

# Discovering Computers

Technology in a World of Computers,  
Mobile Devices, and the Internet

## Chapter 9

## Operating Systems



# Objectives Overview

Define an operating system

Describe the start-up process and shutdown options on computers and mobile devices

Explain how an operating system provides a user interface, manages programs, manages memory, and coordinates tasks

Describe how an operating system enables users to configure devices, establish an Internet connection, and monitor performance

Identify file management and other tools included with an operating system, along with ways to update operating system software

# Objectives Overview

Explain how an operating system enables users to control a network or administer security

Summarize the features of several desktop operating systems

Briefly describe various server operating systems

Summarize the features and uses of several mobile operating systems

# Operating Systems

- An **operating system (OS)** is a set of programs containing instructions that work together to coordinate all the activities among computer and mobile device hardware

Start and shut down  
a computer or  
mobile device

Provide a user  
interface

Manage programs

Manage memory

Coordinate tasks

Configure devices

Establish an  
Internet connection

Monitor  
performance

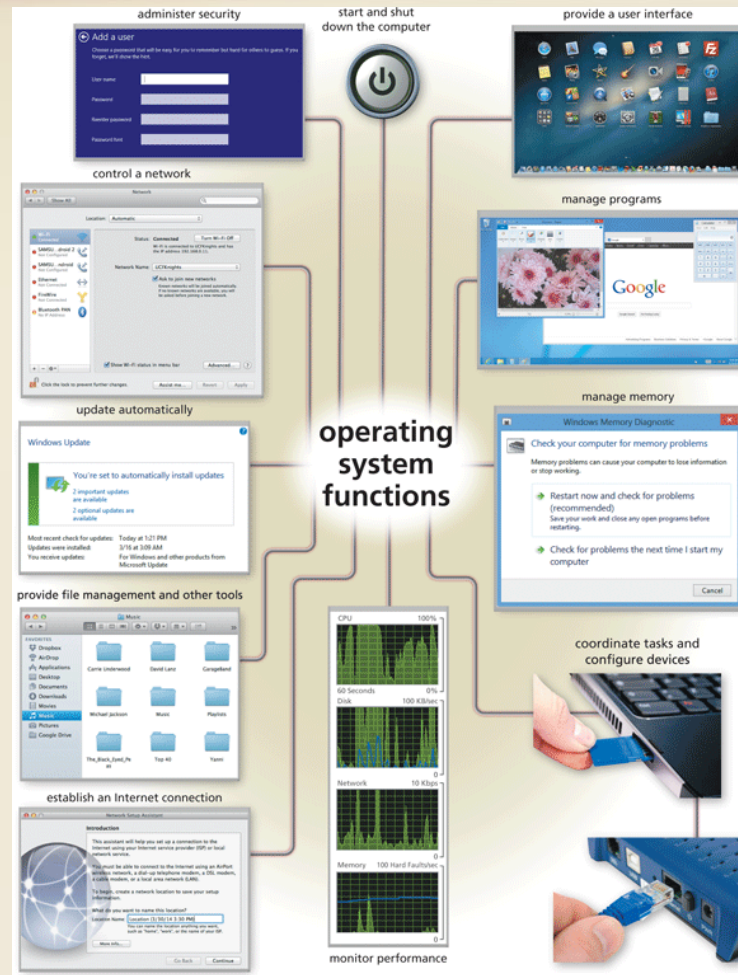
Provide file  
management and  
other device or  
media-related tasks

Updating operating  
system software

Control a network

Administer security

# Operating Systems



# Operating System Functions

- Starting Computers and Mobile Devices
  - If a computer or mobile device is off, you press a power button to turn it on



# Operating System Functions

- An operating system includes various power options

Sleep mode saves any open documents running programs or apps to memory, turns off all unneeded functions, and then places the computer in a low-power state

Hibernate saves any open documents and running programs or apps to an internal hard drive before removing power from the computer or device



# Operating System Functions

- A **user interface** (**UI**) controls how you enter data and instructions and how information is displayed on the screen
- With a graphical user interface (GUI), you interact with menus and visual images





# Operating System Functions

- In a command-line interface, a user types commands represented by short keywords or abbreviations or presses special keys on the keyboard to enter data and instructions

