

Technology Now, 2e

Chapter 3: System Software

A Guide to this Instructor's Manual:

We have designed this Instructor's Manual to supplement and enhance your teaching experience through classroom activities and a cohesive chapter summary.

This document is organized chronologically, using the same headings in **orange** that you see in the textbook. Under each heading you will find (in order): The Bottom Line which summarizes the main points in the section, Lecture Notes providing key section highlights, Teacher Tips, Classroom Activities, and Lab Activities. Pay special attention to teaching tips, and activities geared towards quizzing your students, enhancing their critical thinking skills, and encouraging experimentation within the software.

In addition to this Instructor's Manual, our Instructor's Resources also include PowerPoint Presentations, Test Banks, and other supplements to aid in your teaching experience.

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In This Chapter

- Identify System Software
- Define Operating Systems
- Describe Common OS Tasks
- Manage Your Computer's Windows
- Describe Common OS Features
- Compare PC Operating Systems
- Compare Mobile Operating Systems
- Describe File Basics
- Work with Folders
- Manage Files
- Customize Microsoft Windows

Identify System Software

THE BOTTOM LINE

- System software is the software that runs a computer, and includes the operating system and utility programs.
- You need to keep your operating system up to date to keep your computer running smoothly and to protect against security threats.

LECTURE NOTES

- Review that system software includes the operating system and utility software, and is the software that makes it possible for a person to interact with and utilize the hardware of a computer.
- Describe the various roles of the operating system.
- Discuss the roles and types of utility software, including file management, search, disk cleanup, and file compression programs.

CLASSROOM ACTIVITIES

Quick Quiz

1. An ____ is a collection of software changes to fix bugs, improve security, and enhance features. (update)
2. ____ lets you perform work or personal tasks. (Application software)
3. ____ software deletes unnecessary files. (Disk cleanup)
4. ____ reduce the size of files. (File compression utilities)

LAB ACTIVITIES

Encourage students to explore using the command-line interface. In Windows 10, press the Windows key to switch to the Start screen, type "comm" to highlight "Command Prompt" in the Search pane, then press the Enter key to open a Command Prompt window. This is the command-line interface used by early operating systems such as DOS or UNIX.

Instruct students to type the command "help" at the command line, then press Enter. This will display a long list of commands. Read the descriptions and test out some common useful commands such as ver, dir, cd, and tasklist. Exit the Command Prompt window by clicking the Close button in the title bar or by typing "exit" then pressing Enter.

Define Operating Systems

THE BOTTOM LINE

- The operating system is the essential software on your computer.
- Operating systems process data, manage memory, control hardware, and provide a user interface.
- Personal computers, mobile devices, and servers run different types of operating systems.

LECTURE NOTES

- Provide an overview of the basic operating system functions including managing the boot process, providing a user interface, and memory management.
- Define processing techniques including multitasking, multithreading, multiprocessing, and parallel processing.
- Distinguish between the operating system types: personal computer (PC), server or network, mobile, and embedded.

CLASSROOM ACTIVITIES

Quick Quiz

1. A ____ is a multiuser OS because it controls a single, centralized computer that supports many users on networked computers. (server OS or network OS)
2. ____ uses the Google Chrome browser as its user interface and primarily runs web apps. (Chrome OS)
3. Operating systems may use ____ to divide one task among many processors so that parts of the task are completed simultaneously. (parallel processing)
4. An OS may use ____ to perform many tasks simultaneously, such as running two or more programs. (multitasking)

Describe Common OS Tasks

THE BOTTOM LINE

- The OS controls a computer from soon after you start it up until you shut it down.
- During that time, the OS manages resources including the processor, memory, storage space, and connected devices.
- The OS also provides the user interface so you can perform tasks.

LECTURE NOTES

- Provide an overview of the computer startup process, from power on to display of the main user interface.
- Describe the role of the OS in tracking system resources, managing input and output, and managing hardware.
- Explain the role of the OS in providing a user interface to allow a user-friendly way for a person to accomplish tasks using a computer.
- Review the role of the OS in safely ending processes and shutting down a computer.

