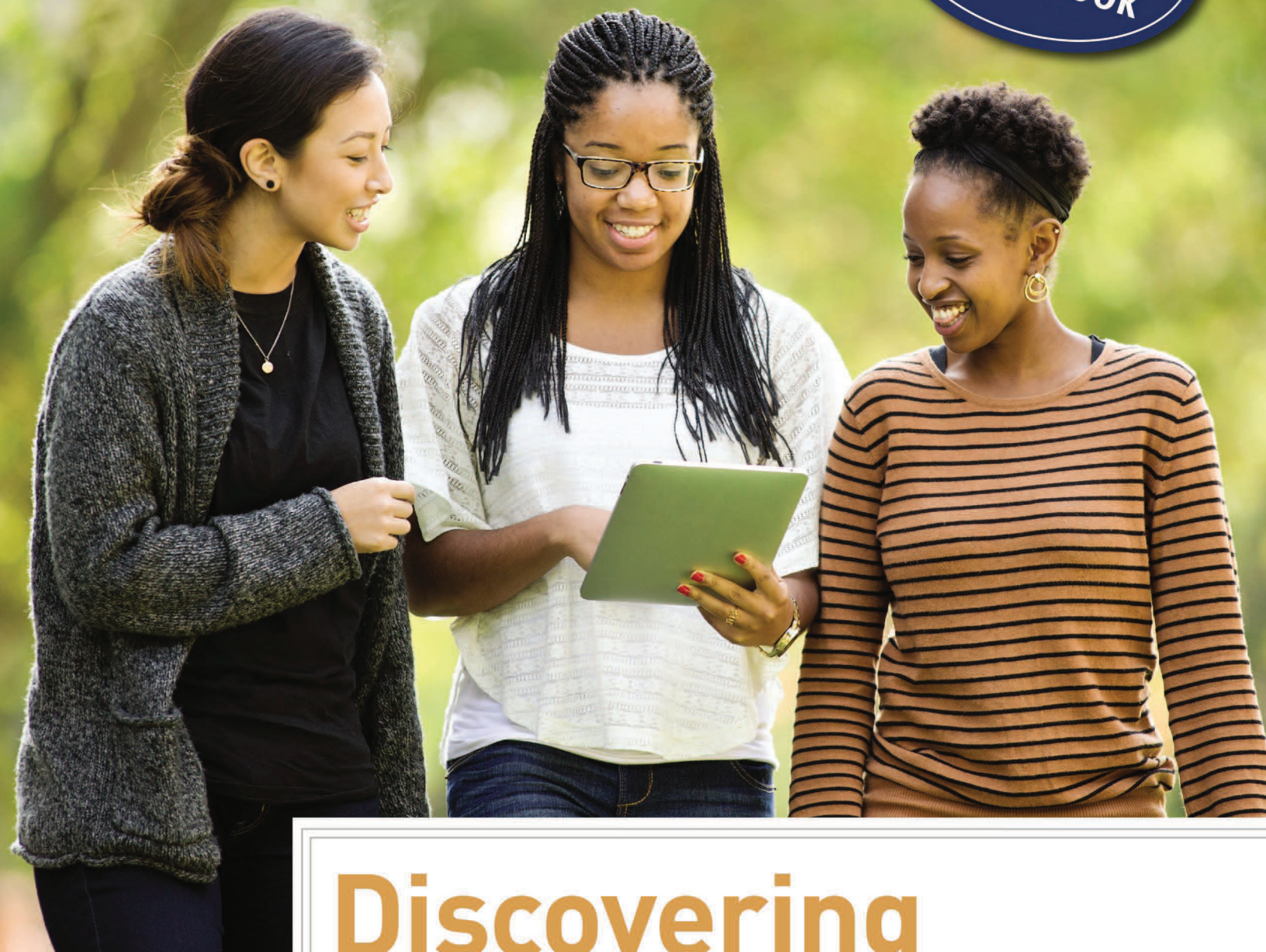


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Discovering Computers

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

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Discovering Computers

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



Discovering Computers

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

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**Discovering Computers: Technology in a
World of Computers, Mobile Devices, and the
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Discovering Computers

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

Table of Contents at a Glance

 Chapter 1 Digital Literacy: Introducing a World of Technology1	 Chapter 8 Digital Storage: Preserving on Media and in the Cloud335
 Chapter 2 The Internet: Accessing, Searching, Sharing, and Communicating53	 Chapter 9 Operating Systems: Managing, Coordinating, and Monitoring Resources377
 Chapter 3 Computers and Mobile Devices: Evaluating the Possibilities103	 Chapter 10 Communications and Networks: Sending and Receiving Digital Content415
 Chapter 4 Programs and Apps: Using Software at Work, School, and Home151	 Chapter 11 Information and Data Management: Organizing, Verifying, Maintaining, and Accessing463
 Chapter 5 Digital Safety and Security: Identifying Threats, Issues, and Defenses201	 Chapter 12 Information Systems and Program Development: Designing and Building Solutions509
 Chapter 6 Inside Computers and Mobile Devices: Exploring the Components247	
 Chapter 7 Input and Output: Examining Popular Devices287	

Discovering Computers

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

Table of Contents

CHAPTER 1

Digital Literacy: Introducing a World of Technology

1

A WORLD OF TECHNOLOGY	2
COMPUTERS	4
Laptops	4
Tablets	4
Desktops	6
Servers	6
MOBILE AND GAME DEVICES	7
Smartphones	7
Digital Cameras	8
Portable Media Players	8
E-Book Readers	9
Game Devices	9
DATA AND INFORMATION	11
Input	12
Output	14
Memory and Storage	15
THE INTERNET	18
The World Wide Web	19
Web Browsing	20
Web Searching	21
Online Social Networks	21
Internet Communications	23
DIGITAL SECURITY AND SAFETY	23
Viruses and Other Malware	23
Privacy	24
Health Concerns	24
Environmental Issues	24
PROGRAMS AND APPS	25
Operating Systems	25
Applications	26
Installing and Running Applications	27
Developing Programs and Apps	28
COMMUNICATIONS AND NETWORKS	29
Wired and Wireless Communications	29
Networks	30
USES OF TECHNOLOGY IN SOCIETY	33
Education	33
Government	34
Finance	34
Retail	35
Entertainment	35
Health Care	36
Travel	36
Science	37
Publishing	37
Manufacturing	38
TECHNOLOGY USERS	38

CHAPTER SUMMARY	41
STUDENT ASSIGNMENTS: Study Guide • Key Terms • Checkpoint	
• How To: Your Turn • Internet Research • Problem Solving	
• Critical Thinking • Beyond the Book	42 – 52

CHAPTER 2

The Internet: Accessing, Searching, Sharing, and Communicating

53

THE INTERNET	54
Evolution of the Internet	54
CONNECTING TO THE INTERNET	56
Internet Service Providers	58
How Data and Information Travel the Internet	59
Domain Names and IP Addresses	59
THE WORLD WIDE WEB	61
Browsing and Navigating the Web	62
Web Addresses	64
Web Apps and Mobile Apps	65
TYPES OF WEBSITES	67
Search Engines	67
Online Social Networks	68
Informational	70
Media Sharing and Bookmarking Sites	70
News, Weather, Sports, and Other Mass Media	71
Educational	71
Business, Governmental, and Organizational	72
Blogs	72
Wikis	73
Health and Science	73
Entertainment	73
Financial	74
Travel and Mapping	75
Shopping and Auctions	75
Careers and Employment	76
E-Commerce	77
Portals	78
Web Publishing	78
MEDIA ON THE WEB	79
Graphics	80
Audio	81
Video	83
Plug-Ins	83
OTHER INTERNET SERVICES	83
Email	84
Email Lists	86
Instant Messaging	86
Chat Rooms	87
Discussion Forums	87
VoIP	88
FTP	88

NETIQUETTE 90
CHAPTER SUMMARY 91
STUDENT ASSIGNMENTS: Study Guide • Key Terms • Checkpoint
 • How To: Your Turn • Internet Research • Problem Solving
 • Critical Thinking • Beyond the Book 92 – 102

CHAPTER 3

Computers and Mobile Devices: Evaluating the Possibilities 103

COMPUTERS AND MOBILE DEVICES 104
DESKTOPS AND MOBILE COMPUTERS 104
 Desktops 106
 Laptops and Tablets 108
 Handheld Computers 111
SERVERS 111
SUPERCOMPUTERS 113
TERMINALS 113
 Point-of-Sale Terminals 113
 ATMs 114
 Self-Service Kiosks 115
CLOUD COMPUTING 116
MOBILE DEVICES 117
 Smartphones 117
 Digital Cameras 120
 Portable Media Players 122
 E-book Readers 124
GAME DEVICES 125
EMBEDDED COMPUTERS 126
PUTTING IT ALL TOGETHER 128
PORTS AND CONNECTIONS 129
 USB Ports 131
 Port Replicators and Docking Stations 131
 Wireless Device Connections 132
PROTECTING HARDWARE 134
 Hardware Theft and Vandalism 134
 Hardware Failure 134
HEALTH CONCERNS OF USING TECHNOLOGY 136
 Repetitive Strain Injuries 136
 Other Physical Risks 137
 Behavioral Health Risks 138
CHAPTER SUMMARY 139
STUDENT ASSIGNMENTS: Study Guide • Key Terms • Checkpoint
 • How To: Your Turn • Internet Research • Problem Solving
 • Critical Thinking • Beyond the Book 140 – 150

CHAPTER 4

Programs and Apps: Using Software at Work, School, and Home 151

PROGRAMS AND APPS 152
 The Role of the Operating System 154
 Software Availability 155
PRODUCTIVITY APPLICATIONS 157
 Project Development 157
 Word Processing 159
 Presentation 160
 Spreadsheet 160

