Democratic and Popular Algerian Republic
Ministry of Higher Education and Scientific Research
Djilali Bounaama University - Khemis Miliana
Faculty of Material Sciences and Computer Science
Department of Computer Science

OPERATING SYSTEM II

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Schedule

Cours :

Wed 10:00 - 11:30 (AP2)

Tutorials:

G2: Wed 11:30 - 13:00 (S35)

G1: Wed 14:30 - 16:00 (S36)

Lab work:

- - -

How does the course work?

Evaluation:

Final exam : 60%

class works : 40%

Tutorials:

Assignements (2) : 12 pts

Attendance : 5 pts

Assiduity : 3 pts

Labs :

~~Lab test : 10 pts~~

~~Lab repport : 8 pts~~

~~Attendance : 2 pts~~

RESSOURCES

- Tanenbaum, Modern operating systems, thirth edition, Pearson, 2014
- Operating System Concepts Tenth Edition « Silberschatz ».
- William stallings, Operating systems: internal and design principles.
  - **others**:
  - Michel Divay, Unix, Linux et les systemes d'exploitation : cours et exercices corrigés , 2004.
  - Crocus, Systemes d'exploitation des ordinateurs, 1993.
  - Sacha Krakowiak, Principes des systémes d'exploitation des ordinateurs, Dunod, 1993

- internet

THE COURSE CONTENT :

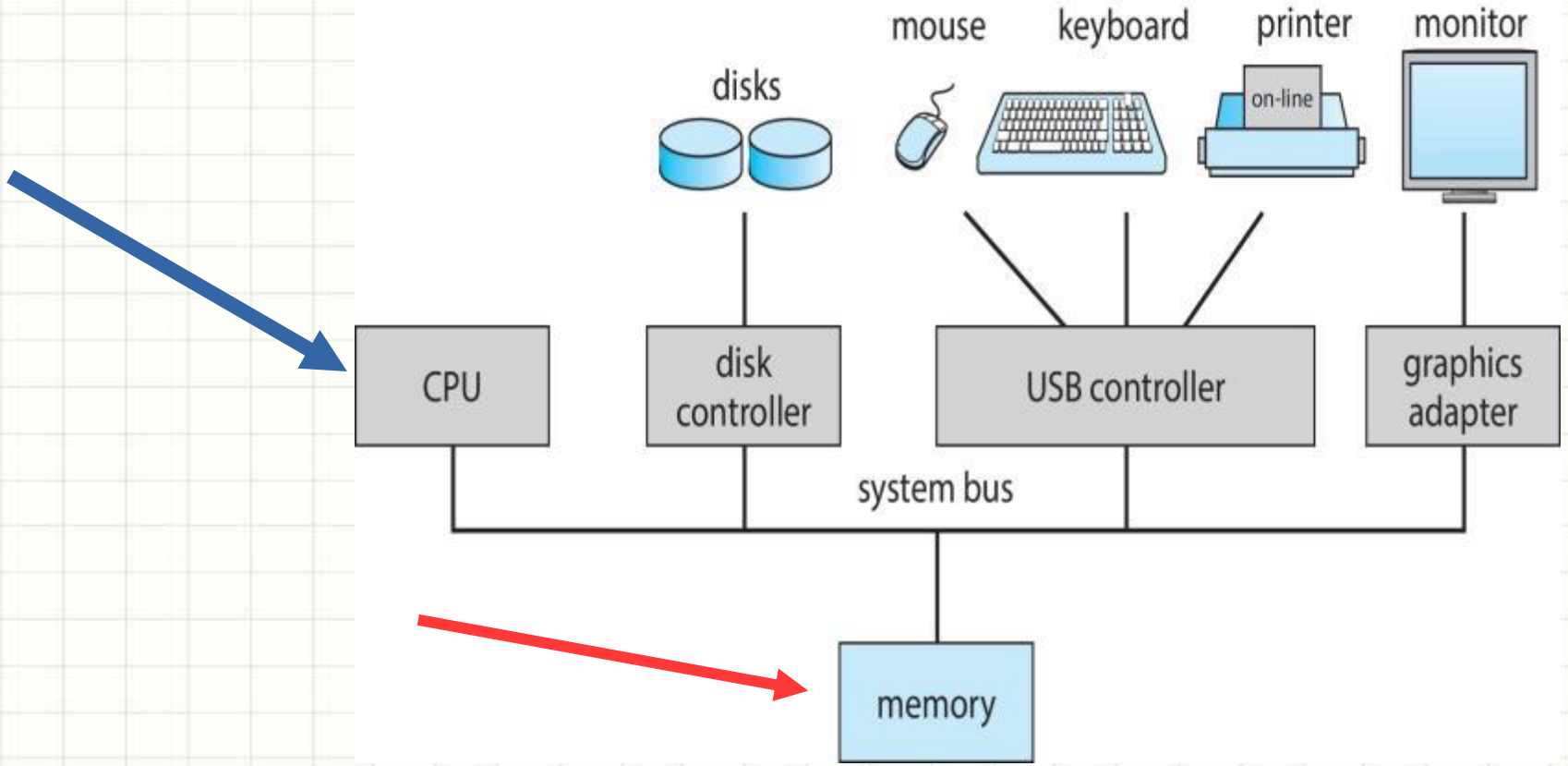
- → INTRODUCTION
- THE PROCESS MODEL
- PROCESS SYNCHRONIZATION USING :
  1. CRITICAL REGIONS
  2. SEMAPHORES
  3. MONITORS
  4. ...
- INTERPROCESS COMMUNICATION
- DEADLOCKS

