

OPERATING SYSTEMS

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Operating Systems

- An **operating system (OS)** is a set of programs that coordinate all the activities among computer or mobile device hardware

Start and shut down
a computer or mobile
device

Provide a user
interface

Manage programs

Manage memory

Coordinate tasks

Configure devices

Monitor performance

Establish an Internet
connection

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 RAM, turns off all unneeded functions, and then places the computer in a low-power state

Hibernate mode 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) window. It shows a terminal with a green prompt 'bash-2.05b\$' and a cursor. The user has entered the command 'date', which has been executed, showing the system date and time: 'Wed May 25 11:36:56 PDT'. The user has then entered 'lsmod', which has been executed, showing a list of loaded kernel modules. The output is as follows:

Module	Size	Used by
joydev	8256	0
ipw2200	175112	0
ieee80211	44228	1 ipw2200
ieee80211_crypt	4872	2 ipw2200, ieee80211
e1000	84468	0

The terminal window shows the prompt 'bash-2.05b\$' followed by a cursor. The user has entered the command 'date' and 'lsmod'. The output of 'date' is 'Wed May 25 11:36:56 PDT'. The output of 'lsmod' is a table of loaded modules. The diagram includes three labels with arrows pointing to the terminal: 'command prompt' pointing to the first 'bash-2.05b\$', 'command entered by user' pointing to 'date', and 'command prompt' pointing to the second 'bash-2.05b\$'.

Operating System Functions

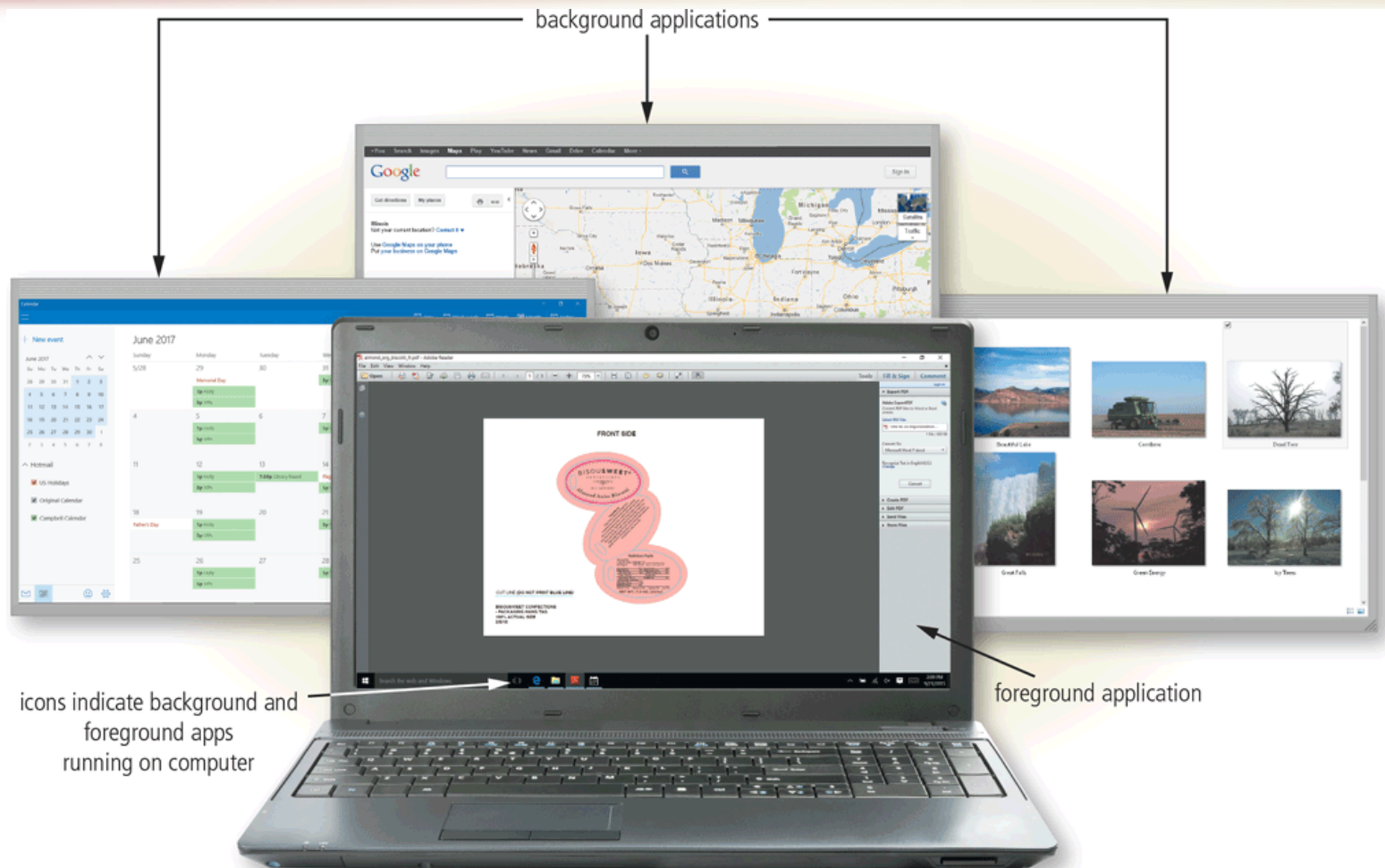
- How an operating system handles programs directly affects your productivity

