow computers to connect wirelessly, such as through Wi-Fi or Bluetooth, without using any physical cables.

Well, distrusted systems and networks are teams of independent computers consisting of multiple resources, processes of data collaborations, and unified service to end-users, which provides client-server systems, web servers, email servers, and file servers. It is important to know network outages and connectivity issues by implementing a backup and failover strategy to maintain the games during network disruptions, which can be achieved through load balancers, redundant servers, and error-handling mechanisms.

Security:

We have arrived at the most crucial part of it because it is of paramount importance for Draw It or Lose It; it is important for handling user information. To protect user data between various platforms, we should take these security measures.

They implement data encryption in transit and safeguard user information. They utilize industry-standard protocols such as SSL/TLS to secure data during each transmission and algorithms like AES for data storage.

We should provide strong access controls and authentication mechanisms so that only authorized users can access the game and user data. We implement multi-factor authentication for an extra layer of security.

Updates the server and all components regularly to address security vulnerabilities. Detection systems and monitoring tools detect and respond to security threats in real-time. Performs regular security testing and identifies audits.

In conclusion, the operating systems architecture, file systems components, memory and storage management and its techniques, and distrusted systems and networks are all. By leveraging the capabilities of Windows, the gaming room can create a secure and reliable infrastructure to expand across various computing environments while ensuring optimal performance and architectural choices, which will build a strong foundation for the growth and success of the game. At the end my team will use Window based operating platforms because it is versatile in all of the platforms and easy to access from anywhere in the world from.