Database 162
 Note Taking 162
 Calendar and Contact Management 163
 Software Suite 163
 Project Management 164
 Accounting 164
 Personal Finance 164
 Legal 166
 Tax Preparation 166
 Document Management 166
 Support Services 167
 Enterprise Computing 168
GRAPHICS AND MEDIA APPLICATIONS 170
 Computer-Aided Design 170
 Desktop Publishing 170
 Paint/Image Editing 171
 Photo Editing and Photo Management 171
 Clip Art/Image Gallery 173
 Video and Audio Editing 173
 Multimedia and Website Authoring 174
 Media Player 175
 Disc Burning 176
PERSONAL INTEREST APPLICATIONS 176
COMMUNICATIONS APPLICATIONS 178
SECURITY TOOLS 179
 Personal Firewall 179
 Antivirus Programs 181
 Spyware, Adware, and Other Malware Removers 182
 Internet Filters 183
FILE AND DISK MANAGEMENT TOOLS 183
 File Manager 183
 Search 184
 Image Viewer 185
 Uninstaller 185
 Disk Cleanup 186
 Disk Defragmenter 186
 Screen Saver 187
 File Compression 187
 PC Maintenance 188
 Backup and Restore 188
CHAPTER SUMMARY 189
STUDENT ASSIGNMENTS: Study Guide • Key Terms • Checkpoint
 • How To: Your Turn • Internet Research • Problem Solving
 • Critical Thinking • Beyond the Book 190 – 200

CHAPTER 5

Digital Safety and Security: Identifying Threats, Issues, and Defenses 201

DIGITAL SECURITY RISKS 202
 Cybercrime 202
INTERNET AND NETWORK ATTACKS 204
 Malware 205
 Botnets 206
 Denial of Service Attacks 206
 Back Doors 207
 Spoofing 207
 Safeguards against Internet and Network Attacks 208
 Firewalls 208

UNAUTHORIZED ACCESS AND USE	210
Safeguards against Unauthorized Access and Use	210
Access Controls	211
User Names and Passwords	211
Possessed Objects	213
Biometric Devices	213
Digital Forensics	214
SOFTWARE THEFT	215
Safeguards against Software Theft	215
INFORMATION THEFT	216
Safeguards against Information Theft	216
Encryption	216
Digital Signatures and Certificates	218
HARDWARE THEFT, VANDALISM, AND FAILURE	219
BACKING UP — THE ULTIMATE SAFEGUARD	219
WIRELESS SECURITY	221
ETHICS AND SOCIETY	224
Information Accuracy	225
Intellectual Property Rights	225
Codes of Conduct	226
Green Computing	226
INFORMATION PRIVACY	227
Electronic Profiles	228
Cookies	229
Phishing	231
Spyware and Adware	231
Social Engineering	232
Privacy Laws	232
Employee Monitoring	233
Content Filtering	234
CHAPTER SUMMARY	235
STUDENT ASSIGNMENTS: Study Guide • Key Terms • Checkpoint	
• How To: Your Turn • Internet Research • Problem Solving	
• Critical Thinking • Beyond the Book	236 – 246

CHAPTER 6

Inside Computers and Mobile Devices: Exploring the Components

247

INSIDE THE CASE	248
The Motherboard	250
PROCESSORS	252
The Control Unit	253
The Arithmetic Logic Unit	253
Machine Cycle	254
Registers	254
The System Clock	255
Personal Computer and Mobile Device Processors	255
Processor Cooling	256
CLOUD COMPUTING	257
DATA REPRESENTATION	259
Bits and Bytes	259
Coding Schemes	259
MEMORY	261
Bytes and Addressable Memory	261
Types of Memory	261
RAM	262
Cache	265
ROM	265

Flash Memory	266
CMOS	267
Memory Access Times	267
ADAPTERS	268
Adapter Cards	269
USB Adapters and ExpressCard Modules	269
BUSES	270
Bus Width	270
Types of Buses	271
POWER SUPPLY AND BATTERIES	271
CHAPTER SUMMARY	275
STUDENT ASSIGNMENTS: Study Guide • Key Terms • Checkpoint	
• How To: Your Turn • Internet Research • Problem Solving	
• Critical Thinking • Beyond the Book	276 – 286

CHAPTER 7

Input and Output: Examining Popular Devices

287

WHAT IS INPUT?	288
KEYBOARDS	290
Types of Keyboards	291
POINTING DEVICES	292
Mouse	292
Touchpad	293
Pointing Stick	293
Trackball	294
TOUCH SCREENS	294
PEN INPUT	297
Stylus	297
Digital Pen	297
Graphics Tablet	298
MOTION INPUT	298
VOICE INPUT	299
Audio Input	300
VIDEO INPUT	300
Webcams	302
Videoconference	303
SCANNERS AND READING DEVICES	303
Optical Scanners	304
Optical Readers	304
Bar Code Readers	305
RFID Readers	306
Magstripe Readers	306
MICR Readers	307
Data Collection Devices	307
WHAT IS OUTPUT?	308
DISPLAYS	309
Display Technologies	310
Display Quality	310
DTVs and Smart TVs	311
PRINTERS	312
Nonimpact Printers	313
Ink-Jet Printers	313
Photo Printers	315
Laser Printers	316
All-in-One Printers	317
Thermal Printers	318
Mobile Printers	318

Label Printers 318
 Plotters and Large-Format Printers. 318
 Impact Printers. 319
OTHER OUTPUT DEVICES 319
 Speakers. 319
 Headphones and Earbuds 320
 Data Projectors 320
 Interactive Whiteboards 321
 Force-Feedback Game Controllers and Tactile Output 321
ASSISTIVE TECHNOLOGY INPUT AND OUTPUT 321
CHAPTER SUMMARY 323
STUDENT ASSIGNMENTS: Study Guide • Key Terms • Checkpoint
 • How To: Your Turn • Internet Research • Problem Solving
 • Critical Thinking • Beyond the Book 324 – 334

CHAPTER 8

Digital Storage: Preserving on Media and in the Cloud 335

STORAGE 336
 Storage Capacity 336
 Storage versus Memory 338
 Storage Access Times 339
HARD DISKS. 339
 Characteristics of a Hard Disk 341
 Disk Cache 343
 RAID. 343
 External Hard Disks 343
 Maintaining Data Stored on a Hard Disk 344
FLASH MEMORY STORAGE. 345
 SSDs. 346
 Memory Cards 347
 USB Flash Drives 350
CLOUD STORAGE 351
OPTICAL DISCS 352
 Characteristics of Optical Discs 353
 CDs 355
 DVDs 355
ENTERPRISE STORAGE 358
 RAID. 358
 NAS and SAN. 359
 Tape 360
OTHER TYPES OF STORAGE 361
 Magnetic Stripe Cards 361
 Smart Cards 362
 RFID Tags 363
 Microfilm and Microfiche 363
CHAPTER SUMMARY 365
STUDENT ASSIGNMENTS: Study Guide • Key Terms • Checkpoint
 • How To: Your Turn • Internet Research • Problem Solving
 • Critical Thinking • Beyond the Book 366 – 376

CHAPTER 9

Operating Systems: Managing, Coordinating, and Monitoring Resources 377

OPERATING SYSTEMS 378
OPERATING SYSTEM FUNCTIONS. 380
 Starting Computers and Mobile Devices 380

Shutting Down Computers and Mobile Devices 381
 Providing a User Interface 381
 Managing Programs. 383
 Managing Memory 384
 Coordinating Tasks. 386
 Configuring Devices 387
 Establishing an Internet Connection 388
 Monitoring Performance 389
 Providing File and Disk Management 389
 Updating Operating System Software 390
 Controlling a Network 391
 Administering Security. 392
TYPES OF OPERATING SYSTEMS 393
DESKTOP OPERATING SYSTEMS. 394
 Windows 394
 Mac OS 395
 UNIX 397
 Linux 398
 Chrome OS. 399
SERVER OPERATING SYSTEMS. 399
MOBILE OPERATING SYSTEMS. 400
 Android 401
 iOS 402
 Windows Phone 402
CHAPTER SUMMARY 403
STUDENT ASSIGNMENTS: Study Guide • Key Terms • Checkpoint
 • How To: Your Turn • Internet Research • Problem Solving
 • Critical Thinking • Beyond the Book 404 – 414

CHAPTER 10

Communications and Networks: Sending and Receiving Digital Content 415

COMMUNICATIONS 416
NETWORKS 418
 LANs, MANs, WANs, and PANs. 419
 Network Architectures 421
 Network Topologies 423
NETWORK COMMUNICATIONS STANDARDS AND PROTOCOLS 424
 Ethernet 425
 Token Ring 425
 TCP/IP 426
 Wi-Fi. 427
 Bluetooth 427
 UWB. 429
 IrDA 429
 RFID 429
 NFC 430
 WiMAX 431
COMMUNICATIONS SOFTWARE. 431
COMMUNICATIONS LINES 432
 Cable 433
 DSL 433
 ISDN 433
 FTTP 434
 T-Carrier 434
 ATM 434
COMMUNICATIONS DEVICES. 434
 Digital Modems: Cable, DSL, and ISDN. 435
 Wireless Modems. 436

Wireless Access Points	436
Routers	437
Network Cards	439
Hubs and Switches	439
HOME NETWORKS	440
TRANSMISSION MEDIA	442
PHYSICAL TRANSMISSION MEDIA	443
Twisted-Pair Cable	443
Coaxial Cable	444
Fiber-Optic Cable	444
WIRELESS TRANSMISSION MEDIA	444
Infrared	445
Broadcast Radio	445
Cellular Radio	446
Microwaves	447
Communications Satellite	448
CHAPTER SUMMARY	451
STUDENT ASSIGNMENTS: Study Guide • Key Terms • Checkpoint	
• How To: Your Turn • Internet Research • Problem Solving	
• Critical Thinking • Beyond the Book	452 – 462

CHAPTER 11

Information and Data Management: Organizing, Verifying, Maintaining, and Accessing

