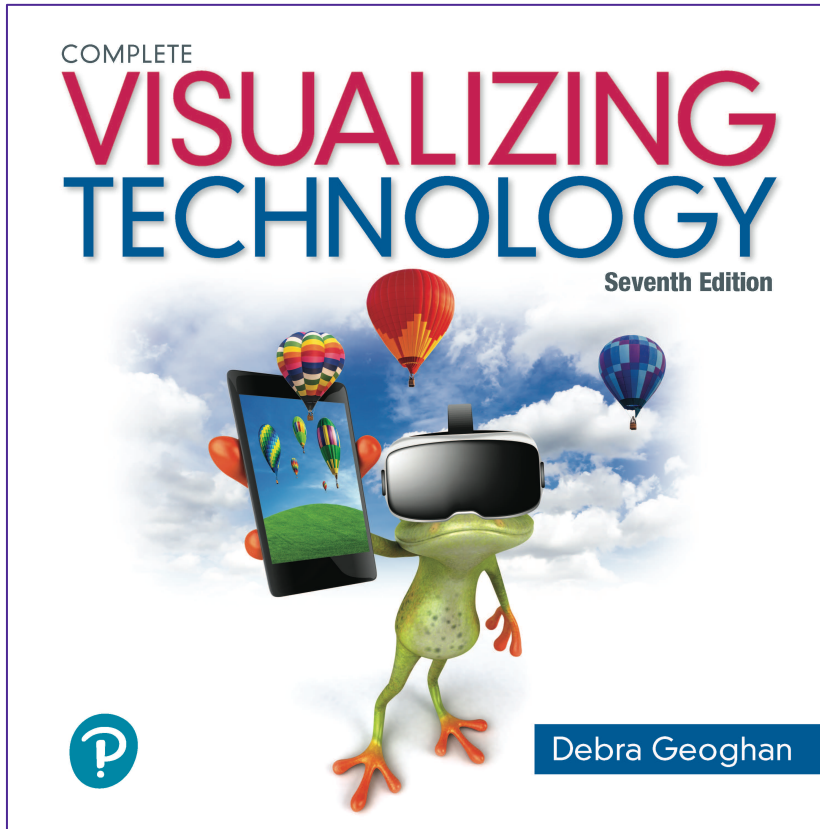# Introductory Visualizing Technology

Seventh Edition

Chapter 5

System Software

Learning Objectives

5.1 Explain What an Operating System Does

5.2 Compare Desktop Operating Systems

5.3 Configure a Desktop Operating System

5.4 Compare Specialized Operating Systems

5.5 Compare the Most Common Network Operating Systems

5.6 List and Explain Important Utility Software

5.7 Troubleshoot Common Computer Problems

Learning Objective 5.1

- Explain What an Operating System Does

Explain What an Operating System Does

System Software

- System software
  - Software that makes the computer run

- Operating system
  - Most important type of system software
  - Provides user with the interface to communicate with hardware and other software
  - A personal computer is useless without an operating system

Modern Operating System

- Provides user interface (GUI)

- Manages resources (multitasking)

- Controls hardware (PnP)

- Interacts with software (API)
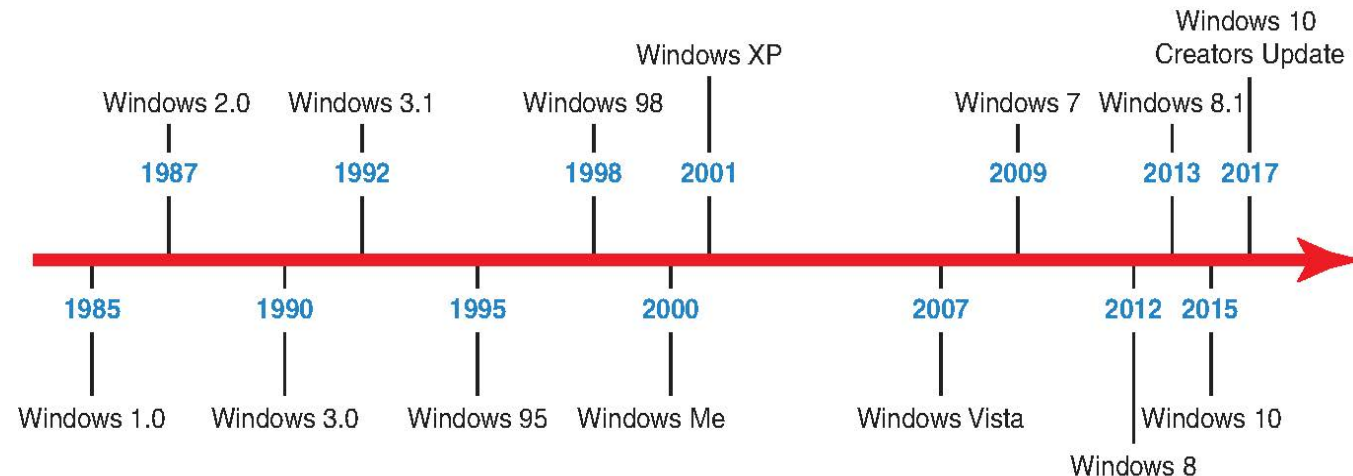
Learning Objective 5.2