Single
tasking and
multitasking

Foreground
and
background

Single user
and multiuser

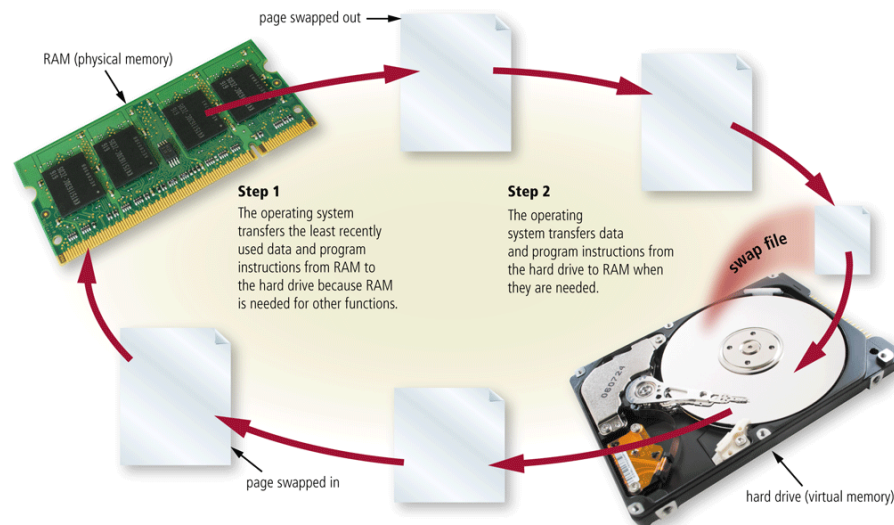
Operating System Functions



Operating System Functions

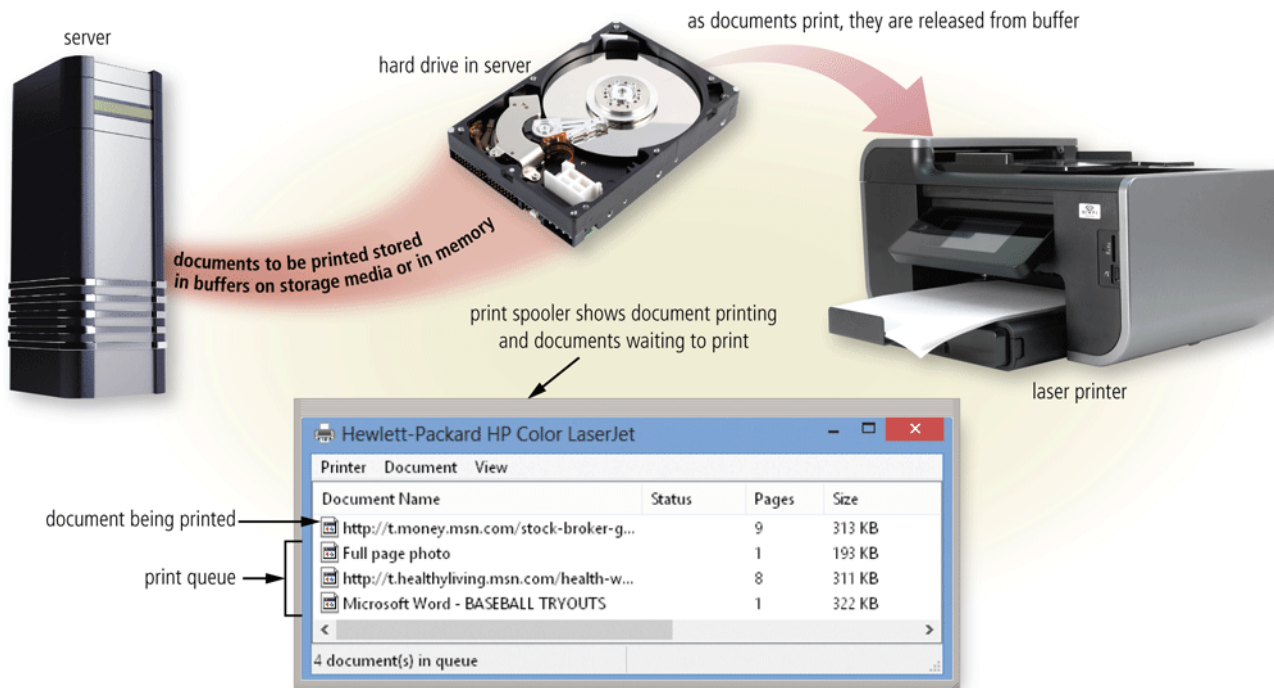
- Memory management optimizes the use of the computer or device's internal memory
- **Virtual memory** is a portion of a storage medium functioning as additional RAM