The diagram illustrates a command-line interface (CLI) session. It features a terminal window with a black background and green text. The prompt is 'bash-2.05b\$'. The user enters the command 'date', which returns the system date and time: 'Wed May 25 11:36:56 PDT'. The user then enters 'lsmod', which lists the loaded kernel modules. The output is a table with three columns: 'Module', 'Size', and 'Used by'. The modules listed are 'joydev', 'ipw2200', 'ieee80211', 'ieee80211\_crypt', and 'e1000'. The 'Used by' column shows that 'ipw2200' is used by 'ipw2200', and 'ieee80211' is used by 'ipw2200' and 'ieee80211'. The prompt 'bash-2.05b\$' is shown again at the bottom of the terminal window.

```
bash-2.05b$ date
Wed May 25 11:36:56 PDT
bash-2.05b$ lsmod
Module                Size  Used by
joydev                 8256  0
ipw2200              175112  0
ieee80211             44228  1 ipw2200
ieee80211_crypt        4872  2 ipw2200, ieee80211
e1000                 84468  0
bash-2.05b$
```

Labels in the diagram:

- command prompt (points to the first 'bash-2.05b\$')
- command entered by user (points to 'date')
- command prompt (points to the last 'bash-2.05b\$')

# Operating System Functions

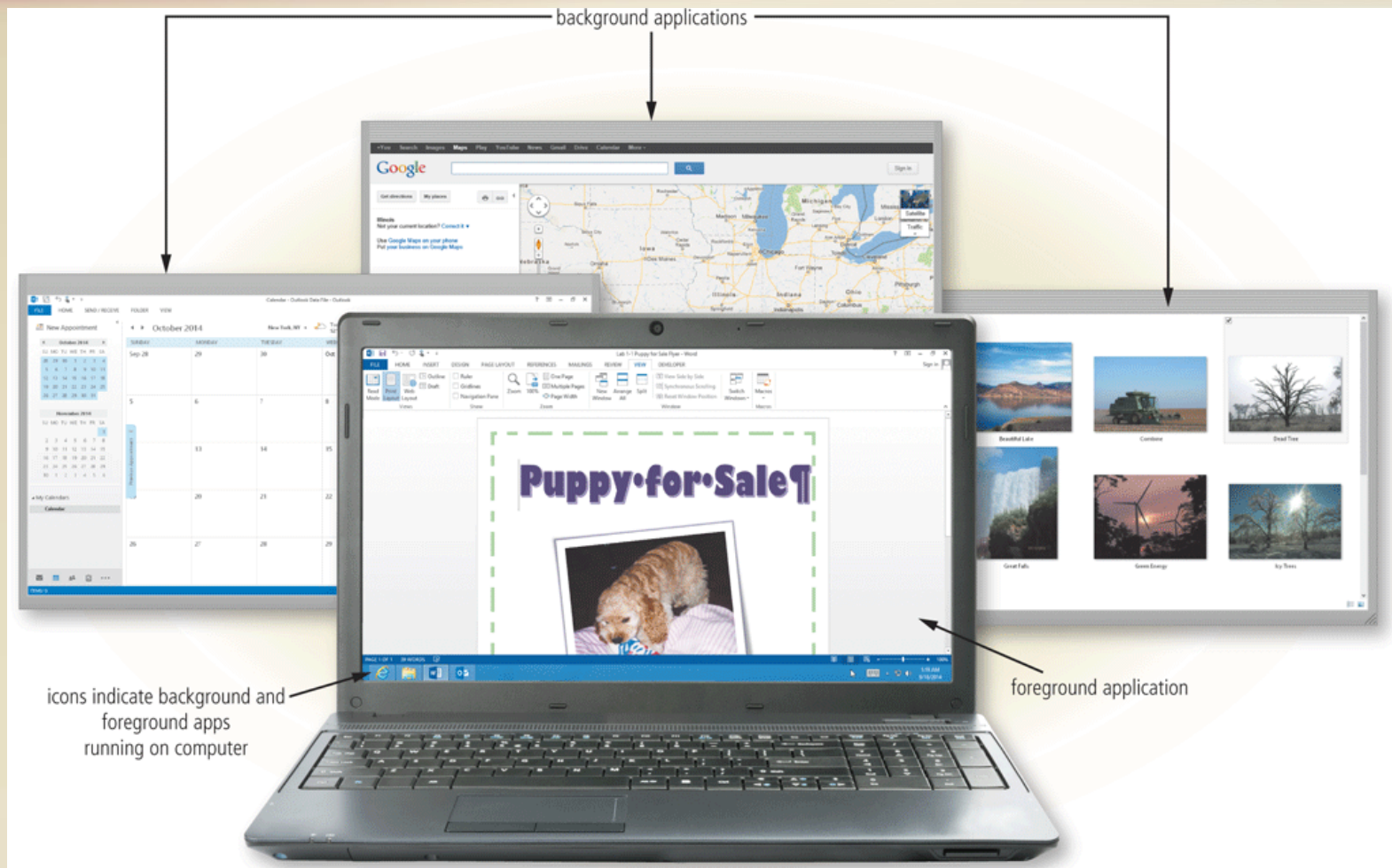
- How an operating system handles programs directly affects your productivity