CLASSROOM ACTIVITIES

Quick Quiz

1. The ____ is the core of an operating system. (kernel)
2. Placing data in a buffer so it can be retrieved later is called _____. (spooling)
3. To control a hardware resource, the OS communicates with a(n) _____. (device driver)
4. A(n) ____ is a graphic that you click to make a selection. (button)

Manage Your Computer's Windows

THE BOTTOM LINE

- Manage windows by switching from one to another, opening and closing them, and arranging them on the desktop.
- Resize windows to make them larger or smaller, revealing less or more of the desktop.

LECTURE NOTES

- Describe the role of windows as a central tool in any graphical user interface, including common window components.
- Explain how to manipulate windows including switching between, opening, arranging, resizing, and manipulating windows.

CLASSROOM ACTIVITIES

Quick Quiz

1. A(n) _____ is a rectangular area of the screen that displays the contents of a program, file, or folder. (window)
2. The foreground window is the _____ window. (active)
3. In Windows, you can use _____ to minimize all open windows except one. (Shake)
4. To return a maximized window to its original size, click the _____ button. (Restore Down)

Describe Common OS Features

THE BOTTOM LINE

- Operating systems with graphical user interfaces have many features in common, including the desktop, menus, icons, and dialog boxes.
- PC operating systems provide tools that help you maintain computer storage devices and manage files.

LECTURE NOTES

- Review common OS features including desktops, menus, dialog boxes, icons, and buttons.
- Describe common utility programs including disk and file utilities.

CLASSROOM ACTIVITIES

Quick Quiz

1. At the bottom of the Windows desktop is the _____, which contains buttons for running programs, viewing folders, and opening files. (taskbar)
2. Click a round _____ to select one option from a group of options in a dialog box. (option button)
3. A(n) _____ is a graphic representing a program, file, or hardware device. (icon)
4. When you save data on a disk, the OS places it in an available storage area, or _____. (sector)

Compare PC Operating Systems

THE BOTTOM LINE

- Because an OS comes installed on new computers, you should know the strengths and weaknesses of the popular PC OSs.
- The OS determines how easy it is to use and upgrade your computer, so consider the user interface and flexibility as two of the most important criteria when comparing PS OSs.

LECTURE NOTES

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CLASSROOM ACTIVITIES

Quick Quiz

1. ____ is a PC operating system developed by Microsoft Corporation. (Windows)
2. In macOS, the ____ contains icons for accessing files and apps. (Dock)
3. Linux is available in versions called _____. (distributions)
4. ____ is a PC operating system developed by Google to work with Google web apps. (Chrome OS)

Compare Mobile Operating Systems

THE BOTTOM LINE

- A mobile operating system has features similar to those of a PC operating system, but has a simpler user interface designed for mobile devices.
- Mobile operating systems are developed to fit into the limited memory of mobile devices and work well with mobile hardware features such as touch screens and voice recognition.

LECTURE NOTES

- Define a mobile operating system as an OS developed to run on a tablet, smartphone, or other mobile device.
- Provide an overview of the four most popular mobile operating systems: Android, iOS, and Windows Phone.

CLASSROOM ACTIVITIES

Quick Quiz

1. Developed by Google, ____ is a mobile OS based on Linux. (Android)
2. Developed by Apple, ____ runs only on Apple mobile devices. (iOS)
3. ____ is the mobile OS from Microsoft intended to run on certain brands of smartphones. (Windows Phone)
4. The home screen in Windows Phone is called the _____. (Start screen)

Describe File Basics

THE BOTTOM LINE

- To save a file, you must give it a name and choose where you want to store it on your computer.
- To understand how to use a file, you examine its properties and identify its format.
- To protect your files, you back them up.

LECTURE NOTES

- Define a file as a named collection of data on a storage medium such as a hard disk or USB flash drive.
- Review the two main categories of files: executable files and data files.
- Explain basic file management concepts such as naming files, storing files, file properties, file formats, selecting and copying files, compressing and uncompressing files, and backing up files.