- Compare Desktop Operating Systems
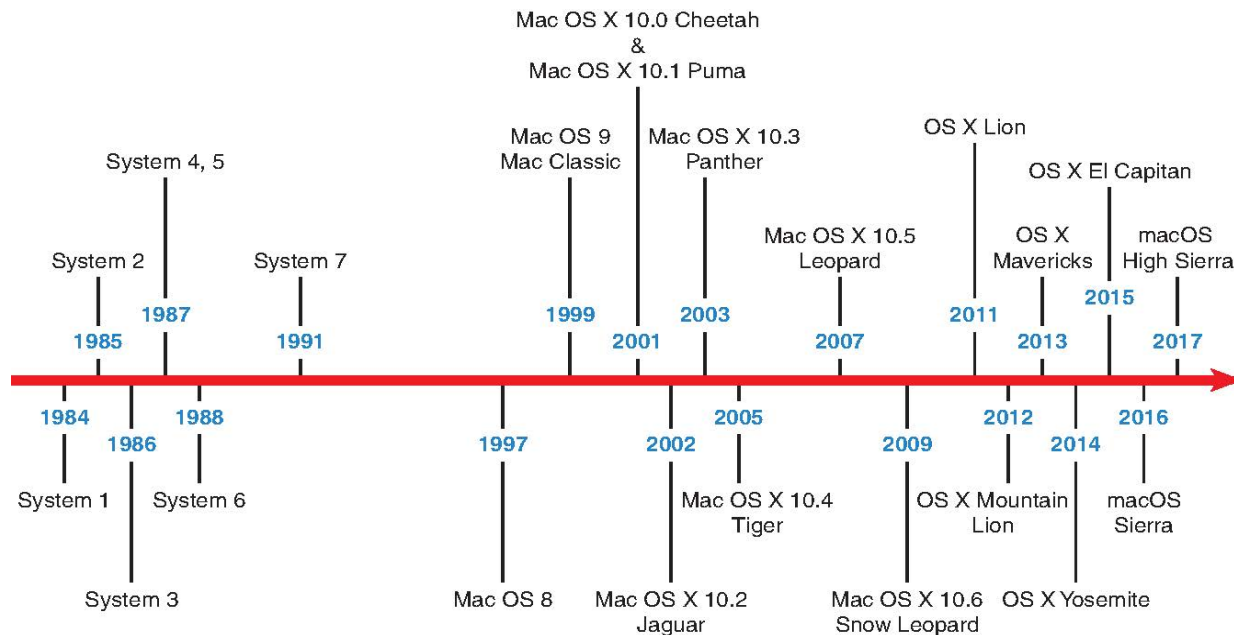
Compare Desktop Operating Systems