463

DATABASES, DATA, AND INFORMATION	464
Data Integrity	466
Qualities of Valuable Information	466
The Hierarchy of Data	467
Maintaining Data	470
Validating Data	473
FILE PROCESSING VERSUS DATABASES	474
File Processing Systems	475
The Database Approach	475
DATABASE MANAGEMENT SYSTEMS	478
Data Dictionary	478
File Retrieval and Maintenance	479
Data Security	482
Backup and Recovery	482
RELATIONAL, OBJECT-ORIENTED, AND MULTIDIMENSIONAL DATABASES	483
Relational Databases	483
Object-Oriented Databases	484
Multidimensional Databases	485

WEB DATABASES	486
DATABASE ADMINISTRATION	489
INFORMATION SYSTEMS IN THE ENTERPRISE	491
Enterprise Resource Planning	491
Document Management Systems	492
Content Management Systems	492
Other Enterprise-Wide Information Systems	493
CHAPTER SUMMARY	497
STUDENT ASSIGNMENTS: Study Guide • Key Terms • Checkpoint	
• How To: Your Turn • Internet Research • Problem Solving	
• Critical Thinking • Beyond the Book	498 – 508

CHAPTER 12

Information Systems and Program Development: Designing and Building Solutions

509

SYSTEM DEVELOPMENT	510
System Development Guidelines	510
Who Participates in System Development?	512
Project Management	513
Feasibility Assessment	515
Documentation	515
Data and Information Gathering Techniques	516
Planning Phase	520
Analysis Phase	520
Design Phase	523
Implementation Phase	527
Support and Security Phase	530
APPLICATION DEVELOPMENT LANGUAGES AND TOOLS	531
Low-Level Languages	532
Procedural Languages	533
Object-Oriented Programming Languages and Application Development Tools	535
Other Languages and Application Development Tools	538
Web Development	540
CHAPTER SUMMARY	545
STUDENT ASSIGNMENTS: Study Guide • Key Terms • Checkpoint	
• How To: Your Turn • Internet Research • Problem Solving	
• Critical Thinking • Beyond the Book	546 – 556
APPENDIX	APP 1
INDEX	IND 1

Preface

The Shelly Cashman Series® offers the finest textbooks in computer education. We are proud of the fact that the previous seventeen editions of this textbook have been the most widely used in computer education. With this edition of *Discovering Computers* we have implemented significant improvements based on current computer trends and comments made by instructors and students. *Discovering Computers: Technology in a World of Computers, Mobile Devices, and the Internet* continues with the innovation, quality, and reliability you have come to expect from the Shelly Cashman Series.

In *Discovering Computers: Technology in a World of Computers, Mobile Devices, and the Internet* you will find an educationally sound, highly visual, interactive, and easy-to-follow pedagogy that, with the help of animated figures, relevant video, and interactive activities in the e-book, presents an in-depth treatment of introductory computer subjects. Students will finish the course with a solid understanding of computers, how to use computers, and how to access information on the Web.

Objectives of this Text, e-Book, and CourseMate Web Site

Discovering Computers: Technology in a World of Computers, Mobile Devices, and the Internet is intended for use

as a stand-alone solution or in combination with an applications, Internet, or programming textbook in a full-semester introductory computer course. No experience with computers is assumed. The objectives of this offering are to:

- Present the most-up-to-date technology in an ever-changing discipline
- Give students an in-depth understanding of why computers are essential in business and society
- Teach the fundamentals of and terms associated with computers and mobile devices, the Internet, programs and apps, and digital safety and security
- Present the material in a visually appealing, interactive, and exciting manner that motivates students to learn
- Provide exercises, lab assignments, and interactive learning activities that allow students to learn by actually using the computer, mobile devices and the Internet
- Present strategies for purchasing desktop computers, mobile computers, and mobile devices
- Provide alternative learning techniques and reinforcement via the Web
- Offer distance-education providers a textbook with a meaningful and exercise-rich digital learning experience

Hallmarks of Discovering Computers

To date, more than six million students have learned about computers using *Discovering Computers*. With the Web integration and interactivity, streaming up-to-date audio and video, extraordinary step-by-step visual drawings and photographs, unparalleled currency, and the Shelly and Cashman touch, this book will make your computer concepts course exciting and dynamic. Hallmarks of Shelly Cashman Series *Discovering Computers* include:

A Proven Pedagogy

Careful explanations of complex concepts, educationally-sound elements, and reinforcement highlight this proven method of presentation.

A Visually Appealing Book that Maintains Student Interest

The latest technology, pictures, drawings, and text are combined artfully to produce a visually appealing and

easy-to-understand book. Many of the figures include a step-by-step presentation, which simplifies the more complex computer concepts. Pictures and drawings reflect the latest trends in computer technology. This combination of pictures, step-by-step drawings, and easy-to-read text layout sets the standard for computer textbook design.

Latest Technologies and Terms

The technologies and terms your students see in *Discovering Computers* are those they will encounter when they start using computers. Only the latest application software is shown throughout the book.

Web Integrated

This book uses the Web as a major learning tool. The purpose of integrating the Web into the book is to (1) offer students additional information and currency

Distinguishing Features

Discovering Computers: Technology in a World of Computers, Mobile Devices, and the Internet includes a variety of compelling features, certain to engage and challenge students, making learning with *Discovering Computers* an enriched experience. These compelling features include:

- **Strong Content.** Based on market research and in-depth assessment of organization and each chapter's content, *Discovering Computers* has been restructured and reorganized to improve retention of material and promote transference of knowledge. The text's visually engaging presentation showcases current technology as well as course fundamentals in order to reinforce classroom and real world applications.
- **Balanced Presentation.** The print book provides students only with what they really need to know to be successful digital citizens in the classroom and beyond. The media-rich ebook addresses timely content, such as statistics, trends, prices, models, and expands on the print, with content appropriate for Computing majors. Students and instructors can choose to utilize this digital-only content, empowering each to fit the content to their specific needs and goals for the course.

- **Thematic Approach.** Chapter boxes, marginal elements, and accompanying digital-only content are linked by common themes to facilitate class discussions and help students make connections. These connections shed light on the integral role technology plays in business and society.
- **Media Engagement.** Enrichment content is available only in the e-book to enhance student knowledge and understanding through links to content and interactive media embedded at locations most appropriate for learning. Developed by the authors, activities providing deeper understanding and encourage learning by doing as well as offer practical skill development.
- **Reinforcement and Support.** End-of-chapter student assignments, along with the accompanying CourseMate web site, offer students an exceptional learning solution in addition to significant practice opportunities in the form of study guide materials, flash cards, practice tests and critical thinking opportunities.

on important topics; (2) use its interactive capabilities to offer creative reinforcement and online quizzes; (3) make available alternative learning techniques with Web-based learning games, practice tests, and interactive labs; (4) underscore the relevance of the Web as a basic information tool that can be used in all facets of society; (5) introduce students to doing research on the Web; and (6) offer instructors the opportunity to organize and administer their traditional campus-based or distance-education-based courses on the Web using various learning management systems.

Extensive End-of-Chapter Student Assignments

A notable strength of *Discovering Computers* is the extensive student assignments and activities at the end of each chapter. Well-structured student assignments can make the difference between students merely participating in a class and students

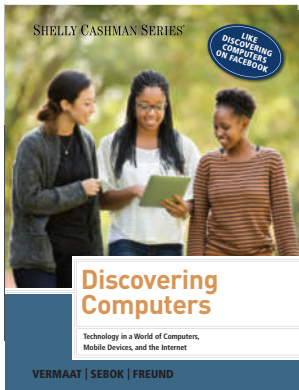
retaining the information they learn. End-of-chapter student assignments include the following:

- Study Guide exercises reinforce material for the exams
- Key Terms pages review chapter terms
- Checkpoint exercises test knowledge of chapter concepts
- How To — Your Turn exercises require that students learn new practical skills
- Problem Solving exercises require that students seek solutions to practical technology problems
- Internet Research exercises require that students search for information on the web
- Critical Thinking exercises challenge student assessment and decision-making skills
- Beyond the Book exercises expand understanding of chapter animations, boxes, figures, mini features, social media posts, and third-party links and videos through thought-provoking questions

Instructor Resources

The Instructor Resources include both teaching and testing aids.

Instructor's Manual Includes lecture notes summarizing the chapter sections, figures and boxed elements found in every chapter, teacher tips, classroom activities, lab activities, and quick quizzes in Microsoft Word files.



Syllabus Easily customizable sample syllabi that cover policies, assignments, exams, and other course information.

Figure Files Illustrations for every figure in the textbook in electronic form. Figures are provided both with and without callouts.

Solutions to Exercises Includes solutions for all end-of-chapter student assignments.

PowerPoint Presentations — Course Presenter A one-click-per-slide presentation system that provides PowerPoint slides for every subject in each chapter. Course Presenter provides consistent coverage for multiple lecturers.

Test Bank & Test Engine Test banks include 220 questions for every chapter, featuring objective-based and critical thinking question types, and including page number references and figure references, when appropriate. Also included is the test engine, ExamView, the ultimate tool for your objective-based testing needs.

Printed Test Bank A Rich Text Format (.rtf) version of the test bank that you can print.

Test Out/Final Exam Objective-based exam that can be used to test students out of your course, or as a final examination.

Pretest/Posttest Carefully prepared tests that can be used at the beginning and the end of the semester to measure student progress.



Computer Concepts CourseMate

The Computer Concepts CourseMate for *Discovering Computers* is the most expansive digital site for any computer concepts text in the market today! The content in the

CourseMate solution is integrated into each page of the text, giving students easy access to current information on important topics, reinforcements activities, and alternative learning techniques. Integrating the Computer Concepts CourseMate into the classroom keeps today's students engaged and involved in the learning experience.

The Computer Concepts CourseMate includes an integrated, multi-media rich and interactive digital book, powered by MindTap, and a variety of interactive quizzes and learning games, exercises, videos, and other features that specifically reinforce and build on the concepts presented in the chapter. These interactive activities are captured within the CourseMate EngagementTracker, making it easy to assess students' retention of concepts. This digital solution encourages students to take learning into their own hands and explore related content on their own to learn even more about subjects in which they are especially interested.

All of these resources on the Computer Concepts CourseMate for *Discovering Computers* enable students to get more comfortable using technology and help prepare students to use the Internet as a tool to enrich their lives.

