Introduction to Operating Systems

CSC322

Lecture 1

Objectives

- What is Operating System
- Definitions of Operating System
- Boot Strapping
- Introduction to common Operating Systems

Computer Hardware

Software Applications

Computer Hardware

Software Applications

OPERATING SYSTEM

Computer Hardware

Software Applications

SYSTEM

Computer Hardware

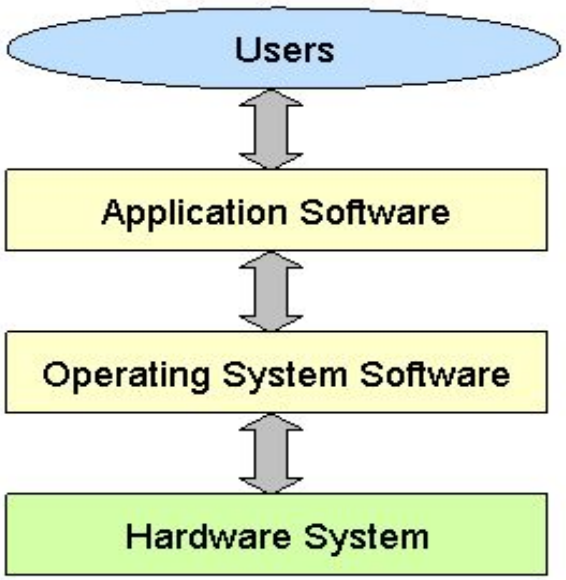
What is operating system?

Definition:

- An **operating system** (**OS**) is a collection of software that manages computer hardware resources .

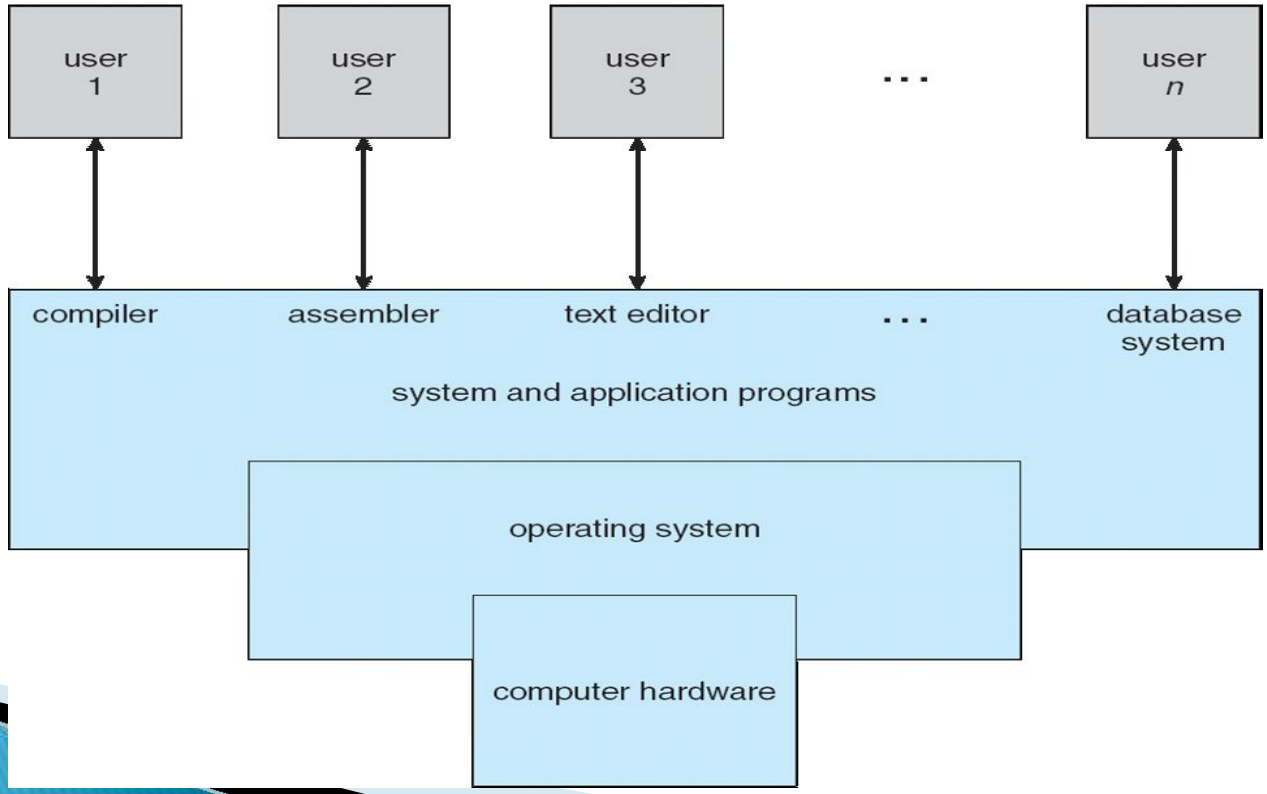
Without a computer operating system, a computer would be useless