How a Computer Might Use Virtual Memory



Operating System Functions

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



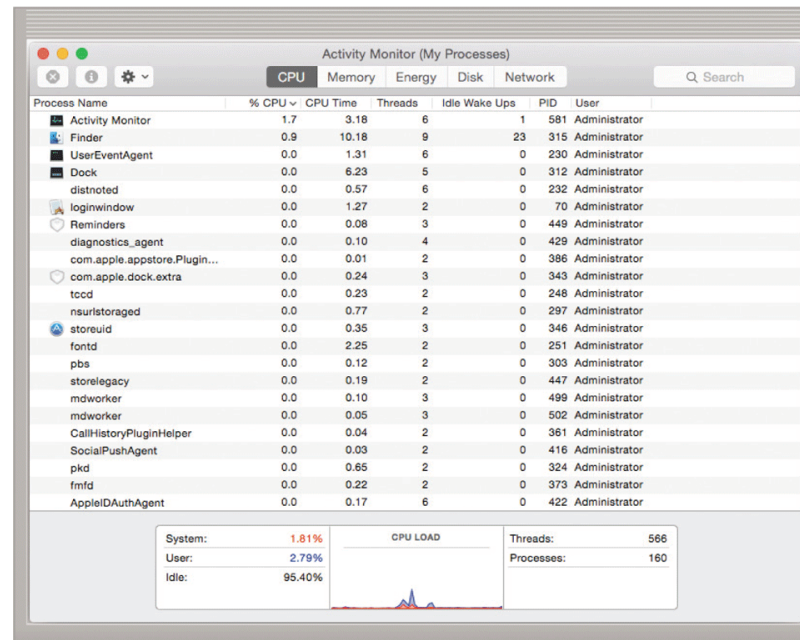
Operating System Functions

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 or connect them

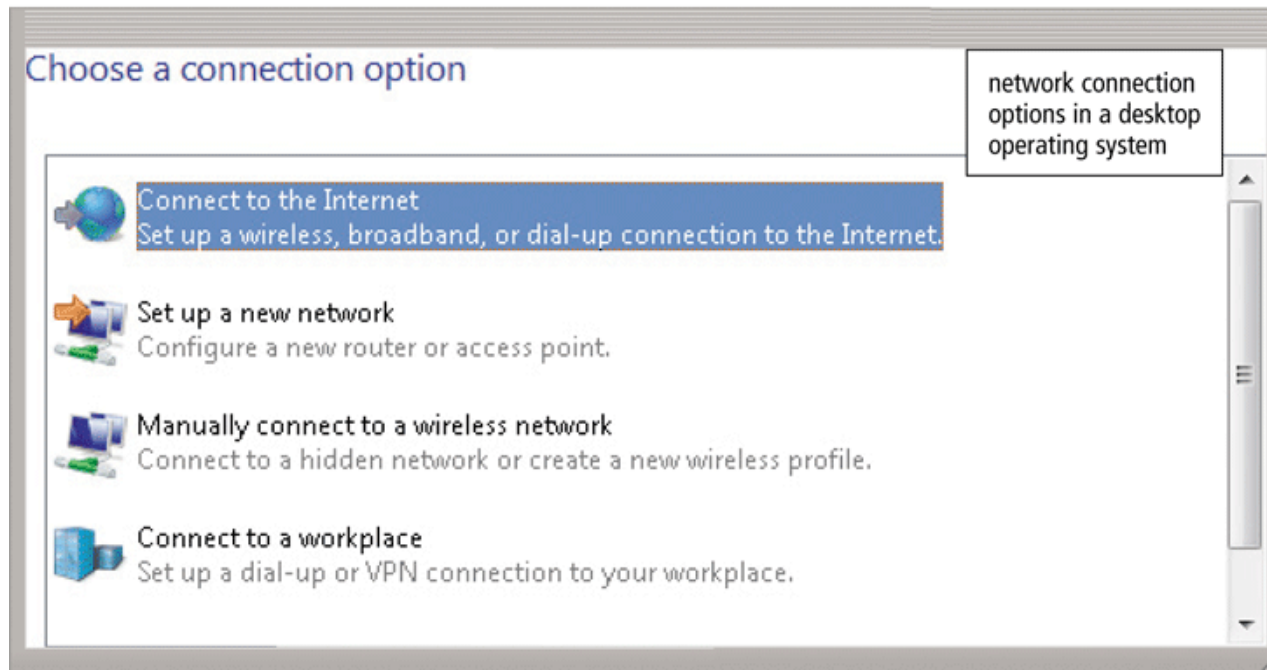
Operating System Functions

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



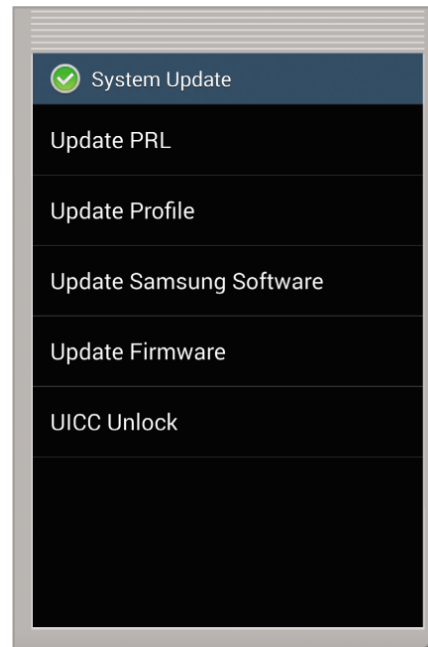
Operating System Functions

- Operating systems typically provide a means to establish Internet connections



Operating System Functions

- Many programs, including operating systems, include an **automatic update** feature that regularly provides new features or corrections to the program