Single tasking  
and  
multitasking

Foreground  
and  
background

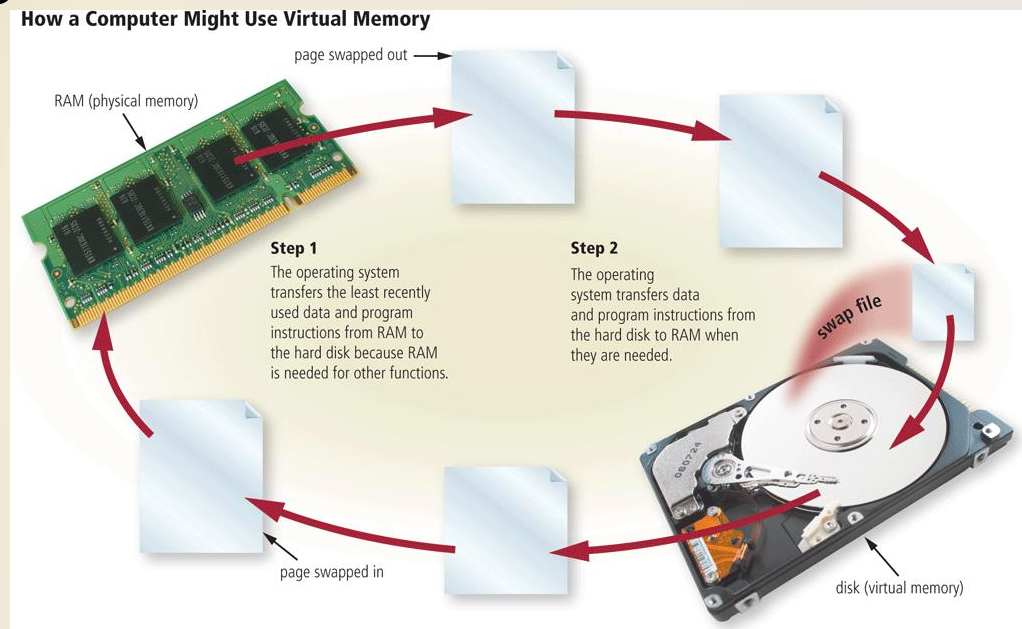
Single user  
and multiuser

# Operating System Functions



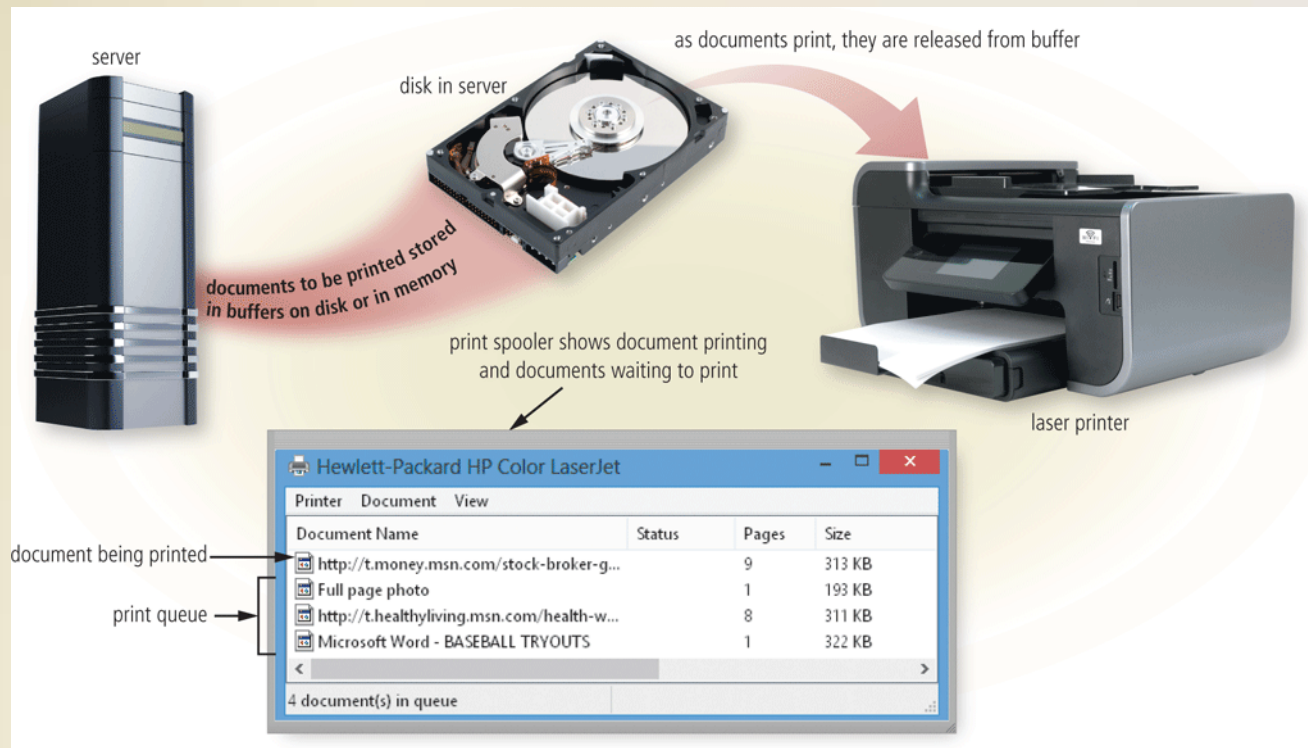
# Operating System Functions

- Memory management optimizes the use of the computer or device's internal memory
- **Virtual memory** is a portion of a storage medium functioning as additional RAM



