

COA

Chapter 08: | OS Support - Introduction

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| AGENDA

- Operating System Overview

| Intro...

- The operating system (**OS**) is the software that **controls the execution** of programs on a processor and that **manages** the processor's **resources**
 - Memory: **Memory Management**
 - Processor: **CPU scheduling**
 - I/O
- Performed efficiently and rapidly if the processor **hardware** includes capabilities to **support** the OS
- Acts as an **interface**

| OS Main Objectives

- Convenience
- Efficiency

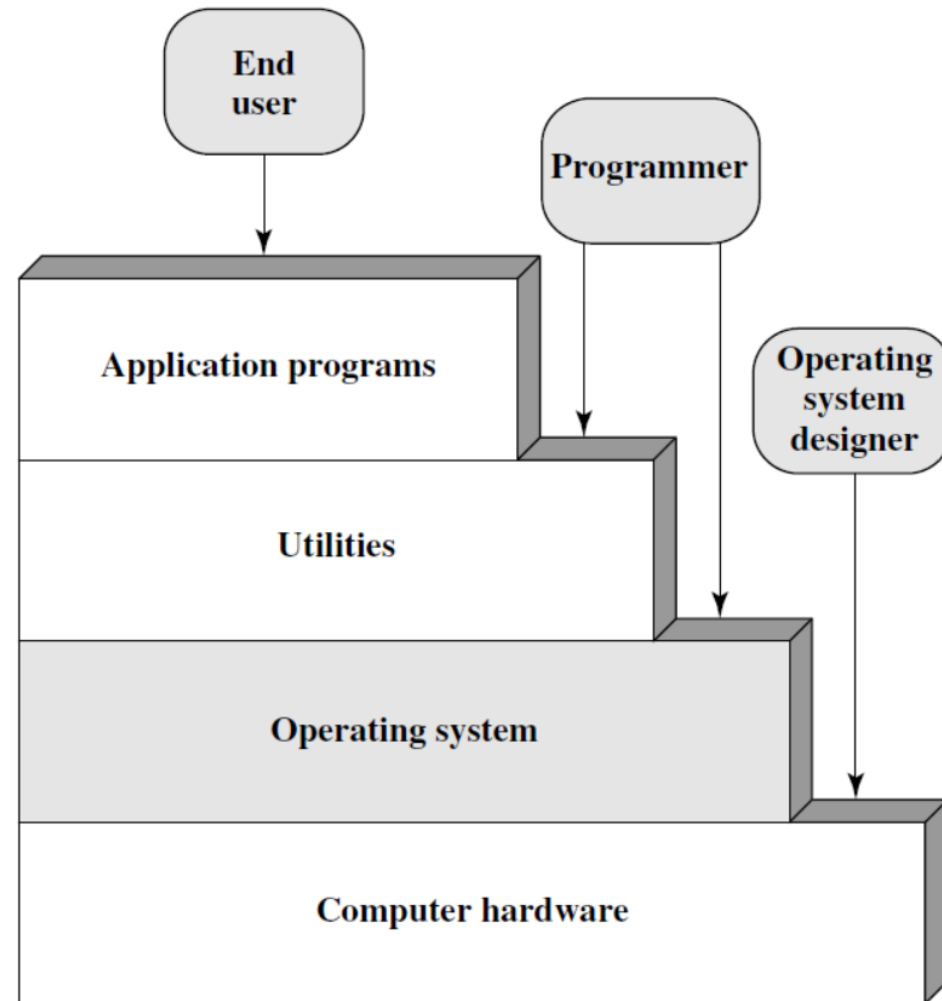
| OS as a User / Computer Interface

- The **end user**, generally is not concerned with the computer's architecture.
- The end user **views** a computer system in terms of an **application**
- To **develop an application program**
 - A set of **processor instructions** - **complex** task
 - **To ease this task**, a set of systems programs is provided. Some of these programs are referred to as **utilities**

| OS as a User / Computer Interface

- **Utilities:** Implement frequently used functions that assist in **program creation**, the **management of files**, and the **control of I/O devices**.
- A programmer makes use of these facilities in developing an application
 - The most important system program is the **OS**.
- The **OS masks the details of the hardware** from the programmer - It acts as **mediator**

| OS as a User / Computer Interface



| OS services

- Program creation
- Program execution
- Access to I/O devices
- Controlled access to files
- System access
- Error detection and response
- Accounting

| OS as Resource Manager

- The OS **directs the processor** in the use of the other system resources and in the **timing** of its execution of other programs
 - Relinquish
 - Resume

| OS as Resource Manager

- **A portion of the OS is in main memory.**
 - **Most frequently used functions in the OS: kernel, or nucleus**
 - **Other portions of the OS currently in use.**
- **The remainder of main memory contains user programs and data.**
- **The allocation of this resource (main memory) is controlled jointly by the OS and memory management hardware**

| OS as Resource Manager

- The **OS** decides **when an I/O device can be used** by a program in execution, and **controls access** to and use of **files**.
- The **processor** itself is a **resource**

