Definition: OS is a piece of software that abstracts & manages hardware resources for applications to use.

- CPU \(\Rightarrow\) Processes & threads
- RAM \(\Rightarrow\) Virtual Memory
- Storage \(\Rightarrow\) Filesystem
- I/O Devices

Handling complexities & masking limitations
3 Roles of OS

1). Referee [Resource Management]
   • Resource allocation
   • Isolation (failure isolation)
   • Communication

2). Illusionist [Handling Complexities, Masking Limitation]
   • examples = processes (dedicated CPU), virtual memory (infinite memory)

3). Glue [Common Services]
OS Evaluation Metrics

→ Reliability & Availability

→ Security = Isolation

→ Portability

① Abstract Virtual Machine (AVM)

            = API (posix) + memory access model + safe instructions

② Hardware Abstraction Layer (HAL)

→ Performance

  • overhead, fairness