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

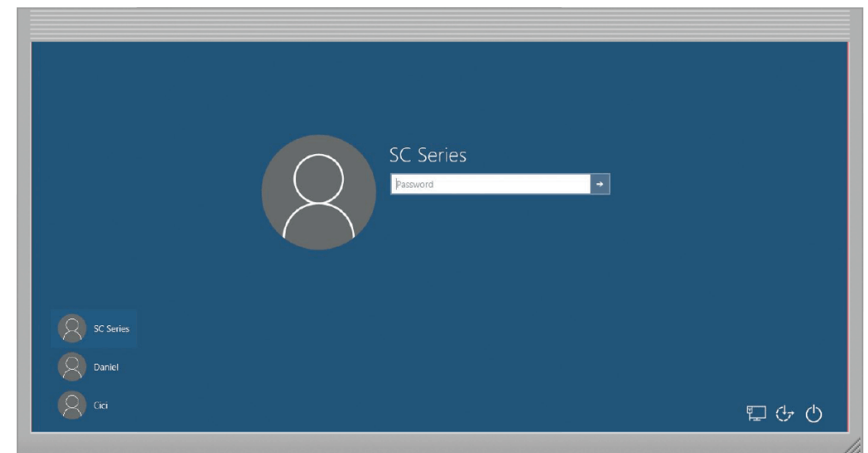
Backup and
Restore

Operating System Functions

- 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



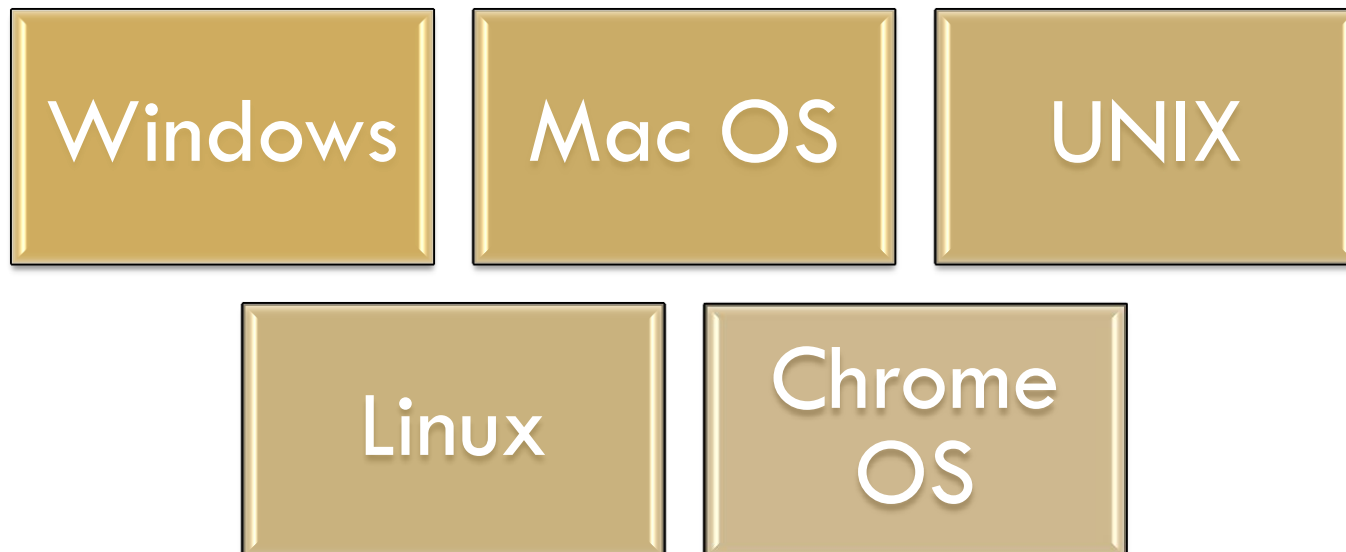
Types of Operating Systems

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