Mac OS

Introduction:

ANDROID

Computer System Organization



INTRODUCTION AU SYSTEME D'EXPLOITATION

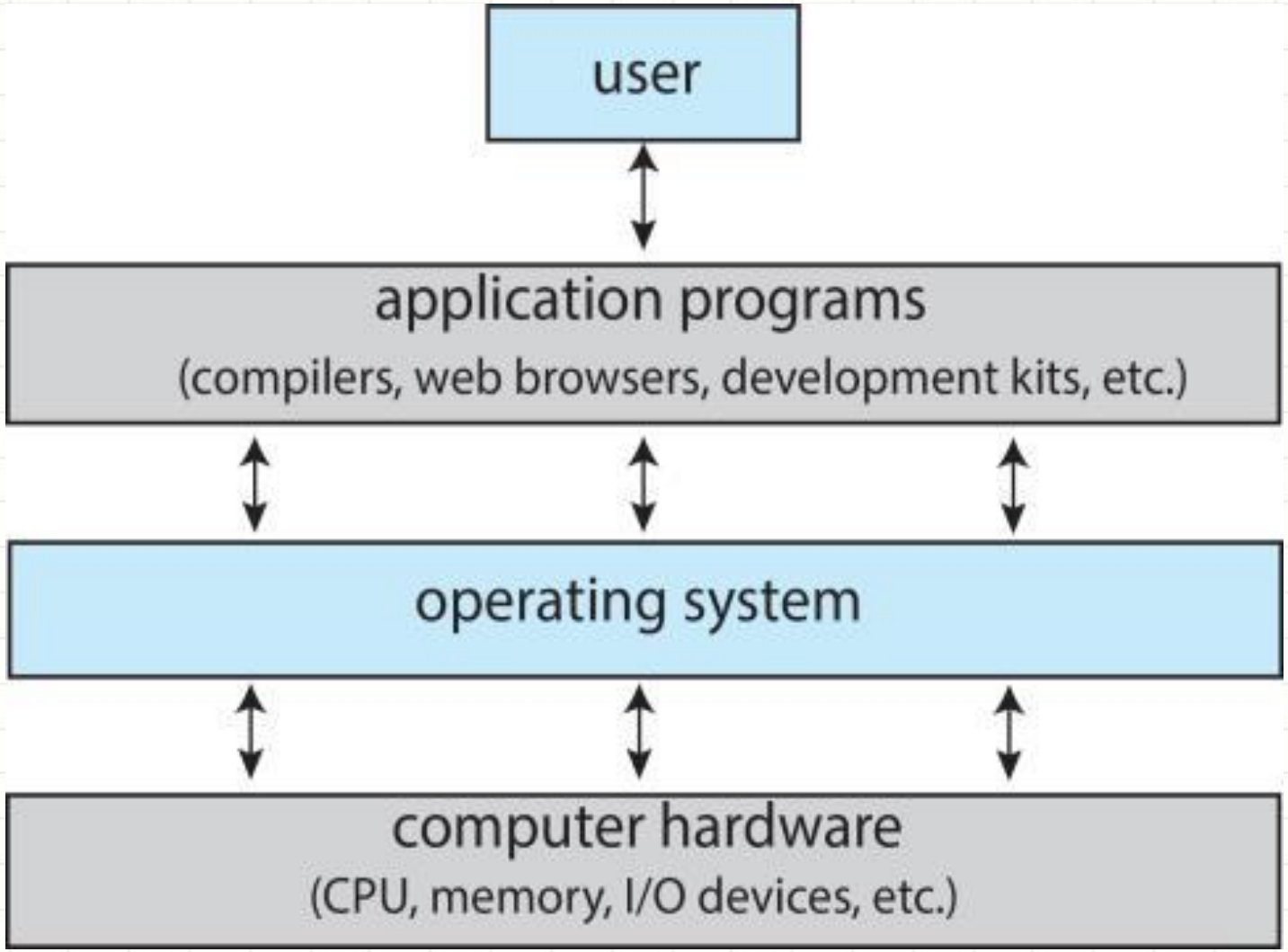
Computers can be used to **collect** data, perform computations, store information, communicate with other computers, and **produce** outputs. The nature of these functions determines whether they are best implemented in the physical machine or in software.