CLASSROOM ACTIVITIES

Quick Quiz

1. ____ files are programs containing instructions that tell your computer how to perform specific tasks.
(Executable)
2. ____ files contain data such as words, numbers, and pictures that you can manipulate. (Data)
3. Most filenames include a(n) ____, or short identifier separated from the main part of the filename by a dot.
(extension)
4. To indicate a file's location, you use a file specification, or _____. (path)

Work with Folders

THE BOTTOM LINE

- You can store hundreds or even thousands of files on your computer's hard drive, online on a cloud storage site, or on another storage medium.
- You should master file management so that after you store, copy, move, and rename files, you can find them easily again.

LECTURE NOTES

- Review the central role of folders in organizing files on a computer.
- Discuss basic folder management skills such as navigating, creating, renaming, expanding and collapsing, and moving, copying, and deleting folders.

CLASSROOM ACTIVITIES

Quick Quiz

1. On a Windows computer, the file manager is called _____. (File Explorer)
2. You can click a folder name in the path shown in the _____ to open the folder. (Address bar)
3. In Windows, you can rename a folder by _____ the folder name and then clicking Rename on the shortcut menu. (right-clicking)
4. In Windows, if you delete a folder by mistake, you can undo the deletion by pressing _____. (CTRL+Z)

Manage Files

THE BOTTOM LINE

- Save your files on your hard drive, flash drive, or to the cloud so you can easily access them later.
- You should know how to navigate your computer so you can find and open files you've saved.

LECTURE NOTES

- Explain that file management rules apply to all types of files, whether they are spreadsheets, photographs, or documents.
- Review basic file management tasks such as using Save and Save As, saving a file to a location on a hard drive, saving a file to a Flash drive, saving a file to OneDrive or another cloud storage service, and opening a saved file.

CLASSROOM ACTIVITIES

Quick Quiz

1. The first time you select a command to save a file on a PC, the operating system displays the _____ dialog box. (Save As)
2. To save a file to a flash drive, first place the drive in a(n) _____ on your computer. (USB port)
3. Besides saving files on your hard drive or a flash drive attached to your computer, you can save them in the _____. (cloud)
4. You can _____ a file to open it in the same application used to create, edit, or save the file. (double-click)

Customize Microsoft Windows

THE BOTTOM LINE

- Learn how to customize Windows to suit your taste and computing habits.
- Be familiar with changing display settings, changing hardware settings, and adding and changing user accounts.

LECTURE NOTES

- Explain that Microsoft Windows provides many tools you can use to customize the operating system settings and appearance to best match an individual's work style and habits.
- Discuss commonly customized operating system settings, such as the desktop, Control Panel, Display Settings, screen savers and sounds, the taskbar, and the keyboard and pointing device.
- Review the role of user accounts, and explain the differences between Administrator accounts and Standard accounts.

CLASSROOM ACTIVITIES

Quick Quiz

1. When you start working with a new computer, you use its ____ settings. (default)
2. One type of icon you can add to the desktop is a(n) ____ icon, which is indicated by a small arrow next to an icon that illustrates the program. (shortcut)
3. A quick way to customize many settings at the same time is to select a desktop ____, which is a predefined set of elements such as background images and colors. (theme)
4. A(n) ____ item is an icon that always appears on the taskbar. (pinned)

End of Chapter Material

Chapter Review: Focused questions prompting review of each chapter section.

Test Your Knowledge Now: Multiple choice questions spanning chapter topics.

Try This Now: Activities designed to allow application of chapter content using real-world tools.

Critical Thinking Now: Scenarios written to encourage independent thought and debate on subjects covered in the chapter.

Ethical Issues Now: Exercise offering opportunity to explore ethical issues related to chapter content.

Team Up Now: Exercise designed to encourage group work exploring a subject covered in the chapter.

Key Terms: Complete list of all key terms covered in the chapter.

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