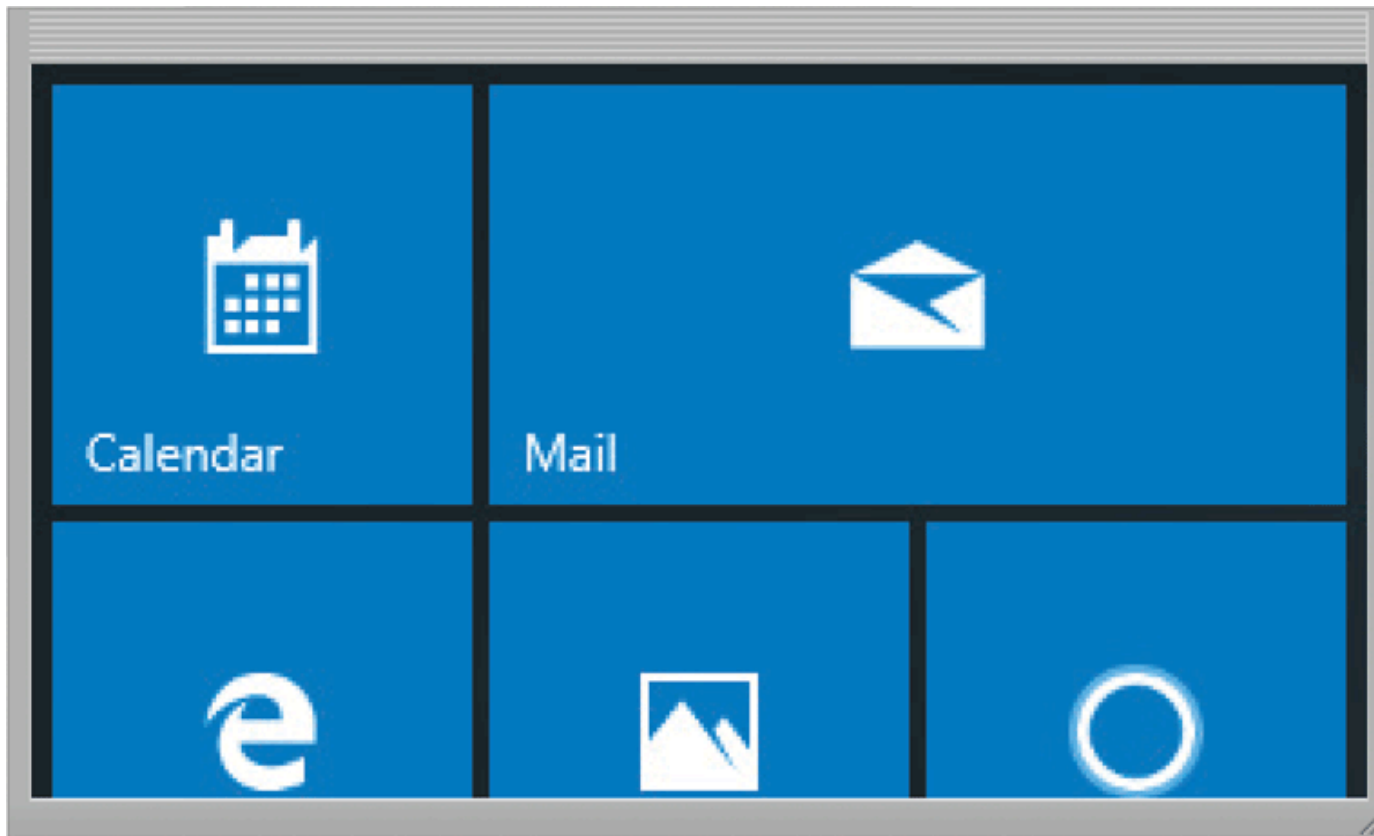
- A **desktop operating system** is a complete operating system that works on desktops, laptops, and some tablets



Desktop Operating Systems

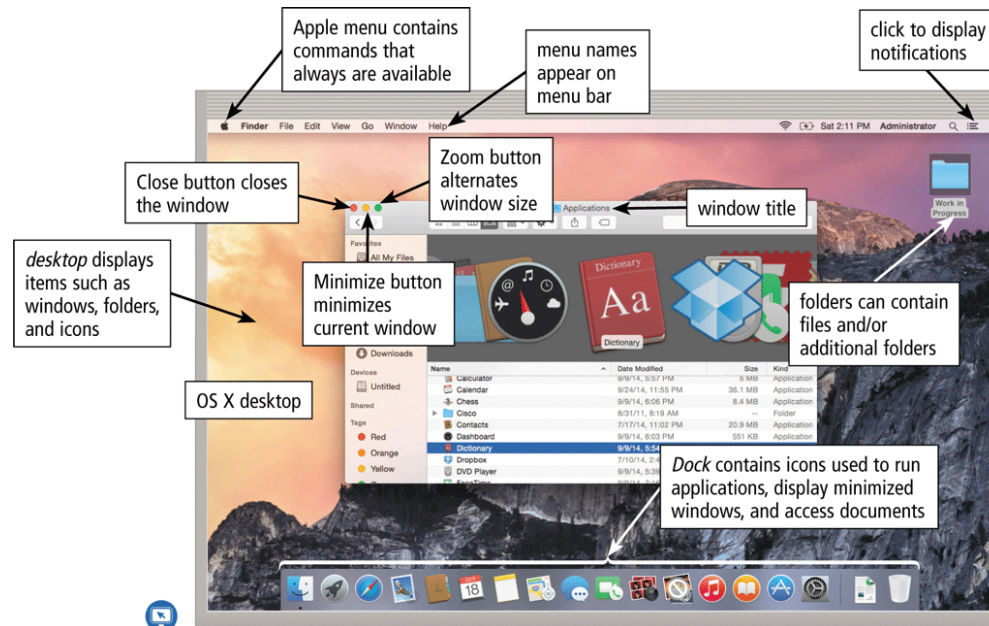
- The latest versions of Windows offer these features
 - ▣ Uses tiles to access apps
 - ▣ Includes the desktop interface
 - ▣ Support for input via touch, mouse, and keyboard
 - ▣ Email app, calendar app, and browser included
 - ▣ Photos, files, and settings you can sync with OneDrive
 - ▣ Enhanced security through an antivirus program, firewall, and automatic updates
 - ▣ Windows Store offers additional applications for purchase