"The operating system acts as a Interface Between the user and computer hardware"



Definition of Operating System

A program that acts as an intermediary between a user of a computer and the computer hardware



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
- I/O is accessed via Operating Systems

Operating System Definition (Cont.)

No universally accepted definition

"Everything a vendor ships when you order an operating system" is a good approximation

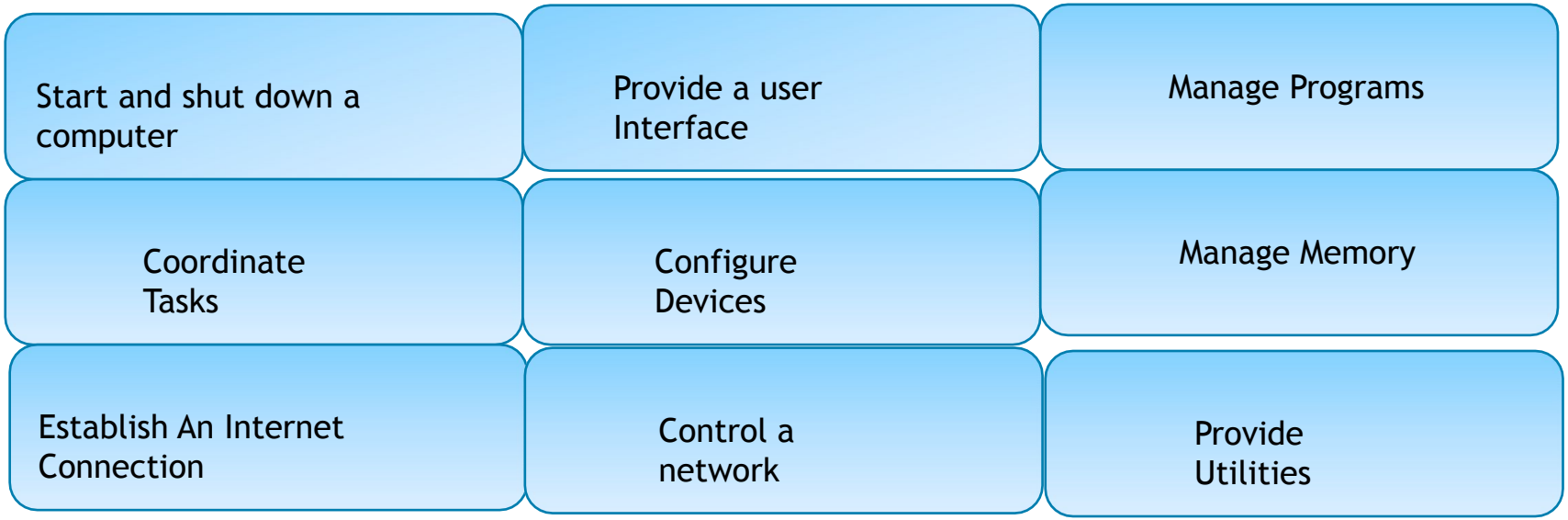
- But varies wildly

"The one program running at all times on the computer" is the **kernel**.

