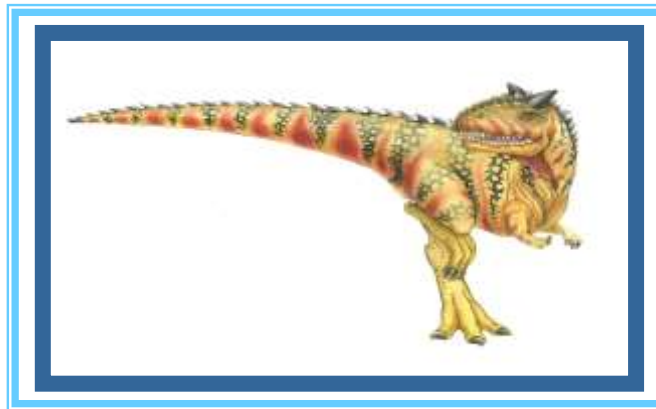


Chapter 1: Introduction





What is an Operating System?

- A program that acts as an intermediary between a user of a computer and the computer hardware
- Operating system goals:
 - Execute user programs and make solving user problems easier
 - Make the computer system convenient to use
 - Use the computer hardware in an efficient manner





Operating System Definition

- OS is a **resource allocator**
 - Manages all resources
 - Decides between conflicting requests for efficient and fair resource use.
- OS is a **control program**
 - Controls execution of programs to prevent errors and improper use of the computer





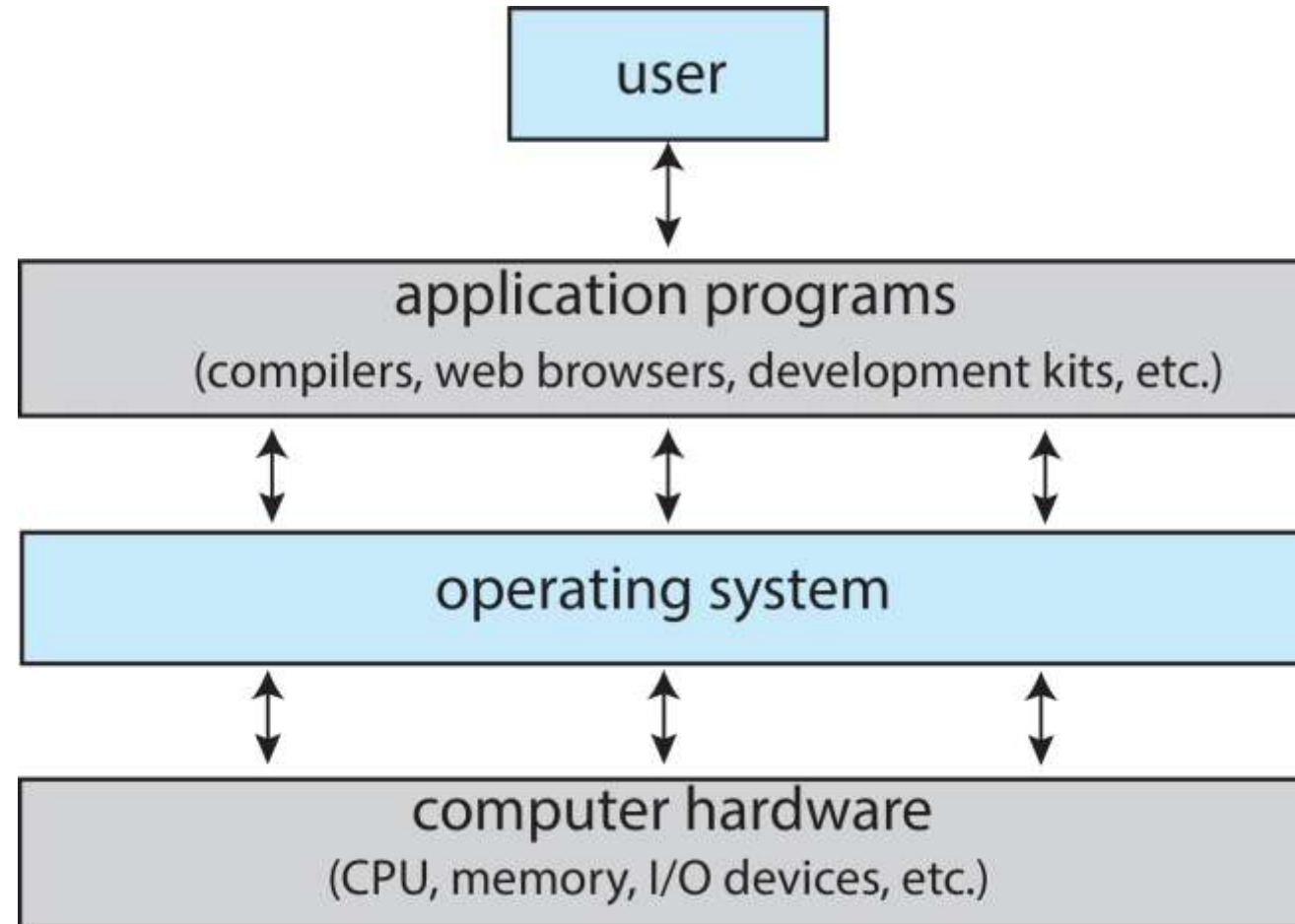
Computer System Structure

- 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 Services

- **Process management**
 - Process creation, deletion, suspension, resumption
 - Process synchronization
 - Process communication
 - Deadlock handling
- **Main Memory Management**
 - Allocate and de-allocate memory space as needed
 - Decide which process is to be loaded into memory
 - Keeps track of memory locations





Operating System Services

- **File management**
 - Creation and deletion of files & directories
 - Backup
 - Mapping files on to secondary storage
- **I/O system management**
 - A general device driver interface
 - Memory management component including buffering, caching, and spooling
- **Secondary Storage management**
 - Free space management
 - Storage allocation
 - Disk Scheduling





Operating System Services

- **Protection**
 - **Mechanism for controlling the access of programs, processes, or users to the resources defined by the computer system**
- **Command interpreter system**
 - **Interface between the user and the system**
 - **Often known as shell**
 - **Get the command and execute it**