# Operating System Functions

- The operating system determines the order in which tasks are processed



# Operating System Functions

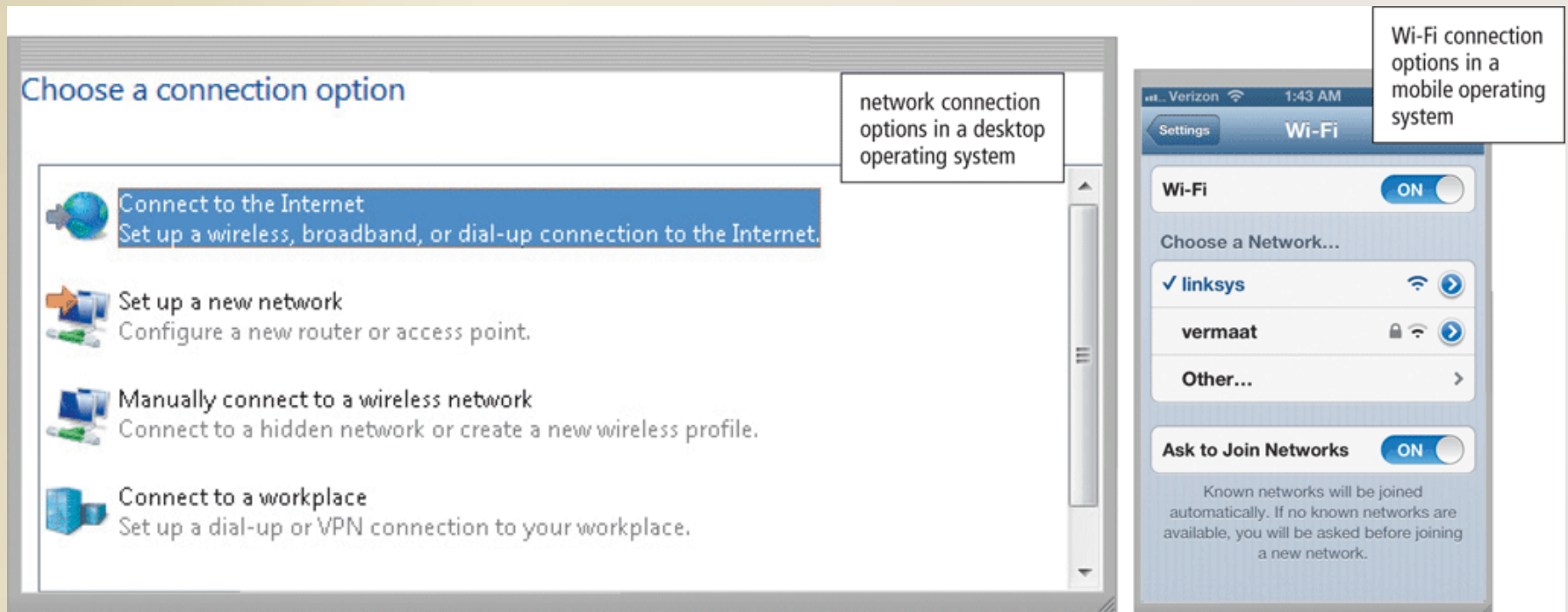
A **driver** is a small program that tells the operating system how to communicate with a specific device

Plug and Play automatically configures new devices as you install them



# Operating System Functions

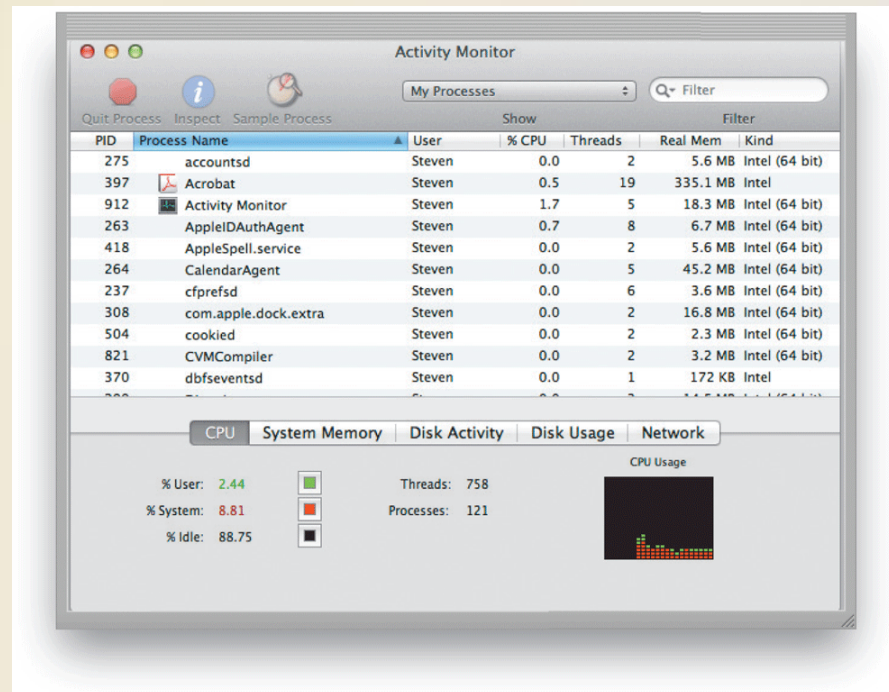
- Operating systems typically provide a means to establish Internet connections





# Operating System Functions

- A **performance monitor** is a program that assesses and reports information about various computer resources and devices



# Operating System Functions

- Operating systems often provide users with a variety of tools related to managing a computer, its devices, or its programs