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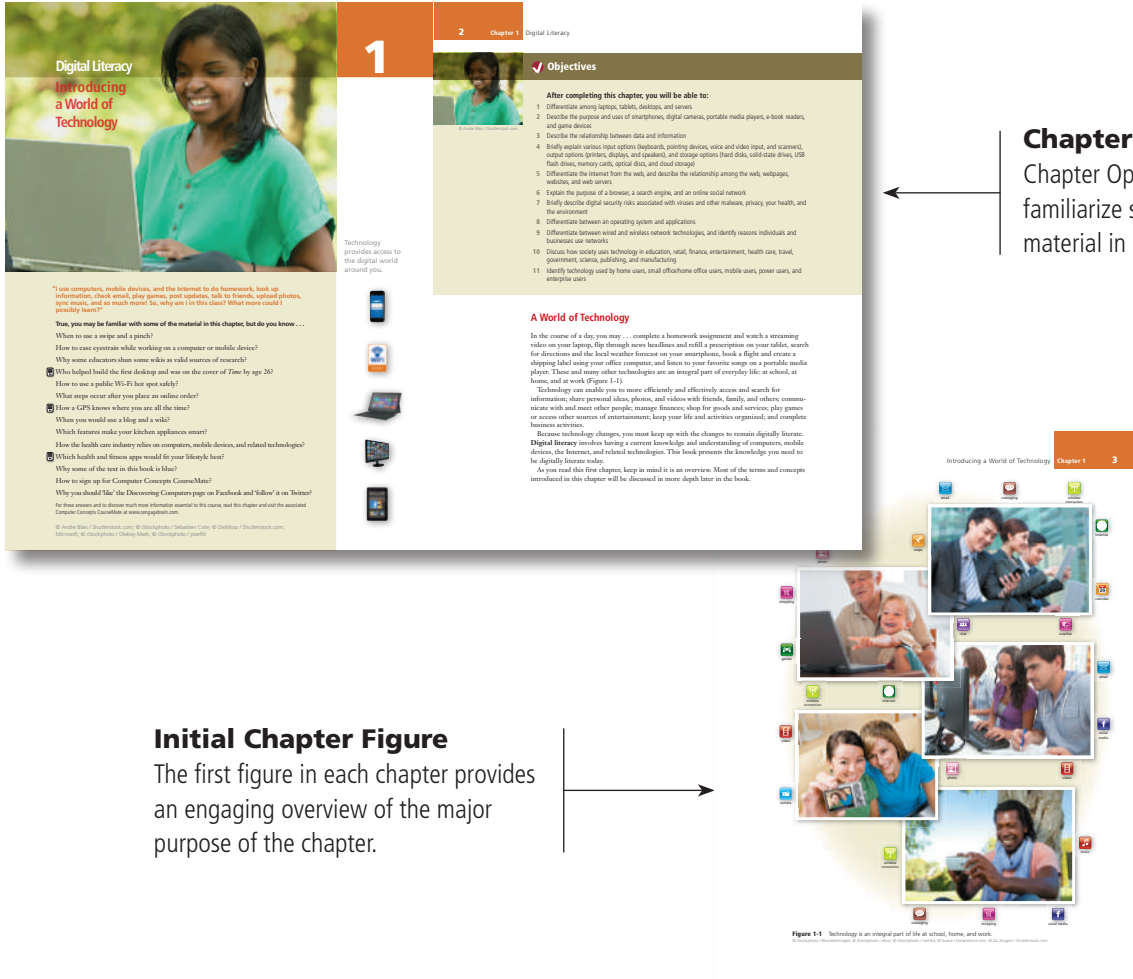
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Chapter Opener
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features provide readers with critical thinking opportunities.

Interactive e-Book Activity Icon

Several elements in each chapter are interactive learning activities in the e-book and are identified by this icon or by blue text.

How To
features enable readers to learn new practical skills

CONSIDER THIS

Are digital cameras, portable media players, e-book readers, and handheld game devices becoming obsolete because more and more smartphones and tablets include their functionality?
 True, many smartphones and tablets enable you to take and store photos, store, organize, and play or view your digital media; read e-books; and play games. This trend of computers and devices with technologies that overlap, called **convergence**, means that consumers may need fewer devices for the functionality that they require.
 Still, consumers often purchase separate stand-alone devices (i.e., a separate digital camera, portable media player, etc.) for a variety of reasons. The stand-alone device (i.e., a digital camera) may have more features and functionality than the combined device offers (i.e., a smartphone). You might want to be able to use both devices at the same time, for example, send text messages on the phone while reading a book on an e-book reader. Or, you might want protection if your combined device (i.e., smartphone) breaks. For example, you still can listen to music on a portable media player if your smartphone becomes nonfunctional.

MINI FEATURE 1-1

Living Digitally – Gaming

Video gamers spend billions of dollars each year making the most of their downtime with game consoles and devices. With outstanding 3-D graphics and challenging gameplay, nearly three-fourths of U.S. households own game hardware and software/apps. The popularity is due, in large part, to the social aspect of gathering families and friends to play together as a group or online with each other and those around the world.

Game Accessories and Input Techniques
 The more popular game consoles work with a wide variety of accessories and input techniques for directing movements and actions of on-screen players and objects, some of which are described below and shown in the images to the left:

- **Gamepads:** Holding the gamepad with both hands, press buttons with your thumbs or move sticks in various directions to trigger events.
- **Air gestures:** Moving your body or a handheld device in predetermined directions through the air, you may need at least six feet of open space to accommodate your motions.
- **Voice commands:** Speaking instructions toward the game console, ensure no background noise is in the room, or use a headset.
- **Fitness accessories:** Working with fitness accessories, such as balance boards and resistance bands, you can make fitness fun and functional.

Games

Games have several options available for purchasing games for game consoles. They can (1) purchase or rent discs or other media that contain games; (2) download games, or transfer them from online stores, to a game console; or (3) sign up for cloud gaming services that stream games, or transfer games on demand.

For tablets and smartphones, you can download games from an app store to your mobile computer or device. Games are the most popular downloaded app category. Two of the major factors for this attractiveness are price, for many of the games can be downloaded at no or little cost, and impressive, fast graphics that draw users into the action.

The wide variety of categories offers a gaming experience for practically everyone. **Numerous games are available in each genre** (some of these games are shown on the next page).

- **Action and adventure:** Characters move through their world by running, jumping, and climbing in an attempt to reach the next level of play and eventually defeat a villain or rescue a prisoner.
- **Education:** Engaging and entertaining puzzles and problems present practical instruction and possible assessment to teach skills and concepts that are applicable in real-world circumstances.
- **Music and fitness:** Individuals and groups improve their physical and mental fitness while engaging in athletic competitions, aerobics, dance, and yoga.
- **Puzzle and strategy:** Players use their skills and intelligence to solve problems, generally with the goal of moving objects to create a pattern.
- **Racing and sports:** Athletes and drivers strive to complete a course or to cross a finish line in record time.
- **Role-playing:** Games assume the role of a character and experience adventures while on a major quest.
- **Simulation:** Players control an activity in a simulated situation, such as piloting an airplane or playing an instrument in a rock band. The Entertainment Software Rating Board (ESRB) assigns ratings to provide guidance of a game's age-appropriateness and content.



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Mini Feature throughout the text explore various real world topics to deepen concept understanding.

Secure IT features allow students to broaden their knowledge with details regarding security issues they will face.

SECURE IT 1-1

Backing Up Computers and Mobile Devices

Many factors, including power outages and hardware failure, can cause loss of data, instructions, or information on a computer or mobile device. To protect against loss, you should back up the contents of storage media regularly. Backing up can provide peace of mind and save hours of work attempting to recover important material in the event of loss. A backup plan for computers could include the following:

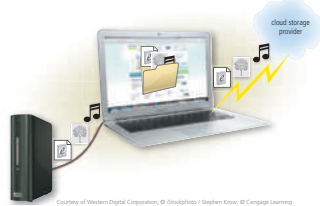
- Use a backup program, either included with your computer's operating system or one that you purchased separately, to copy the contents of your entire hard disk to a separate device.
- Regularly copy music, photos, videos, documents, and other important items to a USB flash drive, external hard disk, or DVD.
- Subscribe to a cloud storage provider.
- Schedule your files to be backed up regularly.

Backup plans for mobile devices are less specific. Apps for backing up your smartphone or tablet's content are available. You also can

back up a mobile device to your computer's hard disk using synchronization software that runs on your computer (synchronization software is discussed later in this chapter). Some mobile device manufacturers, such as Apple, provide **cloud storage solutions** to owners of their devices. Other services allow subscribers to use a friend's computer as a backup storage location.

Overall, the best advice is to back up often using a variety of methods.

Do you back up files regularly? If not, why not? What would you do if you had no backup and then discovered that your computer or mobile device had failed?



Courtesy of Western Digital Corporation; © Shutterstock / Stephen Koss; © Cengage Learning

NOW YOU KNOW

Be sure you understand the material presented in the sections titled Computers, Mobile and Game Devices, and Data and Information, as it relates to the chapter objectives. You *now should know*...

- Which type of computer might be suited to your needs (Objective 1)
- Why you would use a smartphone, digital camera, portable media player, and an e-book reader, and which game software/apps you find interesting (Objective 2)
- How to recognize the difference between data and information (Objective 3)
- When you might use the various methods of input, output, and storage (Objective 4)

Quiz Yourself Online: Check your knowledge of related content by navigating to this book's Quiz Yourself resource on Computer Concepts CourseMate and then tapping or clicking Objectives 1–4.

The Internet

The **Internet** is a worldwide collection of computer networks that connects millions of businesses, government agencies, educational institutions, and individuals (Figure 1-25). The Internet provides society with access to global information and instant communications. Businesses, called **Internet service providers (ISPs)**, offer users and organizations access to the Internet free or for a fee. By subscribing to an ISP, you can connect to the Internet through your computers and mobile devices.

