

Faith Wempen

# Computing Fundamentals

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DIGITAL LITERACY EDITION

WILEY



# **Computing Fundamentals**

**DIGITAL LITERACY  
EDITION**

Faith Wempen

Rosie Hattersley, Richard Millett, and Kate Shoup

**WILEY**

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To Margaret.

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# Introduction

**Welcome to *Computing Fundamentals Digital Literacy Edition!*** This book is designed to prepare you for success in a modern world full of computers—not only the traditional computers such as desktop and notebook PCs, but also computers that you interact with in other places too, like your bank’s ATM or your employer’s computerized cash register. In this book, you will learn about the technologies that drive our computerized society, including the Internet and local area networks (LANs).

## What You Will Learn

This book will help you become a digitally literate person—that is, someone who understands how computer technology fits into our modern society and knows how to navigate a variety of computing environments. The topics covered include the following:

- *Operating systems:* You’ll compare major operating systems and learn what types of devices each operating system is designed to run on. You’ll learn how to navigate in Windows 7 too, including how to run applications and manage files.
- *Computer hardware and concepts:* You’ll learn about the physical parts of computers, including input, processing, output, and storage.
- *Computer software and concepts:* You will find out about the main types of application software and what each type is useful for. You’ll learn how to choose, install, update, use, and remove applications in Windows 7.
- *Browsers:* You will learn how to use a web browser to find information on the Internet.
- *Networking concepts:* You will find out how computer networks work, including the hardware and software required for them.
- *Digital communication:* You will learn how to communicate online in a variety of ways, including email, instant messaging, video chat, and web conferencing.
- *Digital citizenship:* You will learn the etiquette standards and customs of the online world, and the legal and ethical issues involved in worldwide online computing.
- *Safe computing:* You’ll find out what the dangers are in using the Internet and other networks and learn methods of protecting your privacy and safeguarding your computer and its data.

# Chapter Features

Each chapter provides many different ways of helping you learn, not only in the printed book, but also in the online resource supplements. Here is a quick summary of the aids you will find in this book:

- **Learning Objectives:** Each chapter starts out with a list of learning objectives, giving you a practical look at what you will learn.

#### Learning objectives

- Identify the basic parts of an Office application's interface
- Use common features that all Office applications share
- Save, open, and create data files
- Print your work and email it to others
- Adjust the options of an Office application

- **Definitions:** Key terms appear in color in the text, and their definitions appear in the margin for easy lookup. The key terms are also compiled into a glossary in the back of the book.

Scrolling the display does not move the insertion point. To move the **insertion point**, click where you want it to go, or use the directional arrow keys on your keyboard to move it. In Excel, there is no insertion point, but a thick outline around the active cell shows the cell in which content will be entered.

**Insertion point.** The flashing vertical line that indicates where typed text will appear.

- **Notes, Tips, and Cautions:** These special-purpose notes appear in the text whenever there is extra information you should know.

Ctrl+S is the keyboard shortcut for the Save command; Ctrl+N is the shortcut for the New command (to start a new file); and Ctrl+O is the shortcut for the Open command to open an existing file.

TIP

- **Careers in IT:** In these features, you will learn about some careers that relate to the topics you are studying.

Careers in IT

#### Programmer

A programmer writes the instructions that become computer programs. Whether it's an operating system, a utility, or a game, a programmer takes a general concept like "open a dialog box with user controls for adjusting the graphics quality" and makes it a reality by writing the exact instructions needed, line by line. The programmer then compiles those instructions into a usable program, or combines them with the instructions written by another programmer or group of programmers to make a larger program. More experienced programmers may also participate in developing the requirements for a program. A programmer should have at least an Associate Degree in Computer Technology, Computer Science, or Information Technology, and should be familiar with at least two or three different programming languages.



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- **Put It to Work:** These features explain practical uses for the topics you are learning about, and in some cases suggest activities you can try to put the information to immediate use.

