UNIT 1
AN INTRODUCTION TO OPERATING SYSTEMS

OS is an interface between the user-app and the resources (CPU, GPU, memory).

Application software performs specific task for the user.
System software operates and controls the computer system and provides a platform to run application software.

An **operating system** is a piece of software that manages all the resources of a computer system,both hardware and software, and provides an environment in which the user can execute his/her programs in a convenient and efficient manner by hiding underlying complexity of the hardware and acting as a resource manager.

Why OS?

1. What if there is no OS?
    a. Bulky and complex app. (Hardware interaction code must be in app's code base)
    b. Resource exploitation by 1 App.
    c. No memory protection.
2. What is an OS made up of?
    a. Collection of system software.

If, OS is not used one app will hack all the memory, CPU, GPU, etc. and hence other app won't open, and PC will go on hang state.

An operating system function -

- Access to the computer hardware.
- interface between the user and the computer hardware
- **Resource management (Aka, Arbitration) (memory, device, file, security, process etc)**
- **Hides the underlying complexity of the hardware. (Aka, Abstraction)**
- facilitates execution of application programs by providing isolation and protection.

say for example, if you don't have OS, then it might happen that Tiktok can access your data on PUBG and it can also access your PUBG data. If you are playing PUBG, it might happen that Tiktok can access your data on health and reduce your health from 100% to 0%.

User

Application programs
Operating system
Computer hardware

The operating system provides the means for proper use of the resources in the operation of the computer system.

If OS, is not present then the coder of the app will have to also write the code for memory management. This makes the app bulky.

This also violates the DRY Principle (DRY - Do not Repeat Yourself) since multiple apps are using the same code for memory management.

Now if we use OS, the resource management is handled by the OS itself.

Video Link
https://www.youtube.com/watch?v=a1l4MceYHaQ&list=PLDzeHZWIZsTr3nwuTegHLa2qlI81QweYG&index=2