The operating system is the software that provides basic hardware support and a more efficient platform for running programs. It manages hardware resources, provides services for accessing these resources, and creates higher-level abstractions, such as files, directories, and processes.

Computer System Structure

- Computer system can be divided into four components:
  - Hardware – provides basic computing resources
    - CPU, memory, I/O devices
  - Operating system
    - Controls and coordinates use of hardware among various applications and users
  - Application programs – define the ways in which the system resources are used to solve the computing problems of the users
    - Word processors, compilers, web browsers, database systems, video games
  - Users
    - People, machines, other computers

Abstract View of Components of Computer



Operating System Definition

- No universally accepted definition
- "The one program running at all times on the computer" is the **kernel,** part of the operating system
- Everything else is either
  - a **system program** (ships with the operating system, but not part of the kernel) , or
  - an **application program**, all programs not associated with the operating system
- Today's OSes for general purpose and mobile computing also include **middleware** – a set of software frameworks that provide addition services to application developers such as databases, multimedia, graphics

What Operating Systems Do

- Depends on the point of view
- Users want convenience, **ease of use** and **good performance**
  - Don't care about **resource utilization**
- But shared computer such as **mainframe** or **minicomputer** must keep all users happy
  - Operating system is a **resource allocator** and **control program** making efficient use of HW and managing execution of user programs

What Operating Systems Do

- Users of dedicate systems such as **workstations** have dedicated resources but frequently use shared resources from **servers**
- Mobile devices like smartphones and tables are resource poor, optimized for usability and battery life
  - Mobile user interfaces such as touch screens, voice recognition
- Some computers have little or no user interface, such as embedded computers in devices and automobiles
  - Run primarily without user intervention