Put It to Work

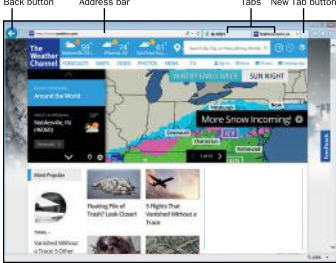
### Using Internet Explorer

This book devotes an entire chapter (Chapter 15, "Web Basics") to using Internet Explorer (IE), but you will probably need to use the web before you get to that chapter to complete some of your assignments, so here is a very quick overview.

Windows 7 has a shortcut to Internet Explorer pinned to the taskbar, so you can start IE from there if you like, or you can click the Start button and click Internet Explorer at the top of the Start menu.

The page that appears initially depends on what page has been set as the default (referred to as the Home page). If you are accessing IE from your school or work, a page may have been assigned for you specific to that organization.

To go directly to a specific address (called a Uniform Resource Locator, or URL), type it in the **address bar**. You can also use the address bar to perform searches. Instead of entering a specific address in the address bar, type some keywords there, or even a whole sentence. Your default search engine will return a list of pages that meet your search criteria.



Use the Back button to return to a previous page. To go back several steps at once, hold the mouse button down on the Back button to open a menu of previously viewed pages.


To open a link in a new tab, right-click the link and choose Open in New Tab. You can then switch back and forth freely between the open pages by clicking their tabs. You can also start a new tab without specifying a page to show on it by clicking the New Tab button to the right of the rightmost displayed tab.

- **Privacy and Security:** These features spotlight information that may be useful in keeping you safe from privacy and security violations, such as security features in an application or a type of hardware or software that enhances security.

Privacy and Security

### Password-Protecting Files

You can password-protect an Office application's data file as you save it. To do so, from the Save As dialog box, click the Tools button, and then choose General Options from the menu. In the dialog box that appears, you can assign a password to the file. There are two password prompts: Password to Open and Password to Modify. The former allows read-only access; the user cannot save changes back to the same file. The latter enables changes to be saved. You can assign two different passwords to allow some people one type of access and others the other type.



Troubleshooting

### Restarting Helps!

If you talk to any computer professional about a problem you are having with your computer, the first thing he or she will probably ask you is: *Have you tried restarting?* That's because restarting Windows can cure a variety of one-time or occasional problems that may occur. For example, suppose your mouse pointer starts jumping around wildly as you move the mouse. That's a problem with the display adapter, and it can almost always be cured by restarting the PC. Another common problem that restarting usually fixes is a keyboard that suddenly starts sending the wrong characters to the PC as you type.

- **Troubleshooting:** These features provide information about solving common problems with the technology you are learning about.

### New Thin Client Operating Systems

Chrome OS is far from the only operating system for thin web clients. Several other open-source operating systems have recently been released, such as Haku ([www.haku-os.org](http://www.haku-os.org)), openThinClient ([openthinclient.org](http://openthinclient.org)), and ThinStation ([www.chinatation.org](http://www.chinatation.org)). These operating systems require less powerful computers than Windows or Mac OS X because they are leaner and have fewer features. Using a thin client operating system on an older computer can make it perform better when doing activities like browsing the web or managing email. The downside of using a non-standard operating system is that few applications are available for it, so you may be limited to the applications that come with it (usually a text editor, a web browser, an email program, and a music player, at the minimum).

New Technologies

### ■ New Technology:

In these features, you will learn about up-and-coming tools and technologies to watch for in the next few years, or recently developed innovations that are improving people's lives right now.

### ■ Step by Step:

Where it is useful to have exact step-by-step instructions for performing a task, a special Step by Step box appears listing the steps to follow.

#### Step by Step

##### Shutting Down a Windows 7 Computer

Follow these steps to shut down the computer completely and turn its power off:

1. Click Start, and then click the Shut Down button.
2. If any programs have unsaved files, a prompt appears for them. Respond to the prompt as needed.

##### Restarting a Windows 7 Computer

Follow these steps to restart the computer:

1. Click Start, and then click the arrow to the right of the Shut Down button. A menu appears, as shown in Figure 5.3.
2. Click Restart.
3. If any programs have unsaved files, a prompt appears for them. Respond to the prompt as needed.