Desktop Operating Systems

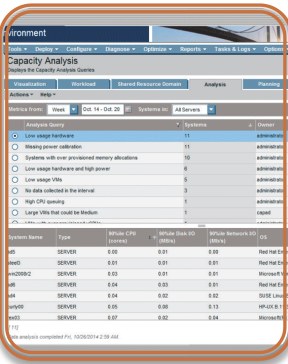


Desktop Operating Systems

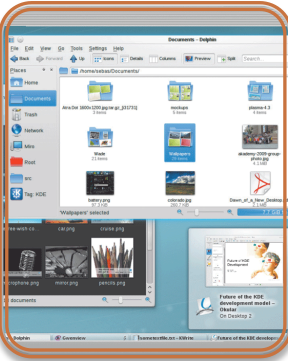
- ❑ The Macintosh operating system has earned a reputation for its ease of use
- ❑ Latest version is **OS X**



Desktop Operating Systems



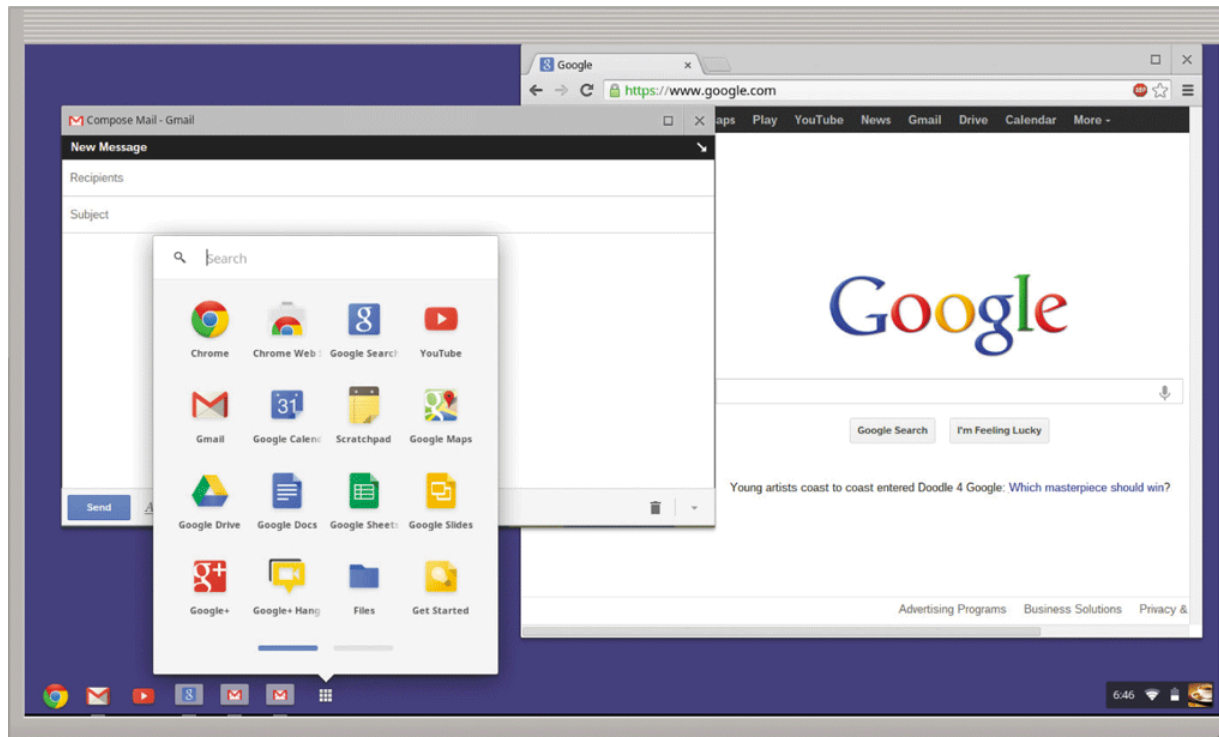
UNIX is a multitasking operating system developed in the early 1970s



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