File Manager

Search

Image Viewer

Uninstaller

Disk Cleanup

Disk  
Defragmenter

Screen Saver

File  
Compression

PC  
Maintenance

Backup and  
Restore

# Operating System Functions

- **Automatic update** automatically provides new features or corrections to the program

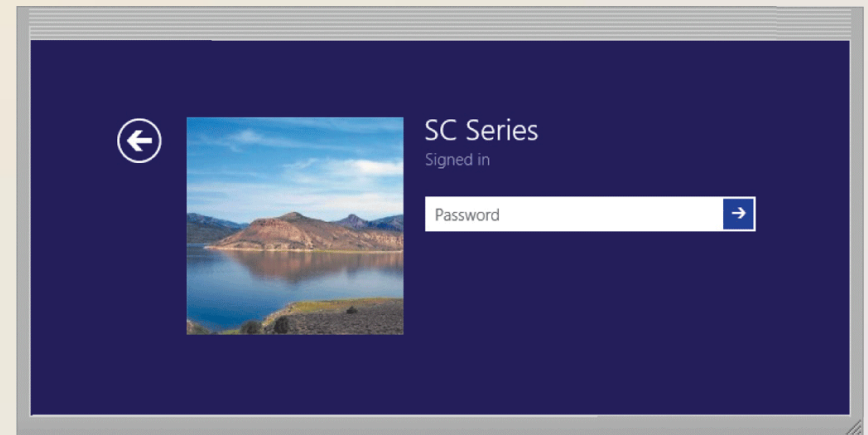


# Operating System Functions

- Some operating systems are designed to work with a server on a network
- These multiuser operating systems allow multiple users to share a printer, Internet access, files, and programs
- A network administrator uses the server operating system to:
  - Add and remove users, computers, and other devices
  - Configure the network, install software and administer network security

# Operating System Functions

- A user account enables a user to sign in to, or access resources on, a network or computer
  - A **user name**, or user ID, identifies a specific user
  - A **password** is a private combination of characters associated with the user name



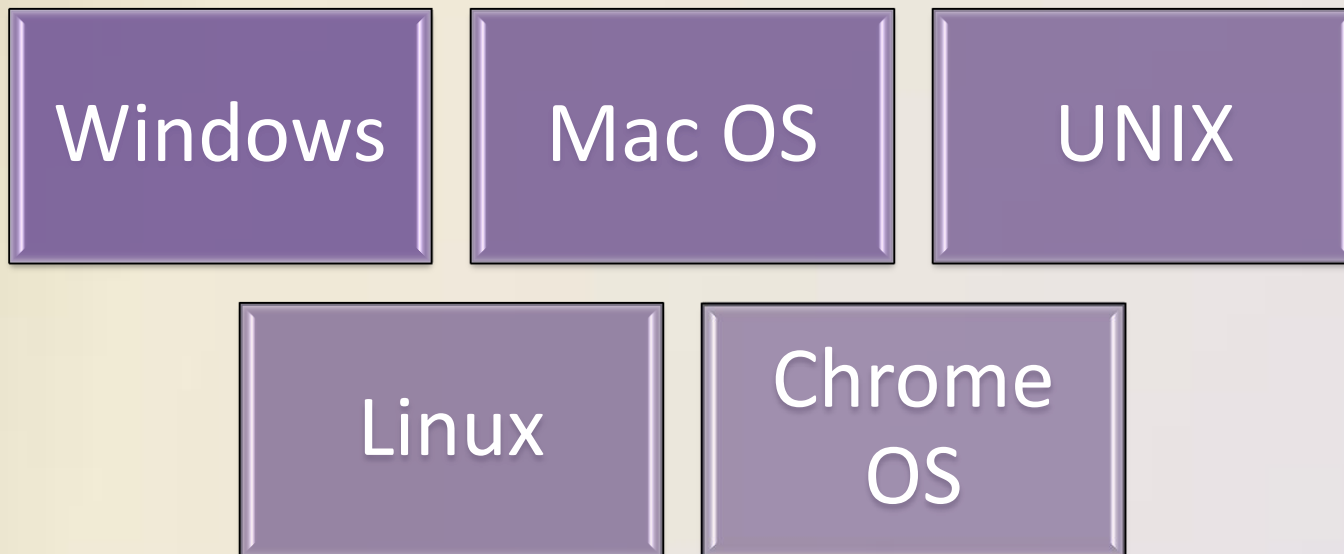
# Types of Operating Systems

**Table 9-2 Examples of Operating Systems by Category**

Category	Name
Desktop	Windows
	OS X
	UNIX
	Linux
	Chrome OS
Server	Windows Server
	Mac OS X Server
	UNIX
	Linux
Mobile	Google Android
	Apple iOS
	Windows Phone