Today, more than two billion home and business users around the world access a variety of services on the Internet. The World Wide Web is one of the more widely used Internet services. Other popular services include email, instant messaging, VoIP, and FTP (all discussed later in this chapter).

BITW

Web vs. Internet
 The terms, web and Internet, should not be used interchangeably. The web is a service of the Internet.

CONSIDER THIS

How do you know if a program will run on your computer?

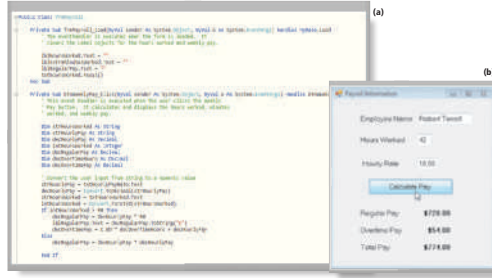
When you buy a computer, the box, the manufacturer's website, or the order summary will list the computer's specifications. Similarly, when you buy software, the software box or the product's website will list specifications and minimum requirements for memory, speed, and more. Your computer's specifications should be the same as or greater than the software specifications. Ensure the software will run on your computer before making a purchase, because many retailers will not allow you to return software.

Developing Programs and Apps

A software developer, sometimes called an application developer or computer programmer, is someone who develops programs and apps or writes the instructions that direct the computer or mobile device to process data into information. When writing instructions, a developer must be sure the program or app works properly so that the computer or mobile device generates the desired results. Complex programs can require thousands to millions of instructions.

Software developers use a programming language or program development tool to create computer programs and apps. Popular programming languages include C++, Java, JavaScript, Visual C#, and Visual Basic. Figure 1-29 shows some of the Visual Basic instructions a programmer may write to create a simple payroll program.

Figure 1-29 A developer writes instructions using Visual Basic (a) to create the Payroll Information window shown here (b).



NOW YOU KNOW

Be sure you understand the material presented in the sections titled The Internet, Digital Security and Safety, and Programs and Apps, as it relates to the chapter objectives. You now should know . . .

- Why webpages use links (Objective 5)
- How you could use a browser to display a webpage and how to perform a basic web search (Objective 6)
- What risks you are exposed to as a result of your technology use and how you can minimize those risks (Objective 7)
- How to recognize an operating system and which programs and apps you might find useful (Objective 8)

Quiz Yourself Online: Check your knowledge of related content by navigating to this book's Quiz Yourself resource on Computer Concepts CourseMate and then tapping or clicking Objectives 5-8.

Now You Know feature provides assessment opportunity and integrates directly to chapter learning objectives to assess learning outcomes.

By The Way (BTW) marginal elements assist readers in broadening their knowledge.

Input

Users have a variety of input options for entering data into a computer, many of which involve using an input device. An input device is any hardware component that allows you to enter data and instructions into a computer or mobile device. The following sections discuss common input methods.



desktop keyboard



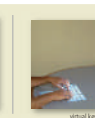
laptop keyboard



on-screen keyboard

Keyboards A keyboard contains keys you press to enter data and instructions into a computer or mobile device (Figure 1-12). All desktop keyboards have a typing area that includes letters of the alphabet, numbers, punctuation marks, and other basic keys. Some users prefer a wireless keyboard because it eliminates the clutter of a cord.

Keyboards for desktops contain more keys than keyboards for mobile computers and devices. To provide the same functionality as a desktop keyboard, many of the keys on mobile computers and devices serve two or three purposes. On a laptop, for example, you often use the same keys to type numbers and to show various areas on a screen, switching a key's purpose by pressing a separate key first.



mini keyboard

virtual keyboard

BTW Mobile Computer Input If you prefer a desktop keyboard to a laptop's keyboard or a tablet's on-screen keyboard, you can use a desktop keyboard with your mobile computer. Likewise, if you prefer using a mouse instead of a touchpad, you can use a mouse with your mobile computer.

Figure 1-12 Users have a variety of keyboard options.



mouse



touchpad

Instead of a physical keyboard, users also can enter data via an on-screen keyboard or a virtual keyboard, which is a keyboard that projects from a device to a flat surface.

Pointing Devices A pointing device is an input device that allows a user to control a small symbol on a screen, called the pointer. Desktops typically use a mouse as their pointing device, and laptops use a touchpad (Figure 1-13).

A mouse is a pointing device that fits under the palm of your hand comfortably. With the mouse, you control movement of the pointer and send instructions to the computer or mobile device. Table 1-1 identifies some of the common mouse operations. Like keyboards, some users prefer working with a wireless mouse.

A touchpad is a small, flat, rectangular pointing device that is sensitive to pressure and motion. To control the pointer with a touchpad, slide your fingertip across the surface of the pad. On most touchpads, you also can tap the pad's surface to imitate mouse operations such as clicking.

Figure 1-13 A mouse and a touchpad.

Ethics and Issues boxes raise controversial, computer-related topics, challenging readers to carefully consider general concerns of computers in society.

8 Chapter 1 Digital Literacy

ETHICS & ISSUES 1-1

Do Text Messages Affect Writing Skills?
When you send text messages, the goal is to communicate the most amount of information using the fewest words and characters. This type of rapid-fire communications places a higher priority on brevity and speed than spelling, capitalization, and punctuation. Educators wonder about the effect that text messages might have on the writing habits and grammar skills of today's students. Their use of text acronyms such as LOL (laugh out loud) and text abbreviations that include numbers, such as gr8 (for great) or 2 (for to, too, or two), is working its way into their formal writing. While adults also use text acronyms and abbreviations, the concern is that teens and young adults use them so often before developing formal writing skills. The result could be students who are less able to use formal language when needed. Research indicates that the more text messages students send, the more likely it is that they may have difficulty with formal writing. On the positive side, by reducing a message to as few words as possible, students learn to present the most important content first, without rambling or exaggeration. The downside is this can lead to short, choppy sentences that do not connect with each other and a lack of supporting details, which are essential in formal writing. Other positives are that students are writing more than ever, and that this type of writing can be considered a form of journaling, or recording of thoughts, activities, and opinions. Some educators argue that rather than worrying about the writing style that students use in their text messages, they should focus on helping students distinguish between formal and informal communications, and what is appropriate in each.

Does the use of text messages make students less likely to perform well in formal writing assignments? Why or why not? Should teachers allow students to use text acronyms and abbreviations in formal writing? Why or why not? Do text messages have any positive impact on communication skills? Why or why not?

Digital Cameras
A digital camera is a device that allows you to take photos and store the photographed images digitally (Figure 1-7). While many digital cameras look like a traditional camera, some are built into smartphones and other mobile devices.

Digital cameras typically allow you to review, and sometimes modify, images while they are in the camera. You also can transfer images from a digital camera to a computer, so that you can review, modify, share, organize, or print the images. Digital cameras often can connect to or communicate wirelessly with a computer, a printer, or the Internet, enabling you to access the photos on the camera without using a cable. Some also can record videos. Many digital devices, such as smartphones and tablets, include an integrated digital camera.

Internet Research
What is a digital SLR camera?
Search for: digital slr camera introduction

Internet Research
What are popular portable media players?
Search for: portable media players

Portable Media Players
A portable media player, sometimes called a *personal media player*, is a mobile device on which you can store, organize, and play or view digital media (Figure 1-8). Digital media includes music, photos, and videos. Portable media players enable you to listen to music, view photos, and watch videos, movies, and television shows. With most, you transfer the digital media from a computer (or the Internet, if the device is Internet capable) to the portable media player.

Figure 1-7 With a digital camera, you can view photographed images immediately through a small screen on the camera to see if the photo is worth keeping.

Figure 1-8 Portable media players, such as the iPod shown here, typically include a set of earbuds.



Chapter Summary allows another review of materials presented in the chapter to reinforce learning and provide additional self assessment opportunities.

Technology @ Work features put chapter information to practical use and provide context within students' lives

Introducing a World of Technology Chapter 1 41

NOW YOU KNOW
Be sure you understand the material presented in the sections titled Communications and Networks, Uses of Technology in Society, and Technology Users, as it relates to the chapter objectives.
You now should know...

- When you might use wired and wireless communications, and why you would use a network (Objective 9)
- How you would use technology in education, government, finance, retail, entertainment, health care, travel, science, publishing, and manufacturing (Objective 10)
- What types of hardware, software, and communications you could use at home, school, and work (Objective 11)

Quiz Yourself Online: Check your knowledge of related content by navigating to this book's Quiz Yourself resource on Computer Concepts CourseMate and then tapping or clicking Objectives 9-11.

Chapter Summary
Chapter 1 introduced you to basic computer concepts. You learned about laptops, tablets, desktops, servers, smartphones, digital cameras, portable media players, e-book readers, and game devices. The chapter introduced various methods for input, output, memory, and storage. It discussed the Internet, browsing and searching the web, and online social networks. Next, the chapter introduced digital security and safety risks and precautions, along with various types of programs, applications, communications, and networks. The many different uses of technology applications in society also were presented, along with types of users.
This chapter is an overview. Many of the terms and concepts introduced will be discussed further in later chapters.

Test your knowledge of chapter material by accessing the Study Guide, Flash Cards, and Practice Test apps that run on your smartphone, tablet, laptop, or desktop.