Compare Desktop Operating Systems—Microsoft Windows

- Most common desktop operating system

- Approximately 90 percent of PCs run a version of Windows

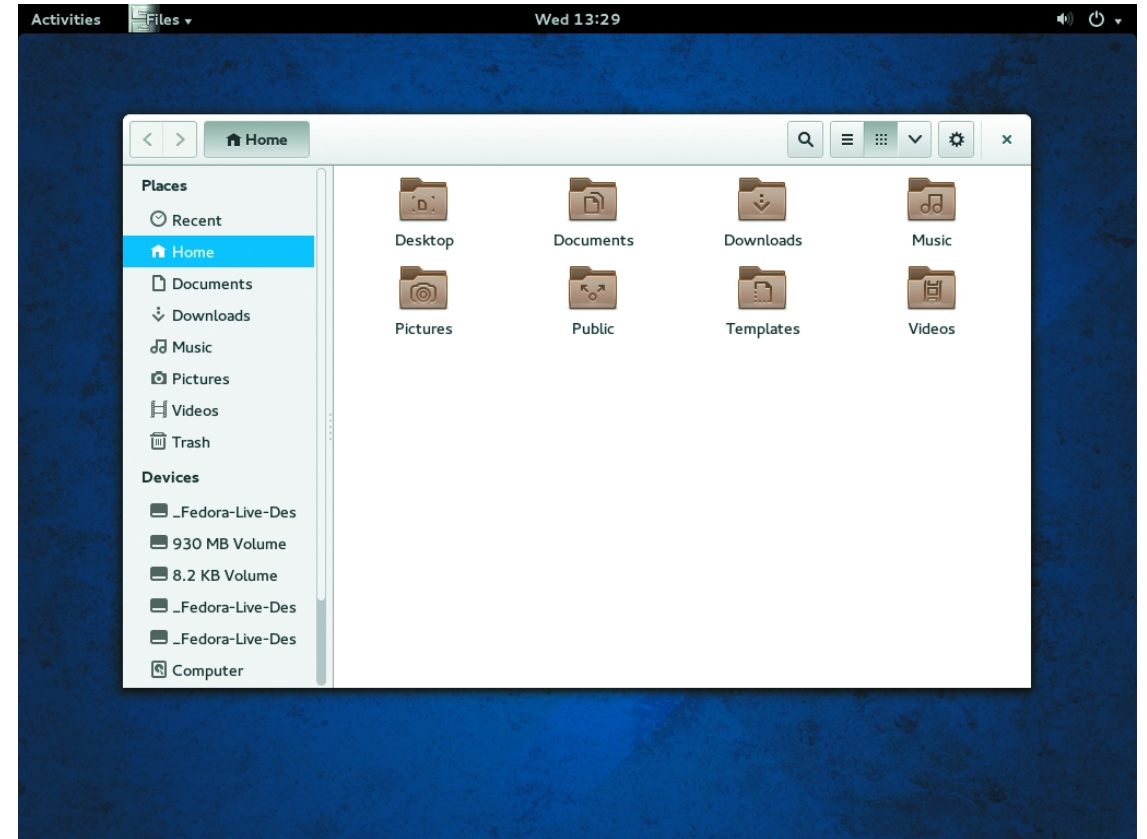- Windows 8 introduced a totally new interface, which was replaced by Windows 10