Everything else is either

- a system program (ships with the operating system) , or an application program.

Operations Of OS

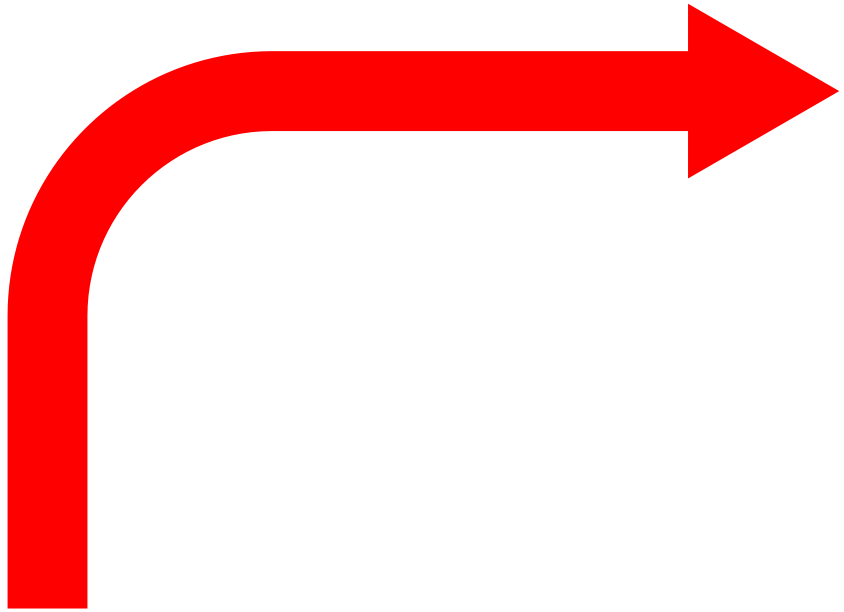


Computer Startup

bootstrap program is loaded at power-up or reboot

- Typically stored in ROM or EPROM, generally known as **firmware**
- Initializes all aspects of system
- Loads operating system kernel and starts execution

Some common Operating Systems



Whose logo is this?

Unix

UNIX

- Developed by Ken Thompson and Dennis Ritchie
- Unix was launched in 1969
- It is a CLI (Command-Line Interface)
- Written in the C programming language
- Led to a variety of academic and commercial variants, e.g. University of California, Berkeley (BSD), Microsoft (Xenix), IBM (AIX) and Sun Microsystems (Solaris)

Whose logo is this?