TECHNOLOGY @ WORK

Health Care
During an intramural volleyball game, you suffer an injury that requires a trip to an emergency room, which is extremely crowded. Upon check-in, the employee at the front desk uses a computer to record your personal data and symptoms. She also uses the computer to verify that your insurance coverage is current and informs you of your co-payment amount. After waiting several minutes, a triage nurse takes your temperature and blood pressure and then asks a series of questions about your symptoms. The nurse also records this data in a tablet and asks you to remain in the waiting room until someone from the radiology department is available to perform a CT scan. The radiology department is located in a different area of the hospital, so the technicians watch a computer screen that displays a list of patients who currently are waiting for their services.
About 30 minutes later, a technician calls your name and escorts you to the radiology department for your CT scan. As she is performing the scan, a computer records the images that later will be reviewed by a physician. When the CT scan is complete, you return to the waiting room until a physician reviews the results. Once he receives the results and reviews them, a hospital employee takes you to a consultation room.
The physician informs you that other than a few bumps and bruises, he believes that you have sustained no permanent damage and prescribes medication to help ease the pain. He then returns to a computer at the nurse's station and adds his diagnosis to the database that stores your medical records. He also sends your prescription electronically to the hospital's pharmacy. Once discharged, you visit the cashier to pay the bill. You then use a tablet to sign an electronic version of your discharge paperwork so that the hospital can store it electronically. The hospital bills your insurance company electronically. If you owe a balance after the insurance company pays its portion, a computer at the hospital will generate a bill that will be mailed to you. After purchasing your medication and leaving the hospital, you realize that despite the hospital being busy, computers decreased the time of your visit by automating processes that otherwise would have been performed manually and reduced possible errors by storing all of your personal information centrally.

How else might computers and technology be used in the health care industry?



End-of-Chapter Student Assignments

42 Chapter 1 Digital Literacy

Study Guide The Study Guide exercise reinforces material you should know for the chapter exam. You will find answers to items with the e-book icon only in the e-book appearing as blue text.

Access the Study Guide app that runs on your smartphone, tablet, laptop, or desktop by navigating to this book's Apps resource on Computer Concepts CourseMate.

Instructions: Answer the questions below using the format that helps you remember best or that is required by your instructor. Possible formats may include one or more of these options: write the answers, create a document that contains the answers, record answers at audio or video using a webcam, smartphone, or portable media player; post answers on a blog, wiki, or website; or highlight answers in the book/e-book.

- Define the term, digital literacy.
- Define the terms, computer and user.
- Differentiate between a desktop and a laptop. A laptop also is known as a(n) _____ computer.
- Describe a tablet.
- Describe how you interact with a touch screen.
- Define the term, server. What services does a server provide?
- Explain whether or not a mobile device is a computer.
- List characteristics of a smartphone.
- Differentiate among text, picture, and video messages.
- Describe the purpose of these mobile devices: digital camera, portable media player, e-book reader, and game console.
- Describe the trend of convergence and how it applies to mobile devices.
- The ESRB provides guidelines for the _____ industry. Describe the rating system.
- Differentiate between data and information. Give an example of each.
- Define the terms, input and output. List several types of input devices and output device.
- Describe the purpose of a pointing device. Give an example.
- List the hardware you can use to enter voice and video.
- Differentiate between memory and storage.
- A computer keeps data, instructions, and information on _____ media. Give some examples.
- Define the term, cloud storage. Describe the types of services offered by cloud storage providers.
- Describe components of a backup plan.
- Describe the Internet. Identify reasons people use the Internet.
- The _____ consists of a worldwide collection of electronic documents. What is each electronic document called?
- Differentiate between the web and the Internet.
- Describe the purpose of a search engine. List two search engines.
- Explain the purpose of an online social network. What is a "tweet"?
- Name the products and/or services of Facebook and Twitter, with respect to technology.
- Explain why a company might be interested in an employee's social networking profile.
- Define the term, malware. List ways you can protect yourself from malware.
- List guidelines for creating a strong password. Describe how online tools can determine a password's strength.
- Explain physical and behavioral health risks associated with using computers.
- Define the term, green computing. Describe strategies that support green computing.
- Define the term, software. Software also is called a(n) _____.
- Define the terms, system software and operating system. List popular operating systems for computers and mobile devices.
- Name the contributions of Steve Jobs and Bill Gates, with respect to technology.
- List the steps involved in installing applications.
- Explain how you can determine whether a program will run on your computer.
- Define the term, communications device. List examples of wireless communications technologies.
- Define the term, hot spot. Give two examples and describe how each is used.
- Give examples of precautions you should take when using a public Wi-Fi hot spot.
- Describe how homes and businesses use networks.
- Explain what occurs when you synchronize computers and mobile devices.
- Define the term, digital divide, and describe how it pertains to education.
- Describe how you might use blogs, wikis, and podcasts to publish content.
- Differentiate among the following technology user types: home user, small/home office user, mobile user, power user, and enterprise user.
- Describe how technology is used in the health care industry.

43 Chapter 1 Introducing a World of Technology

Key Terms

You should be able to define the **Primary Terms** and be familiar with the **Secondary Terms** listed below.

Access the Flash Cards app that runs on your smartphone, tablet, laptop, or desktop by navigating to this book's Apps resource on Computer Concepts CourseMate. **View definitions** for each term by navigating to this book's Key Terms resource on Computer Concepts CourseMate. **Listen to definitions** for each term on your portable media player by navigating to this book's Audio Study Tools resource on Computer Concepts CourseMate.

Primary Terms (shown in bold-black characters in the chapter)

- app (26)
- application (26)
- browser (20)
- communications device (29)
- computer (4)
- desktop (6)
- digital camera (8)
- digital literacy (2)
- e-book reader (9)
- game console (9)
- green computing (25)
- input device (12)
- Internet (18)
- laptop (4)
- mobile device (7)
- network (30)
- online social network (21)
- output device (14)
- personal computer (4)
- portable media player (8)
- printer (14)
- program (25)
- search engine (21)
- server (6)
- smartphone (7)
- social networking site (21)
- software (25)
- storage device (15)
- storage media (15)
- sync (23)
- synchronize (32)
- tablet (4)
- user (4)
- web (19)
- web server (20)
- website (19)
- website (20)

Secondary Terms (shown in italic characters in the chapter)

- blog (17)
- Bluetooth (10)
- camera phone (7)
- cloud (13)
- cloud storage (17)
- computer-aided manufacturing (18)
- convergence (10)
- data (11)
- desktop app (26)
- digital divide (14)
- digital-disk (15)
- double-tap (5)
- downloading (19)
- drag (1, 11)
- search (9)
- enterprise user (19)
- evreader (9)
- e-reader (24)
- game (17)
- gesture (1)
- hard copy (14)
- hard disk (13)
- hardware (4)
- heavier (13)
- home user (18)
- hot spot (10)
- hyperlink (20)
- information (11)
- input (4)
- keyboard (12)
- link (20)
- book (27)
- malware (23)
- memory (15)
- memory card (16)
- microphone (13)
- mobile app (26)
- mobile computer (4)
- file (17)
- gesture (1)
- hard copy (14)
- hard disk (13)
- hardware (4)
- heavier (13)
- home user (18)
- hot spot (10)
- hyperlink (20)
- information (11)
- input (4)
- keyboard (12)
- link (20)
- book (27)
- malware (23)
- memory (15)
- memory card (16)
- microphone (13)
- mobile app (26)
- mobile computer (4)
- mobile user (18)
- mouse (12)
- network (30)
- networked office user (18)
- network (30)
- network computer (4)
- online (12)
- on-screen keyboard (5)
- operating system (25)
- output (4)
- peripherals (24)
- personal media player (8)
- point (13)
- power user (19)
- publish (17)
- push (5)
- point (13)
- power user (19)
- press and hold (5)
- printer (14)
- resumes (16)
- right-click (13)
- scanner (13)
- slide (5)
- small/home office user (18)
- software developer (25)
- solid-state drive (16)
- status (12)
- streaming (15)
- stretch (5)
- surfing the web (20)
- stage (1)
- tap (5)
- target (52)
- text message (7)
- touchpad (12)
- USB flash drive (16)
- user interface (27)
- video message (7)
- web app (26)
- website (19)
- Wi-Fi (16)
- wiki (18)

Aug (17)

Study Guide

materials reinforce chapter content while **Study Guide mobile app** provides practice opportunities on the go.

Key Terms

Before taking a test, use the Key Terms page as a checklist of terms to know.

Checkpoint

Use these pages of multiple-choice, true/false, matching, and short answer exercises to reinforce understanding of the topics presented in the chapter.

44 Chapter 1 Digital Literacy

Checkpoint The Checkpoint exercises test your knowledge of the chapter concepts. The page number containing the answer appears in parentheses after each exercise. The Consider This exercises challenge your understanding of chapter concepts.

Complete the Checkpoint exercises interactively by navigating to this book's Checkpoint resource on Computer Concepts CourseMate. Access the Test Prep app that runs on your smartphone, tablet, laptop, or desktop by navigating to this book's Apps resource on Computer Concepts CourseMate. After successfully completing the self-assessment through the Test Prep app, take the Practice Test by navigating to this book's Practice Test resource on Computer Concepts CourseMate.

True/False Mark T for True and F for false.

- Electronic components in computers process data using instructions, which are the steps that tell the computer how to perform a particular task. (4)
- Screens for desktops cannot yet support touch. (6)
- Smaller applications, such as at home, typically use a powerful, expensive server to support their daily operations. (6)
- Smartphones typically communicate wirelessly with other devices or computers. (7)
- Data conveys meaning to users, and information is a collection of unprocessed items, which can include text, numbers, images, audio, and video. (11)
- As widespread as computers appear to be, most daily activities do not involve the use of or depend on information from them. (11)
- A scanner is a light-sensing output device. (13)
- Because it contains moving parts, flash memory is less durable and shock resistant than other types of media. (16)
- The terms, web and Internet, are interchangeable. (18)
- One way to protect your computer from malware is to scan any removable media before using it. (23)
- Operating systems are a widely recognized example of system software. (25)
- You usually do not need to install web apps before you can run them. (27)

Multiple Choice Select the best answer.