Compare Desktop Operating Systems—Mac OS X

- First released in 1984; used a GUI; called Mac system software

- OS X operating system released in 2001

- Changed to macOS—current version is High Sierra

Compare Desktop Operating Systems—Linux

- Open source—the code is publicly available

- Developed in 1991 by Linus Torvalds

- Does not have a single version but many distributions (distros)
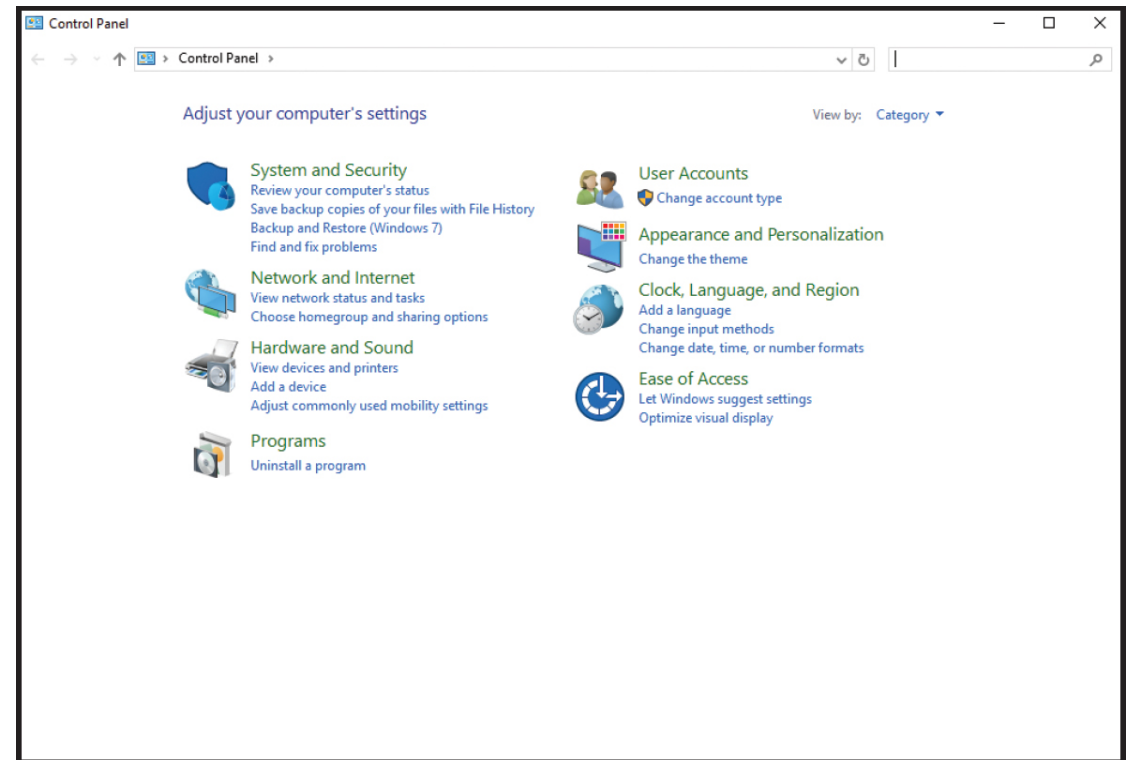
Learning Objective 5.3

- Configure a Desktop Operating System

Configure a Desktop Operating System

Configure a Desktop Operating System—Configuring Your OS

- Settings window—displays settings, help, and info for the current app

- Control Panel—options to configure a monitor, or troubleshoot settings, hardware, and software

Configure a Desktop Operating System—System Preferences for a Mac

- Access System Preferences through the Apple menu or the icon on the dock
- System Preferences in macOS are grouped into rows
- Preferences configure hardware settings and user accounts, and customize the way your computer looks and responds

Configure a Desktop Operating System—User Accounts

- Four types of Windows accounts
  - Standard account—for everyday computing
  - Child account—standard account with Family Safety turned on by default
  - Administrator account—for making global changes, installing software, and configuring settings
  - Guest account—for temporary access

Learning Objective 5.4

- Compare Specialized Operating Systems

Compare Specialized Operating Systems

Specialized Operating Systems—Embedded vs. Mobile Operating Systems (1 of 2)

- Embedded—specialized and limited functions

- Installed in:
  - GPS devices
  - ATM machines
  - Communication systems
  - Car entertainment systems

Specialized Operating Systems—Embedded vs. Mobile Operating Systems (2 of 2)

- Mobile—full-featured

- Installed in:
  - Smartphones
  - Tablets

Specialized Operating Systems—Smartphone Operating Systems

- Apple iOS
  - Proprietary—found only on Apple devices

- Google Android
  - Linux kernel
  - Found on devices made by many companies

- Microsoft Windows Phone
  - Based on Windows Embedded CE
  - Found on devices by many companies

Learning Objective 5.5

- Compare the Most Common Network Operating Systems

Compare the Most Common Network Operating Systems

Network Operating Systems (1 of 2)

Table 5.1 Comparing Modern Network Operating Systems

Network (NOS)	Current Version	Comments
Windows Server: First released as Windows NT in 1993	Windows Server 2016	Scalable; found on many corporate networks; available in versions from Small Business edition to Enterprise and Datacenter editions
Linux: Linux kernel is part of many different distros	Some of the most popular server versions used in business are Red Hat Enterprise Linux and Novell SUSE.	It's impossible to know how many Linux servers are currently installed because many versions can be downloaded and installed for free and without registration
UNIX: The oldest NOS	UNIX itself is not an OS but a set of standards that are used to create a UNIX OS.	Found on servers from HP, IBM, and Sun

Network Operating Systems (2 of 2)

Table 5.1 Comparing Modern Network Operating Systems

Network (NOS)	Current Version	Comments
Apache Web Server	Apache Web Server is the most widely used NOS found on web servers.	Apache can run on UNIX, Linux, or Windows servers.
Novell	Novell Open Enterprise Server 2015	Novell was a leader in business servers throughout the 1980s and 1990s with its Netware products but has moved to open source products.