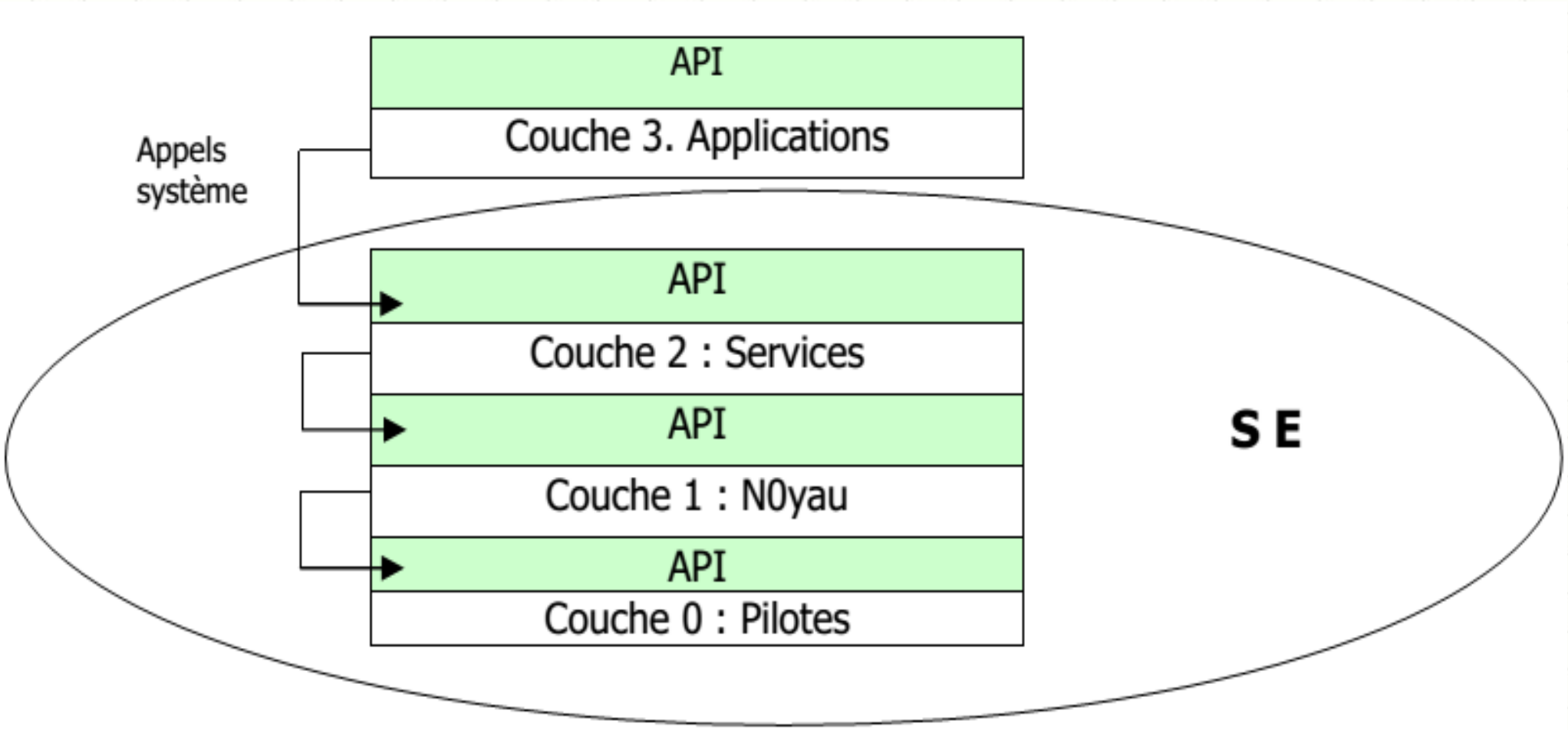


Figure 2: layered structure of an operating system

Operating System

- Exploits the hardware resources of one or more processors
- Provides a set of services to system users
- Manages secondary memory and I/O devices