- A(n) _____ is any hardware component that allows you to enter data and instructions into a computer or mobile device. (12)
 - a. output device
 - b. communications device
 - c. input device
 - d. display
- Which of the following is not an example of an output device? (13)
 - a. scanner
 - b. printer
 - c. display
 - d. speaker
- _____ consists of electronic components that store instructions waiting to be executed and the data needed by those instructions. (15)
 - a. Storage
 - b. Cloud storage
 - c. Solid-state drives
 - d. Memory
- A(n) _____ is removable flash memory, usually no bigger than 1.5 inches in height or width, that you insert in and remove from a slot in a computer, mobile device, or card reader/writer. (16)
 - a. memory card
 - b. USB flash drive
 - c. solid-state drive (SSD)
 - d. optical disc
- A computer that delivers requested webpages to your computer or mobile device is a(n) _____. (20)
 - a. VoIP computer
 - b. web server
 - c. FTP device
 - d. hard disk
- _____ software consists of programs designed to make users more productive and/or assist them with personal tasks. (26)
 - a. System
 - b. Application
 - c. Operating system
 - d. Gaming
- _____ uses the cellular network to enable high-speed Internet connections to devices with built-in compatible technology, such as smart phones. (30)
 - a. Cellular radio
 - b. Bluetooth
 - c. Wi-Fi
 - d. Hot spot
- A(n) _____ is a collaborative website that allows users to create, add to, modify, or delete the content via their browser. (38)
 - a. podcast
 - b. blog
 - c. online social network
 - d. wiki

STUDENT ASSIGNMENTS

STUDENT ASSIGNMENTS

How To: Your Turn

The How To: Your Turn exercises present general guidelines for fundamental skills when using a computer or mobile device and then require that you determine how to apply these general guidelines to a specific program or situation.

Instructions: You often can complete tasks using technology in multiple ways. Figure out how to perform the tasks described in these exercises by using one or more resources available to you (such as a computer or mobile device, articles on the web or in print, online or program help, user guides, blogs, podcasts, videos, other individuals, trial and error, etc.) Summarize your "how to" steps, along with the resource(s) used, in the format requested by your instructor (brief report, presentation, discussion, blog post, video, or other means).

- Use Computer Concepts CourseMate**
Computer Concepts CourseMate provides access to multiple resources to supplement the concepts and skills you are learning in this text. The following steps guide you through the process of signing in to Computer Concepts CourseMate, navigating the website, and accessing various resources.
 - Run your browser and then navigate to www.cengagelearn.com.
 - Sign in with your CourseMate user name and password. If you do not have a user name, tap or click the link to sign up and then follow the instructions to obtain an account.
 - If necessary, add this textbook to your CourseMate account.
 - Tap or click the link to access Computer Concepts CourseMate.
 - Select the desired chapter.
 - Tap or click the resource you want to use.
 - When you are finished viewing the first resource, tap or click the next resource you want to use.
 - Sign out of your CourseMate account when you are finished viewing available resources.

Exercises

- Summarize the process you use to sign in to your Computer Concepts CourseMate account.
- Describe each Computer Concepts CourseMate resource available for this book and for each chapter.
- Which resources on Computer Concepts CourseMate do you feel will best help you reinforce the chapter content? Why?

- Create a Facebook Account, Find the Discovering Computers Facebook Page, and Like It**
The Discovering Computers Facebook page contains links to current events and other technology news, as well as relating the links to content in this book. The following steps guide you through the process of signing up for a Facebook account, navigating to the Discovering Computers Facebook page, and liking the page.
 - Run your browser and then navigate to www.facebook.com.
 - Follow the steps on the Facebook webpage to sign up for a new account. If you already have an account, enter your login information and log into your Facebook account.
 - Search for the Discovering Computers Facebook page using the search text, Discovering Computers.
 - Select the Discovering Computers Product/Service in the search results.
 - Click the Like button to like the page.
 - If your screen displays a Subscribe button, click it to see information from the Discovering Computers Facebook page in your news feed.
 - View the posts and click links on the page that are of interest to you.
 - When you are finished, sign out of Facebook.



- Exercises**
 - Summarize the process you use to sign up for or sign in to your Facebook account.
 - Which links on the Discovering Computers Facebook page are of interest to you? Why?
 - Browse Facebook and find at least three other Facebook pages that are of interest to you. Which pages have you found, and why do you like them?
- Create a Twitter Account, Find the Discovering Computers Twitter Account, and Follow It**
The Discovering Computers Twitter account contains links to current events and other technology news, as well as how it relates to the content in this textbook. The following steps guide you through the process of signing up for a Twitter account, navigating to the Discovering Computers Twitter account, and following it.
 - Run your browser and then navigate to www.twitter.com.
 - Follow the steps on the Twitter webpage to sign up for a new account. If you already have an account, enter your sign-in information and sign in to your Twitter account.
 - Search for the Discovering Computers Twitter account using the search text, DiscoveringComp.
 - Select the Shelly Cashman @DiscoveringComp in the search results.
 - Click the Follow button to follow the account.
 - View the posts and click links on the page that are of interest to you.
 - When you are finished, sign out of Twitter.

- Exercises**
 - Summarize the process you use to sign up for or sign in to your Twitter account.
 - How is the Discovering Computers Twitter account similar to the Discovering Computers Facebook page? How are they different?
 - Browse Twitter and find at least three other Twitter accounts to follow. Which ones have you found, and why do you like them?
- Sign Up for a Microsoft Account**
A Microsoft account provides access to resources on several Microsoft websites. These websites include access to resources such as a free email account, cloud storage, a location to store information about your contacts, and an online calendar. You will need a Microsoft account to complete some of the exercises in this book. The following steps guide you through the process of signing up for a Microsoft account.
 - Run a browser and navigate to www.outlook.com.
 - Click the link and follow the on-screen instructions to sign up for a free Microsoft account.
 - Browse the resources available to you in your Microsoft account.
 - If approved by your instructor, compose and send a new email message to your instructor stating that you have signed up for a Microsoft account successfully.
 - Add your instructor's contact information.
 - Next, add contact information for at least three additional people.
 - Add your birthday to the calendar.
 - Edit your Microsoft account profile to add additional contact and work information.

How To: Your Turn

The How To: Your Turn exercises present general guidelines for fundamental skills when using a computer or mobile device and then require that you determine how to apply these general guidelines to a specific program or situation.

Instructions: You often can complete tasks using technology in multiple ways. Figure out how to perform the tasks described in these exercises by using one or more resources available to you (such as a computer or mobile device, articles on the web or in print, online or program help, user guides, blogs, podcasts, videos, other individuals, trial and error, etc.) Summarize your "how to" steps, along with the resource(s) used, in the format requested by your instructor (brief report, presentation, discussion, blog post, video, or other means).

- Connect to a Wireless Network**
Wireless networks are available in many homes and businesses. Connecting to a wireless network can provide you with high-speed access to the Internet and other network resources. The following steps guide you through the process of connecting to a wireless network from a computer or mobile device.
 - If necessary, turn on your computer or mobile device and make sure wireless functionality is enabled.
 - Obtain the name of the wireless network to which you want to connect. *Note: You should connect only to wireless networks for which you have permission.*
 - On your computer or mobile device, view the list of available wireless networks.
 - Select the wireless network to which you want to connect.
 - If necessary, enter the requested security information, such as an encryption key or a password.
 - Run your browser to test your connection to the wireless network.

Exercises

- Why should you not connect to a wireless network unless you have permission?
- What is the name of the wireless network to which you connected?
- Why might you connect to a wireless network on your smartphone instead of using your mobile data plan?



How To: Your Turn
activities enable readers to learn and to reinforce new practical skills with personally meaningful and applicable exercises.

Problem Solving

Personal activities call on students to relate concepts to their own lives.

50 Chapter 1 Digital Literacy

Problem Solving

The Problem Solving exercises extend your knowledge of chapter concepts by seeking solutions to practical problems with technology that you may encounter at home, school, or work. The Collaboration exercise should be completed with a team.

Challenge yourself with additional Problem Solving exercises by navigating to this book's Problem Solving resource on Computer Concepts CourseMate.

Instructions: You often can solve problems with technology in multiple ways. Determine a solution to the problems in these exercises by using one or more resources available to you (such as a computer or mobile device, articles on the web or in print, blogs, podcasts, videos, television, user guides, other individuals, electronics or computer stores, etc.). Describe your solution, along with the resource(s) used, in the format requested by your instructor (brief report, presentation, discussion, blog post, video, or other means).

Personal

- 1. Shopping for Software** You are shopping for software that will assist you with your home's interior design. The package for the program you would like to purchase states that it was designed for the most recent version of Windows, but an older version is installed on your computer. How can you determine whether the program will run on your computer?
- 2. Bad Directions** You are driving to your friend's house and are using your smartphone for directions. While approaching your destination, you realize that your smartphone app instructed you to turn the wrong way on your friend's street. How could this have happened?
- 3. Bank Account Postings** While reviewing your checking account balance online, you notice that debit card purchases have not posted to your account for the past several days. Because you use online banking to balance your account, you become concerned about your unknown account balance. What steps will you take to correct this situation?
- 4. Inaccessible Media** You insert a memory card with digital photos from your most recent family vacation and discover that your computer will not read the memory card. What might be wrong?
- 5. Problematic Camera** After charging your digital camera battery overnight, you insert the battery and turn on the camera only to find that it is reporting a low battery. Seconds later, the camera shuts off automatically. What might be wrong?

Collaboration

- 11. Technology in Health Care** Your dentist is moving from a shared office so that he can open his own practice. He mentioned that he would like to use technology in his office that not will only improve the patient experience, but also make his job easier. Form a team of three people to determine the types of technology your dentist can use in his new office. One team member should research ways that technology can help improve patient check-in and billing. Another team member should research the types of technology your dentist can use while he is working with patients, and the third team member should research any additional technology that can be used in the office to improve the patient experience. Compile your findings in a report and submit it to your instructor.



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Internet Research

Internet Research exercises require follow-up research on the Web and suggest writing a short article or presenting the findings of the research to the class.

48 Chapter 1 Digital Literacy

Internet Research

The Internet Research exercises broaden your understanding of chapter concepts by requiring that you search for information on the web.

Instructions: Use a search engine or another search tool to locate the information requested or answers to questions presented in the exercises. Describe your findings, along with the search term(s) you used and your web source(s), in the format requested by your instructor (brief report, presentation, discussion, blog post, video, or other means).