Types of Networks

- Client-server—network where users get access to centralized services
  - School network

- Peer-to-peer (P2P)—network where files and services are shared but not centralized
  - Home network
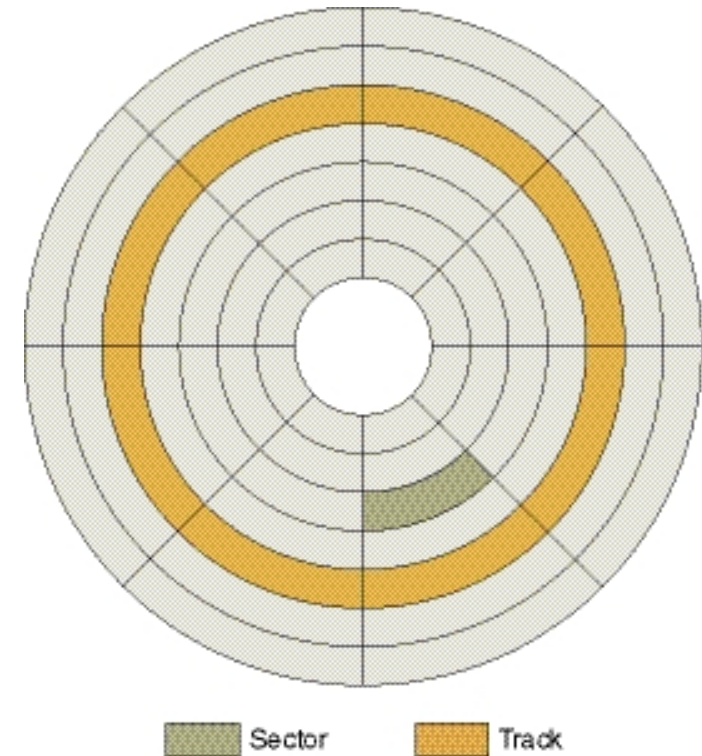
Learning Objective 5.6

- List and Explain Important Utility Software

List and Explain Important Utility Software

Important Utility Software—Disk Utility Software

- Hard disk drives
  - Can be very large and hold a lot of information
  - Important to keep your disks healthy to protect your files
  - Formatting a disk
    - Stores files in clusters (consisting of one or more sectors) on the hard drive
    - Sets up the file system

Sector   Track

Important Utility Software—Windows Utility Software

- Check Disk
  - Monitors health of the file system on a disk

- Optimize Drives
  - Rearranges fragmented files to improve efficiency

- Disk Cleanup
  - Looks for files that can be safely deleted to free up disk space

Important Utility Software—macOS Utility Software

- Disk Utility
  - Used to get information about the disks on your computer
  - Verifies and repairs a disk

- HFS+ file system
  - macOS's HFS+ file system guards against fragmentation
  - Macs rarely need to be defragmented
  - macOS does not include a defragmenter utility

- No need for disk cleanup

Important Utility Software—Security Software

- Firewall
  - Blocks unauthorized access to a computer

- Antivirus programs
  - Protect against viruses, Trojan horses, worms, and spyware

- Antispyware software
  - Prevents adware and spyware infections

Learning Objective 5.7

- Troubleshoot Common Computer Problems

Troubleshoot Common Computer Problems and Maintenance

Basic Troubleshooting Methods

- Reboot the system

- Check connections

- Determine what has changed

- Search online

- Run troubleshooters

- For a Windows computer, check Task Manager

Pearson

Save Energy and Extend Battery Life

- Turn off features that you are not using

- Put your mobile device in power-saving mode

- Put your system in airplane mode to disable all network adapters

Configuring Hardware

- To update a driver on your system, open Device Manager

- Device Manager can uninstall or roll back a driver

- Safe Mode is a special diagnostic mode that starts Windows without most device drivers

Questions

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