

OPERATING SYSTEMS

(CS C372 & IS C362)



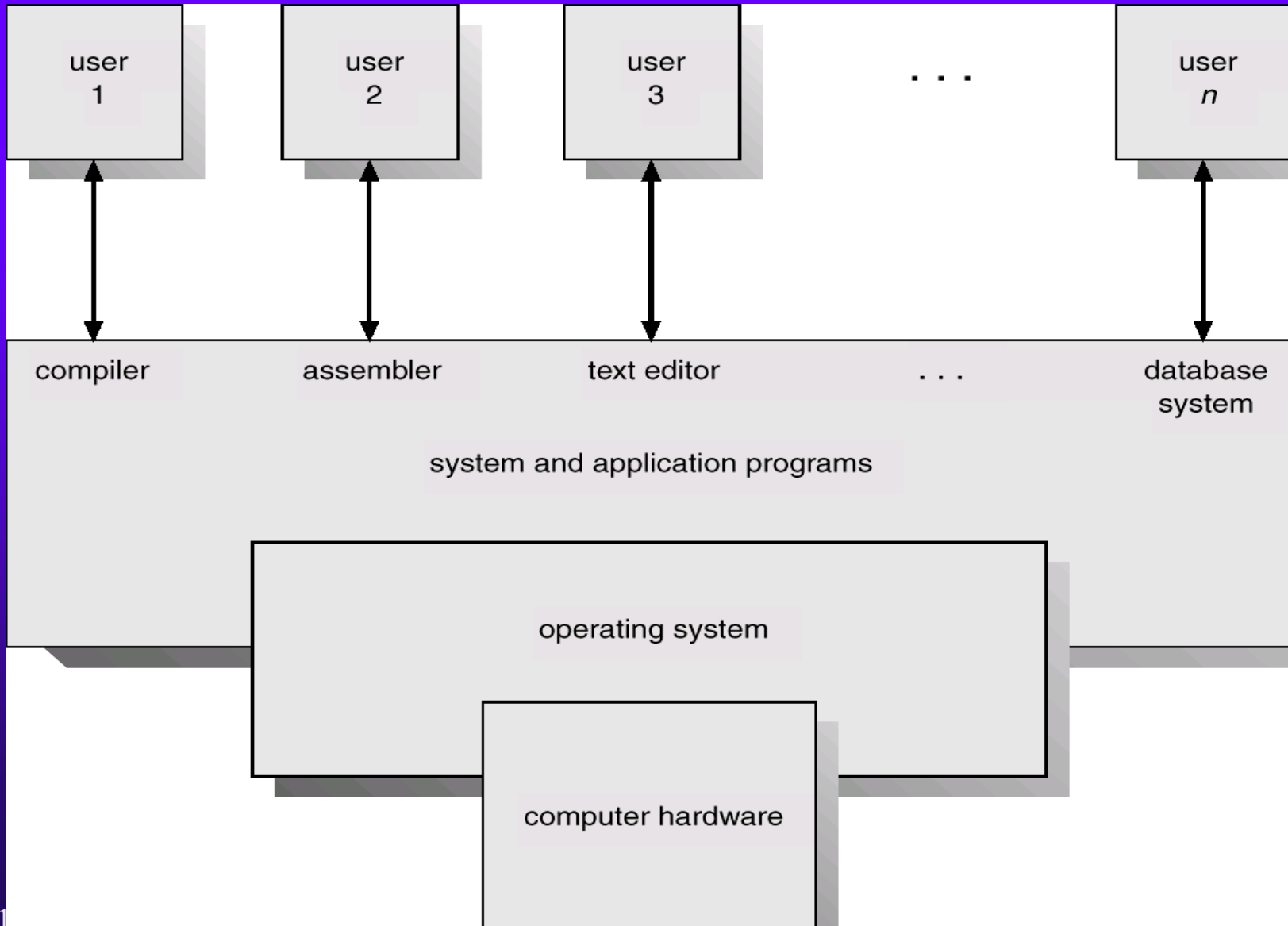
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Introduction

- ◆ What is an Operating system?
 - An operating system is the single most complex and essential software you run on your machine.
 - It is an interface between the user and the computer hardware.
- ◆ What does it do? How does it help?
 - Helps a user programmer by making the system easier (convenient) to use.
 - Helps your programs run by providing resources and protecting them.
 - Helps the system by keeping things running smoothly.
 - Helps the user programmer to do his job efficiently (use computer hardware efficiently).