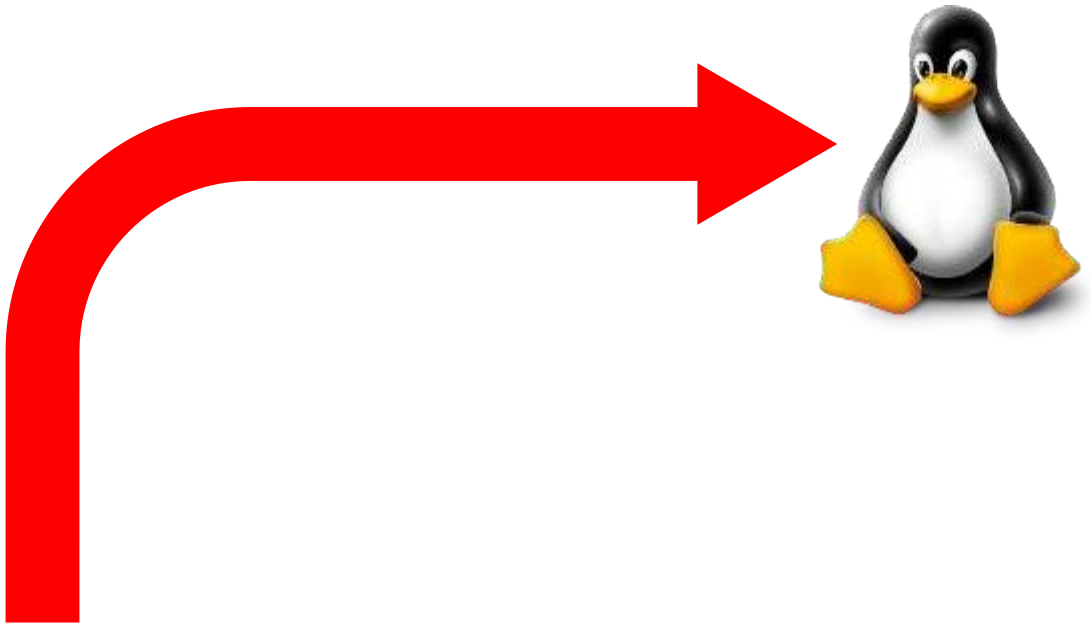
Windows

- Developed by Microsoft - Bill Gates & Paul Allen
- Windows was launched in 1985
- Built on DOS (Disk Operating System), which is a CLI (Command-Line Interface)
- Has two modes User Mode (the user cannot directly access the hardware) and Kernel Mode (the user can access the hardware)
- Runs on Computers, Tablets (Surface), and integration with Xbox

Whose logo is this?

Apple MacOS (later OS X)

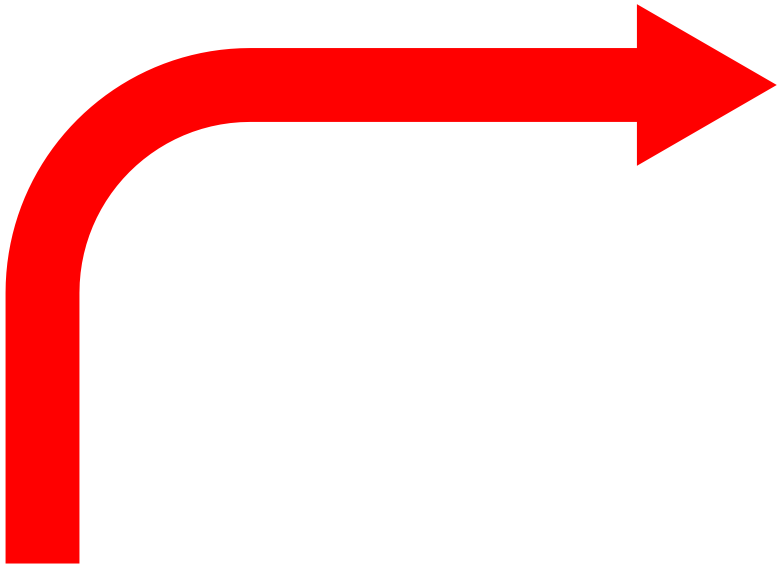
- Developed by Apple - Steve Wozniak & Steve Jobs
- MacOS was launched in 1984
- MacOS is a native GUI (Graphical User Interface)
- MacOS evolved into OS X, which combined technologies from MacOS, Unix, and NeXT
- Runs on Computers and other devices.



Whose logo is this?

Linux

- Developed by Linus Benedict Torvalds
- Linux was launched in 1992
- Linux is a CLI (Command-Line Interface)
- Torvalds made the code of Linux freely available to everyone on the internet, and therefore lots of people created their own versions of Linux, e.g. Debian, RedHat, SUSE, SlackWare, Gentoo, Ubuntu



Whose logo is this?

Android

- Developed by Andy Rubin, Rich Miner, Nick Sears, and Chris White
- Android was launched in 2003
- Based on the Linux kernel
- Android is a GUI designed primarily for touchscreen mobile devices such as smartphones and tablets

Whose logo is this?

iOS

- Developed by Steve Jobs and Scott Forstall
- iOS was launched in 2007
- Based on the MacOS
- iOS is a GUI designed primarily for touchscreen mobile devices such as iPhones, iPods, iPads, and AppleTV.