Shut Down button

- **Quick Review:** At the end of each major section of a chapter are several review questions that you can use to test your understanding of the material. If you can't easily answer these questions, you should re-read the section.

#### Quick Review

1. How do you resize an object?
2. What key do you press to get help?
3. How do you change to a different view?
4. What is the difference between the Windows Clipboard and the Office Clipboard?

# End-of-Chapter Features

At the end of each chapter, you will find special features that will help you review the key points of the chapter and to test and demonstrate your learning.

## Summary

### Understanding System Software

**System software** includes the BIOS, the operating system, and utility programs that perform system maintenance and protection.

A computer's **platform** is its type of hardware. Only certain operating systems can run on certain platforms. The **Intel platform**, also called IBM-compatible, is the most popular platform; this platform's most popular operating system is Windows. The 32-bit Intel platform is called **x86**, and the 64-bit version is called **x64**.

Most operating systems use a **graphical user interface (GUI)**, but some operating systems, especially those designed for use on servers, use a **command-line interface**. UNIX is an example.

There are many types of **utility software** for performing various system maintenance tasks. **Antivirus**, **firewall**, and **anti-spyware** programs protect from outside attacks and malicious software (**malware**). **Anti-spam** programs cut down on the amount of junk email you receive. A **disk checking program** can find and fix file system errors, and a **registry cleanup program** can find and fix inconsistent or unneeded entries in the **registry**. **Backup software** can automate the process of backing up important files.

### Comparing the Major Operating Systems

**Mac OS X** is the operating system on most Apple desktop and notebook computers. Its latest version is OS X 10.9, code named **Mavericks**. Its main competitor is **Microsoft Windows**, which is the most popular operating system in the world, used on more than 90% of all desktop and notebook PCs.

**Linux** is an open-source operating system based on UNIX. The basic version is free, but you can purchase a packaged collection of add-ons and utility programs with it called a distribution (**distro**). A distro typically includes a GUI, as an alternative to Linux's native command-line interface.

You can run multiple operating systems on a single computer by setting it up to **multi-boot**, or to use a **virtual machine** to run the secondary operating system within the first one.

A **thin client** operating system such as Chrome OS is designed for small portable notebook computers that are used primarily for going online.

A **server** is a computer that serves an entire network rather than an individual user. The most popular server operating systems are **Linux**, **UNIX**, and **Windows Server**.

Tablets and smartphones have an operating system that is preinstalled on a chip (**system-on-chip**, or **SoC**). Users can download **apps**, which are add-on applications that extend the device's capabilities. The popular SoC operating systems are **iOS**, **Android**, **Windows RT**, and **Windows Phone**.

### Understanding Device Drivers

A **device driver** translates between the operating system and a hardware device. You can update a device driver to solve some performance problems you may have with the device, and **roll back** the driver if the new driver doesn't work as well as the previous one.

When you install a new piece of hardware, Windows uses a technology called Plug and Play to identify the device and locate a driver for it if possible.

- **Summary:** A section-by-section summary briefly reviews the main points of the chapter, with the key terms you should know highlighted.

- **Key Terms:** A list of the vocabulary words from the chapter appears, so you can make sure you know each one. If a word on this list doesn't sound familiar, page back through the chapter to review its definition.

### Key Terms

AutoCorrect	Ribbon
AutoRecover	ScreenTip
Backstage view	scroll
cell cursor	scroll bar
color palette	scroll box
default file location	selection handle
dialog box launcher	shortcut menu
embed fonts	standard colors
group	status bar
insertion point	tab
keyboard shortcut	template
object	theme
Office Clipboard	theme colors
Quick Access Toolbar (QAT)	Zoom controls

- **Test Yourself:** A variety of exercises help you demonstrate your knowledge, including:

### Test Yourself

#### Fact Check

- Which of these is NOT a type of system software?
  - word processing software
  - backup software
  - BIOS
  - operating system
- Which operating system has a command-line interface by default?
  - iOS
  - UNIX
  - Android
  - Windows RT
- Which of these is a thin client OS?
  - Windows Server
  - Chrome OS
  - Mac OS X
  - UNIX
- In a \_\_\_\_\_, users employ a keyboard to type commands at a prompt.
  - command-line interface
  - graphical user interface
  - utility interface
  - compressed interface
- What file system is the default for Windows 7 system volumes?
  - NTFS
  - FAT32
  - HFS+
  - UDF
- A volume letter is followed by what symbol?
  - ; (semi-colon)
  - % (percent sign)
  - : (colon)
  - & (ampersand)
- Where in Windows Explorer does a file's path appear?
  - address bar
  - ribbon
  - title bar
  - navigation pane

#### Fact Check

- Which of these is NOT a type of system software?
  - word processing software
  - backup software
  - BIOS
  - operating system
- Which operating system has a command-line interface by default?
  - iOS
  - UNIX
  - Android
  - Windows RT

- **Fact Check:** A short multiple-choice quiz.

- **Matching:** An exercise in which you match terms to their meanings.

#### Matching

Match the term to its description.

- x86
  - GUI
  - Linux
  - shell
  - SoC
  - UDF
  - root directory
- \_\_\_\_\_The 32-bit version of the Intel platform
  - \_\_\_\_\_A user interface that uses pictures and a pointing device to issue commands
  - \_\_\_\_\_An open-source operating system used on a variety of platforms
  - \_\_\_\_\_An operating system's user interface
  - \_\_\_\_\_The file system used on DVDs
  - \_\_\_\_\_An operating system that comes preinstalled on a chip on a portable device
  - \_\_\_\_\_The top-level folder on a volume

### Sum It Up

1. List three types of system software.
2. What is the difference between an OS and a platform?
3. List five types of utility programs.
4. List three operating systems that would run on an IBM-compatible desktop PC.
5. Name three operating systems used on smartphones.
6. Explain the purpose of Plug and Play technology.
7. Explain the purpose of partitioning a drive.
8. Give an example of a complete path to a file, and explain the parts of the path.

■ Sum It Up: A variety of open-ended questions that guide you to put your newly acquired knowledge into your own words.

■ Explore More: These activity suggestions provide ideas for going further with several of the topics you learned about in the chapter.

### Explore More

#### Linux Distros

Suppose you want to put Linux on an older desktop PC and give it to a relative who wants to use the Internet. But that person doesn't know much about computers, so you must find a Linux distro that is very easy to use, even for a beginner. Do a web search on the terms *Linux distro beginner*. Based on the information you find, choose two Linux distros you think would meet your needs, and explain why you chose the ones you did.

#### Examining File Associations

Windows 7 has default extension associations for various file types. For example, when you double-click on a file with a `txt` extension, Windows 7 opens it in Notepad because Notepad is the default application for the `txt` extension.

When you have more than one application that is capable of opening a certain type of file, you may want to change Windows's default setting for that extension. For example, if you have both Microsoft Word and WordPad, you might prefer one over the other for opening files with an `rtf` extension.

### Think It Over

#### NTFS Compression and Encryption

NTFS compression and encryption both make files slightly slower to access. In addition, using encryption introduces another level of responsibility into file management because you must back up the encryption key so you can get your files back in the event of a system disaster that causes the hard drive to be inaccessible via the operating system. Given those drawbacks, do you think either of those features would be worth it to you, personally?

#### Backup Scheduling

Suppose you were designing your own backup schedule for your computer. Which folders or files would you back up? Regarding the files you did not choose to back up, why did you exclude them? How often would you perform a full backup? How often would you perform a differential or incremental backup—and which would it be? Think about your answers, and give a reason for each one.

■ Think It Over: These philosophical and practical discussion questions can be springboards to personal writing assignments or used as in-class or small group discussion starters.

## Online Features

You can enhance your understanding of the material by exploring the book's companion website at [www.wiley.com/go/computingfundamentalsdigitalit](http://www.wiley.com/go/computingfundamentalsdigitalit). On the website, you'll find additional Fact Check questions and answers for each chapter.





# Part I

# Computer Basics and Hardware

**Chapter 1**  
**Computer Basics**

**Chapter 2**  
**The System Unit**

**Chapter 3**  
**Input, Output, and Storage**