Computer Components: Top-Level View

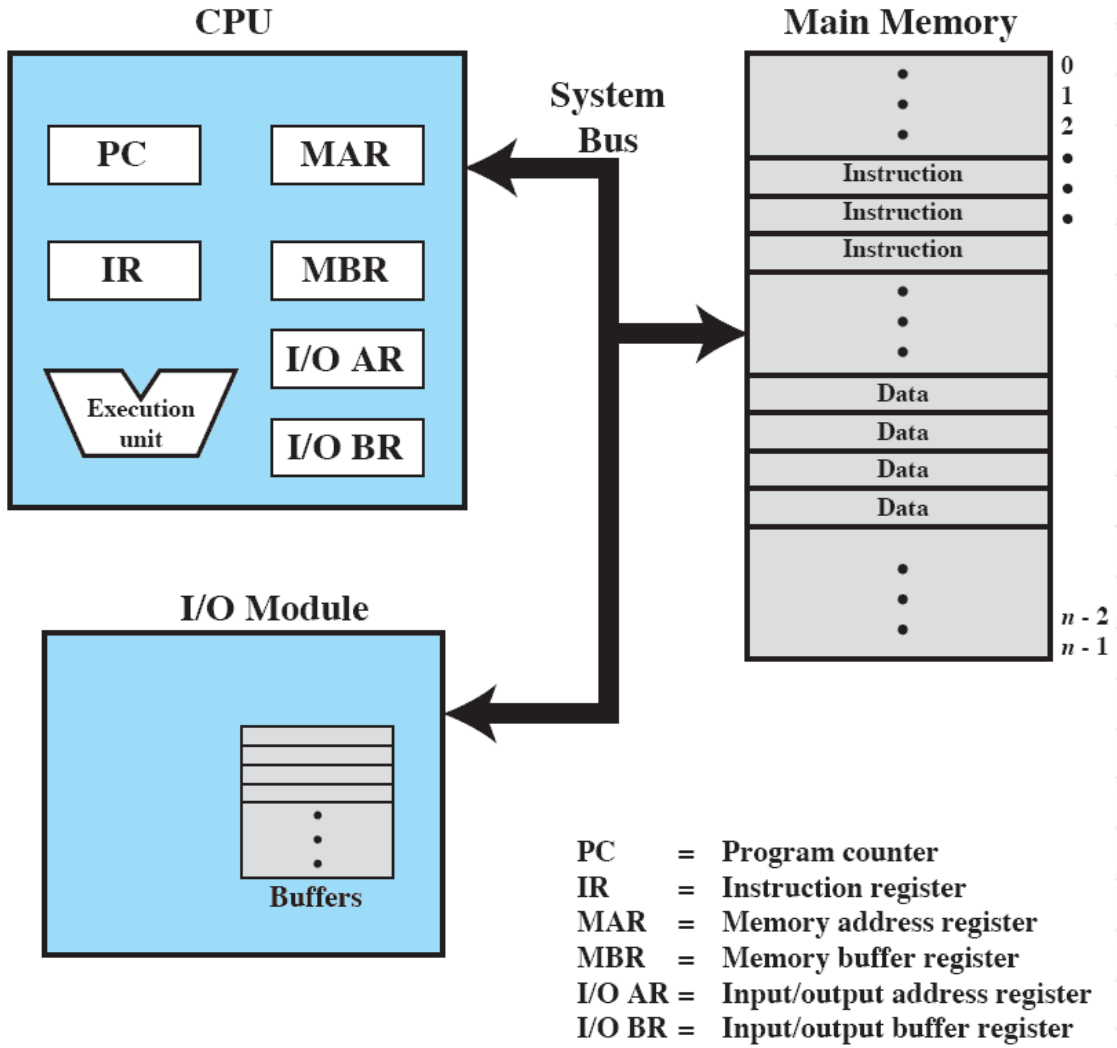


Figure 1.1 Computer Components: Top-Level View

Layers and Views

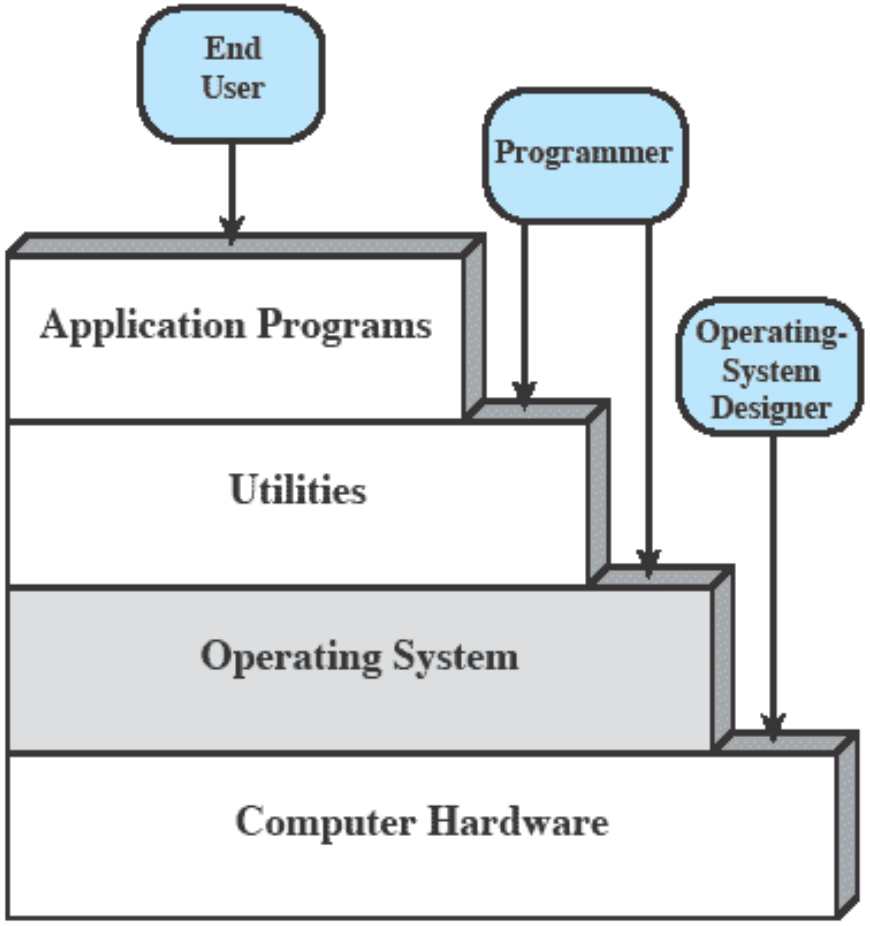


Figure 2.1 Layers and Views of a Computer System

Services Provided by the OS

- Program execution
- Access I/O devices
- Controlled access to files
- System access

Services Provided by the OS

- Error detection and response
  - Internal and external hardware errors
  - Software errors

Services Provided by the OS

- Accounting
  - Collect usage statistics
  - Monitor performance
  - Used to anticipate future enhancements
  - Used for billing purposes