Si todos los procesos estan en waiting, tenes ocupada la ram y 0% CPU

Operating System (OS) Overview: The OS is crucial for managing hardware resources and making the system user-friendly by virtualizing resources like the CPU, memory, and storage. It acts as an intermediary between users and the hardware, providing a virtualized environment where multiple programs can run simultaneously.

Virtualization: The OS creates virtual versions of physical resources to make them easier to use. This includes virtualizing the CPU so that multiple programs can run concurrently, virtualizing memory so that each process thinks it has its own private memory, and managing disk space for persistent storage.

Concurrency: The OS handles multiple tasks at the same time, which can lead to issues like race conditions. Concurrency is managed through mechanisms like threads and synchronization primitives to ensure that multiple tasks can run smoothly without interfering with each other.

Persistence: Data stored in volatile memory (like RAM) is lost when the system is powered off. The OS provides persistent storage through file systems, which manage data on non-volatile storage devices like hard drives or SSDs.

Design Goals of OS: The OS should provide high performance, protection (between applications and the OS), reliability, security, and energy efficiency. These goals guide the development and implementation of the OS.

Historical Context: The evolution of operating systems from simple libraries to complex, multiprogramming systems is discussed, highlighting the importance of systems like UNIX, which introduced key concepts like processes and file systems that are still used today.

Process Management: A process is an abstraction of a running program. The OS manages processes, allowing them to be created, executed, and terminated. Processes can be in different states (running, ready, blocked), and the OS uses scheduling policies to manage which process runs at a given time.

Process API: The OS provides an API for process management, including functions to create, destroy, and control processes. This API allows programs to interact with the OS and manage their execution.