# Desktop Operating Systems

- A **desktop operating system** is a complete operating system that works on desktops, laptops, and some tablets





# Desktop Operating Systems

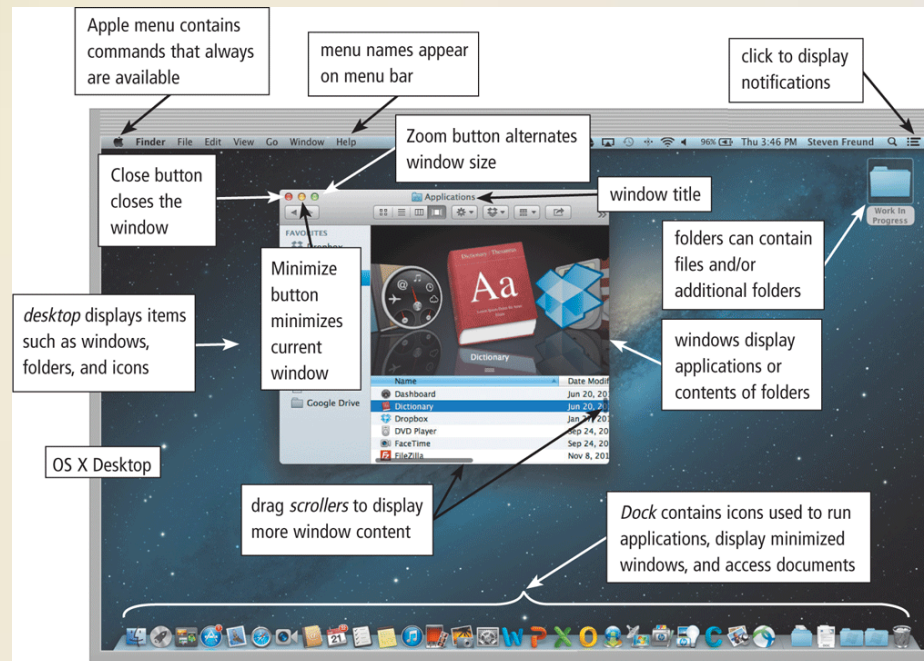
- Windows 8 offers these features:
  - Start screen interface with tiles
  - Includes the desktop interface
  - Support for input via touch, mouse, and keyboard
  - Email app, calendar app, and browser included
  - Photos, files, and settings you can sync with SkyDrive
  - Enhanced security through an antivirus program, firewall, and automatic updates
  - Windows Store offers additional applications for purchase

# Desktop Operating Systems

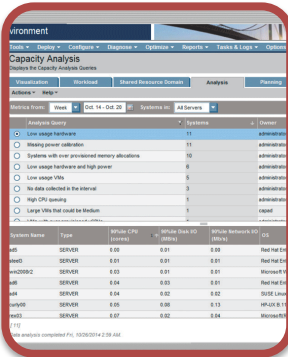


# Desktop Operating Systems

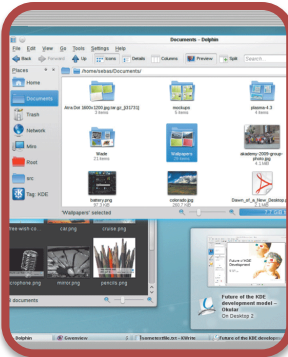
- The Macintosh operating system has earned a reputation for its ease of use
- Latest version is **OS X**