Abstract View of System Components





Computer System Components

1. Hardware – provides basic computing resources (CPU, memory, I/O devices).
2. Operating system – controls and coordinates the use of the hardware (allocate the basic resources and controls the I/O devices) among the various application programs for the various users.
3. Applications programs – define the ways in which the system resources are used to solve the computing problems of the users (compilers, database systems, video games, business programs, web browser, word processors).
4. Users (people, machines, other computers).



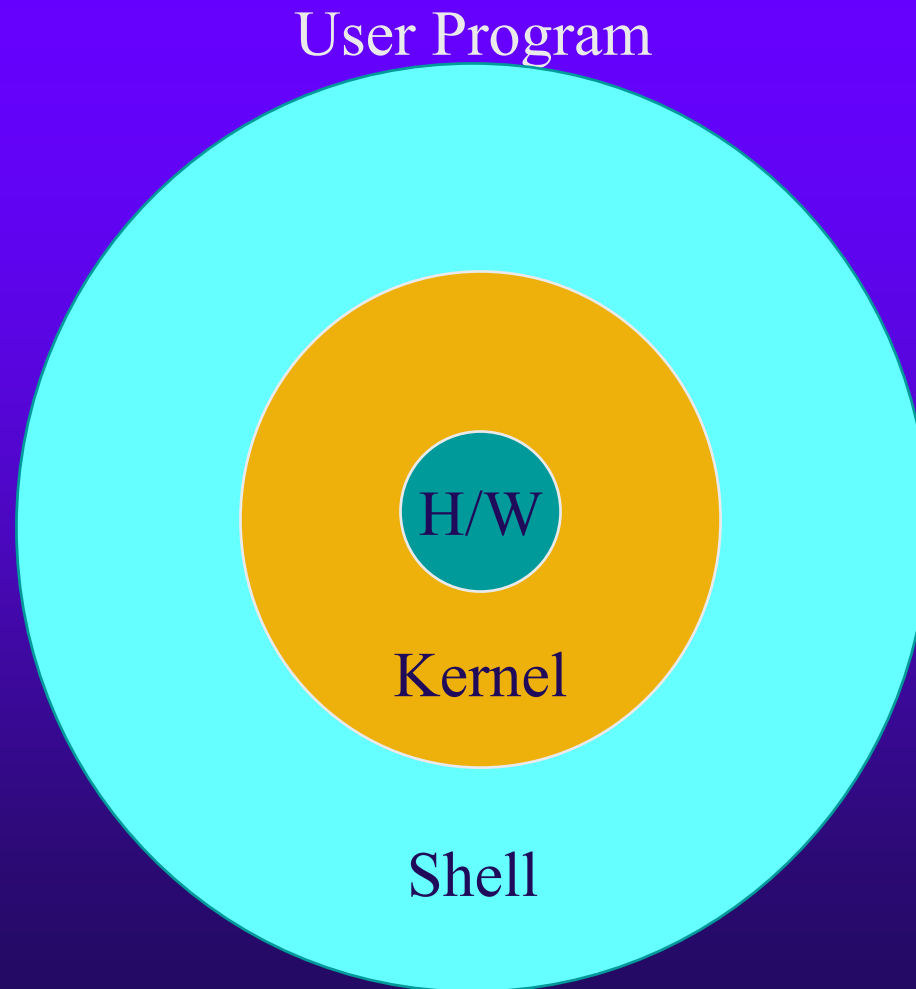
Goals of an operating system

- ◆ Manage/coordinate hardware resources so that the system operates smoothly, efficiently, reliably and securely.
- ◆ Present abstract system model to programmer that promotes simple and convenient access to and control of resources.
- ◆ Maximize resource utilization.
- ◆ Operating system must contain functions needed by many programs.
 - I/O device control, memory allocation etc..
 - Selection of function must be in such a way that maximum number of programs must get the benefit at the same time operating system must not become bulky.

What if no operating system?

- ◆ All we have is a bare hardware
- ◆ We want to run a program
 - How do we load it?
 - How do we run it?
 - What happens when it completes?
- ◆ For doing all these functions we need at least a minimal OS.
 - It must be the resident code that run by default
 - Allow us to load program and run by allotting necessary resources.
 - After completion of the user program control must come back to the operating system.

Unix Operating system structure



Next class

◆ Types of OS

- Main frame systems
 - Batch,
 - Multi programmed and
 - Time sharing systems
- Desktop Systems
- Multi processor Systems
- Distributed Systems
 - Client server and
 - Peer to Peer Systems
- Clustered Systems
- Real time Systems
- Hand held Systems