# Desktop Operating Systems



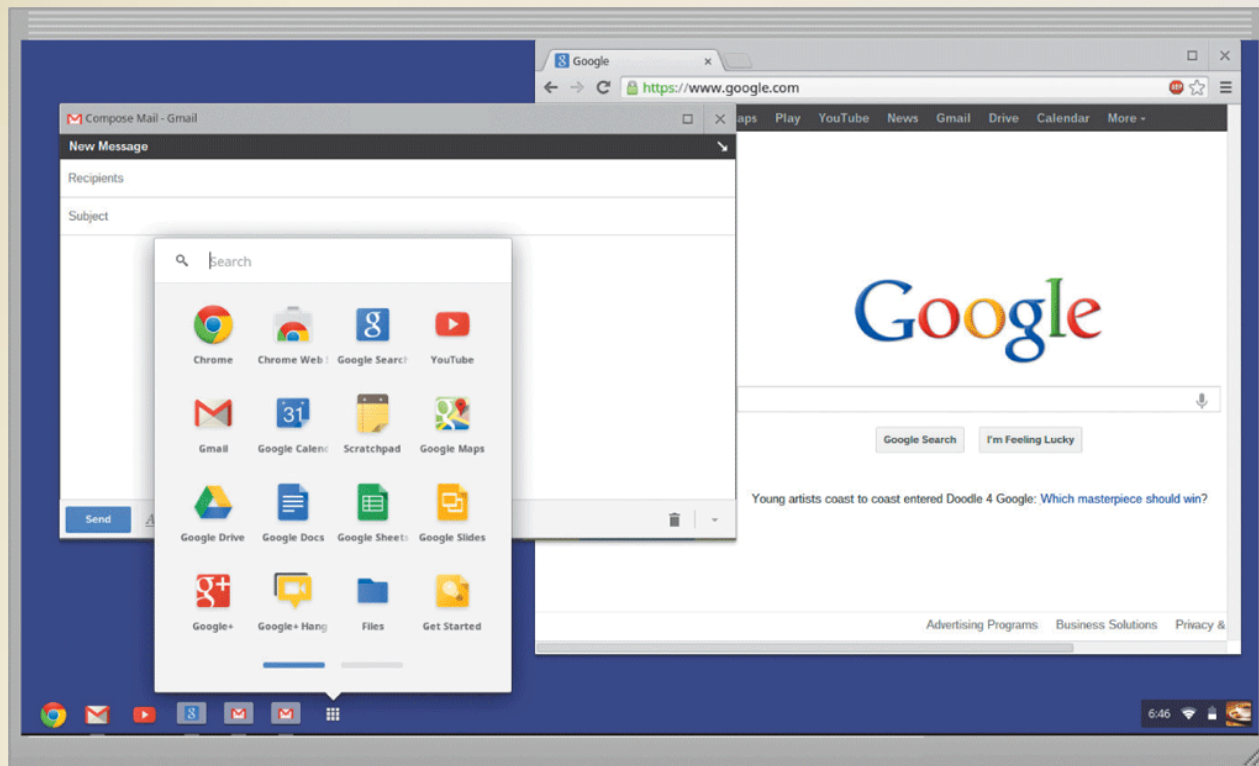
**UNIX** is a multitasking operating system developed in the early 1970s



**Linux** is a popular, multitasking UNIX-based operating system

# Desktop Operating Systems

- **Chrome OS** is a Linux-based operating system designed to work primarily with web apps



# Server Operating Systems

Windows  
Server

OS X  
Server

UNIX

Linux

# Mobile Operating Systems

- The operating system on mobile devices and many consumer electronics is called a **mobile operating system** and resides on firmware

Android

iOS

Windows  
Phone



# Mobile Operating Systems

- **Android** is an open source, Linux-based mobile operating system designed by Google for smartphones and tablets



# Mobile Operating Systems

- **iOS**, developed by Apple, is a proprietary mobile operating system specifically made for Apple's mobile devices



# Mobile Operating Systems

- **Windows Phone**, developed by Microsoft, is a proprietary mobile operating system that runs on some smartphones



# Summary

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Functions common to most operating systems

Variety of desktop operating systems, server operating systems, and mobile operating systems

# Discovering Computers

Technology in a World of Computers,  
Mobile Devices, and the Internet

## Chapter 9

## Operating Systems

Chapter 9 Complete