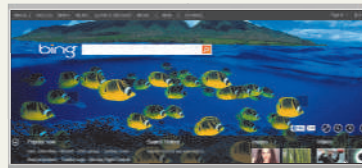
1 Making Use of the Web

Search Engines and Research

Sixty percent of all American adults use a search engine every day, according to Pew Internet, and they generally are pleased with the outcome of their research experience. In How To 1-2 and 1-3 on pages 20 and 21 in this chapter, you learned to use a browser to display a webpage and to perform a basic web search.

Using these skills, find the answers to the following questions: (1) Visit the Pew Internet website and locate the latest Search Engine Use report. What are three of the users' positive search experiences? Which search engine is the most popular among the people surveyed? When was the survey conducted, and how many adults were surveyed? (2) Visit the CNET website and read at least three reviews of products.

Create a table listing the product name, price, editors' and users' ratings, and "bottom line" summary: (3) Use a search engine or research website to locate articles about banning mobile devices in schools. What policies have schools created in lieu of a total ban on this technology? How have schools integrated mobile devices in the classroom as a vehicle to enhance learning?



Source: Microsoft

2 Social Media

Historians place the birth of online social networking with the BBS (Bulletin Board System), where users communicated with a central computer and sent messages to other BBS members and also downloaded files and games. The next phase of social networking evolved when CompuServe, AOL (America Online), and Prodigy were among the services linking people with similar interests. Today's social networks share

many of the same basic principles by allowing members to communicate common interests, play games, and share photos, videos, and music. Some of these social networking sites are for personal use, while others are for entrepreneurs, business owners, and professionals to share job-related topics.

Compare the features of the top personal social networks, and create a table listing the number of active members in the United States and worldwide, the number of years the sites have existed, the more popular features, and the amount of content, such as photos, news stories, and links, that is shared each month. What types of advertisements are featured in each of these sites? Which sites are marketed toward younger and older users? Then, research the social networks used for business. How does their content differ from that found on the personal social networks? How many companies use these sites as a recruiting tool? How many native languages are supported? How are professionals using these websites to find potential clients and business partners?

3 Search Sleuth

(1) Which magazine introduced the first microcomputer kit for the MIT's Altair in its January 1975 issue? (2) Which company sold the TRS-80, one of the more popular personal computers introduced in 1977? (3) What material did Douglas Engelbart use to create the first mouse? (4) What is the code name for the 12 engineers who developed the IBM PC? (5) Who received the first text message in 1992? What was the content of this message? (6) Which company developed the first digital camera? How many pounds did this camera weigh? (7) What is the title of Stephen King's e-book that was released in 2000? (8) In which year did Amazon.com report that for the first time sales of e-books exceeded the sales of hardcover books? (9) What is the name of the keyboard developed in the 1930s with a layout designed to maximize efficiency and reduce hand stress? (10) When did the first USB flash drive appear on the retail market? Which company developed this storage medium?

Chapter 1 51

Introducing a World of Technology

Critical Thinking

The Critical Thinking exercises challenge your assessment and decision-making skills by presenting real-world situations associated with chapter concepts. The Collaboration exercise should be completed with a team.

Challenge yourself additional Critical Thinking exercises by navigating to this book's Critical Thinking resource on Computer Concepts CourseMate.

Instructions: Evaluate the situations below, using personal experiences and one or more resources available to you (such as articles on the web or in print, blogs, podcasts, videos, television, user guides, other individuals, electronics or computer stores, etc.). Perform the tasks requested in each exercise and share your deliverables in the format requested by your instructor (brief report, presentation, discussion, blog post, video, or other means).

1. Class Discussion

Reactions to Software Problems Everyone who uses computers and mobile devices has experienced problems with software, including operating systems, desktop apps, web apps, and mobile apps. Problems range from not being able to install or download the program or app to a computer or mobile device, to a program or an app producing unanticipated results. Depending on the situation, these problems can result in user stress. Many people believe reactions to software problems tend to be more extreme than reactions to problems with other tools. Evaluate situations in which you have seen people react to program and app problems on their computers and mobile devices. Discuss how these users can reduce their frustration when dealing with such problems. Have you ever been frustrated by problems with a program or an app? How did you react? What did you do to solve the problem?


2. Research and Share

Energy Efficiency Increases in energy prices lead many individuals to look at purchasing energy-efficient computers. Energy-efficient computers often look and perform similarly to equivalent computers that use more energy. Find two computers of identical configuration, where the only difference is energy consumption. How much energy does the energy-efficient computer save? Are energy-efficient computers more or less expensive? Will the difference in cost (if any) affect your purchasing decision? How else might you be able to

change your computer to save energy? Use the web to locate articles that recommend energy efficient products and that provide tips about additional ways to save energy. Compile your findings and then share them with the class.

3. Case Study

Farmers' Market You are the new manager for a group of organic farmers who have a weekly market in season. The previous manager tracked all of the data on paper. You realize that using technology will increase your efficiency and enable you to communicate better with the board of directors, vendors, and customers. At the board's next meeting, you will share ideas of how you will use technology. Before the meeting, you compile the following: differences between input and output, a list of the types of data you can use as input, and a list of the types of information you can produce as output. You include the types of computers, mobile devices, and other technologies you will use to enter data and produce the information. Incorporate your own experiences and user reviews of the devices. Compile your findings.



4. Collaboration

4. Recommending Technology Solutions People use computers and mobile devices in a variety of fields, including travel, manufacturing, and more. Although the way people use computers and mobile devices varies, each use involves hardware, programs and apps, and some type of communications method, such as the Internet or cellular network. Form a three-member team and choose a field in which you all are interested. Assign one member to investigate hardware, another to investigate programs and apps, and the third member to investigate communications methods used in the field. Locate user reviews and articles by industry experts. Each team member should develop a list of related items that may be used. After the investigation, create a hypothetical business or organization in the field. Recommend specific hardware, programs or apps, and communications capabilities that would be best for the network or organization. Include comparisons of specific items, as well as costs. Be sure to summarize your investigations, describe the hypothetical business or organization, and outline and support your recommendations.

Critical Thinking

activities provide opportunities for creative solutions to these thought-provoking activities presented in each chapter. The Critical Thinking exercises are constructed for class discussion, presentation, and independent research. The Collaboration exercise is designed for a team environment.

Beyond the Book exercises expand student understanding by allowing research and supported learning opportunities.

Chapter 1 52

Digital Literacy

Beyond the Book

The Beyond the Book exercises expand your understanding of chapter concepts by requiring research.

Access premium content by visiting Computer Concepts CourseMate. If you have a Computer Concepts CourseMate access code, you can reinforce and extend your learning with MindTap Reader, practice tests, video, and other premium content for Discovering Computers. To sign in to Computer Concepts CourseMate at www.cengagebrain.com, you first must create a student account and then register this book, as described at www.cengage.com/c/studentdownload.

Part 1 Instructions: Use the web or e-book to perform the task identified for each book element below. Describe your findings, along with the search term(s) you used and your web source(s), if appropriate, in the format requested by your instructor (brief report, presentation, discussion, blog post, video, or other means).

- Animation** Review the animation associated with this chapter and then answer the question(s) it poses (11). What search term would you use to learn more about a specific segment of the animation?
- Consider This** Select a Consider This in this chapter (5, 6, 7, 10, 11, 15, 17, 22, 25, 28) and find a recent article that elaborates on the topic. What information did you find that was not presented in this book or e-book?
- Drag-and-Drop Figures** Complete the Drag-and-Drop Figure activities associated with this chapter (11, 13, 17, 26, 29, 39). What did you learn from each of these activities?
- Ethics & Issues** Select an Ethics & Issues in this chapter (8, 22, 34, 38) and find a recent article that supports one view presented. Does the article change your opinion about the topic? Why or why not?
- Facebook & Twitter** Review a recent Discovering Computers Facebook post or Twitter Tweet and read the referenced article(s). What did you learn from the article?
- High-Tech Talk** Locate an article that discusses topics related to *transplantation*. Would you recommend the article you found? Why or why not?
- How To** Select a How To in this chapter (5, 20, 21, 27) and find a recent article that elaborates on the topic. Who would benefit from the content of this article? Why?
- Innovative Computing** Locate two additional facts about *Diabetes Tracking* or *Mobile Payments*. Do your findings change your opinion about the future of this innovation? Why or why not?
- Internet Research** Use the search term in an Internet Research (8, 9, 15, 24, 33, 37) to answer the question posed in the element. What other search term could you use to answer the question?
- Mini Features** Locate an article that discusses topics related to one of the mini features in this chapter (10, 32, 40). Do you feel that the article is appropriate for this course? Why or why not?
- Secure IT** Select a Secure IT in this chapter (18, 23, 24, 30) and find a recent article about the topic that you find interesting. How can you relate the content of the article to your everyday life?
- Technology @ Work** Locate three additional, unique usages of technology in the health care industry (41). What makes the use of these technologies unique to the health care industry?
- Technology Innovators** Locate two additional facts about *Bill Gates*, *Steve Jobs*, *Facebook*, *Mark Zuckerberg*, and *Twitter*. Which Technology Innovator impresses you most? Why?
- Third-Party Links** Visit one of the third-party links identified in this chapter (8, 18, 21, 22, 23, 25, 30, 34, 38, 41) and read the article or watch the video associated with the link. Would you share this link on your online social network account? Why or why not?

Part 2 Instructions: Find specific instructions for the exercises below in the e-book or on Computer Concepts CourseMate. Beside each exercise is a brief description of its online content.

- You Review It** Search for and review a video or podcast about current technology news.
- Windows and Mac** Enhance your understanding and knowledge about using Windows and Mac computers by completing the *Running Applications*, *Improve Your Mouse Skills*, and *Understand Computer Information* activities.
- Android, iOS, and Windows** Enhance your understanding of Android, iOS, and Windows devices by completing the *Manage Your Calendar* and *Manage Your Contacts* activities.
- Exploring Computer Careers** Read about a career as an app developer, search for related employment ads, and then answer related questions.
- App Adventure** Track your own health and fitness by installing and running an app on your smartphone or tablet.

Visual Walkthrough of the Computer Concepts CourseMate for Discovering Computers

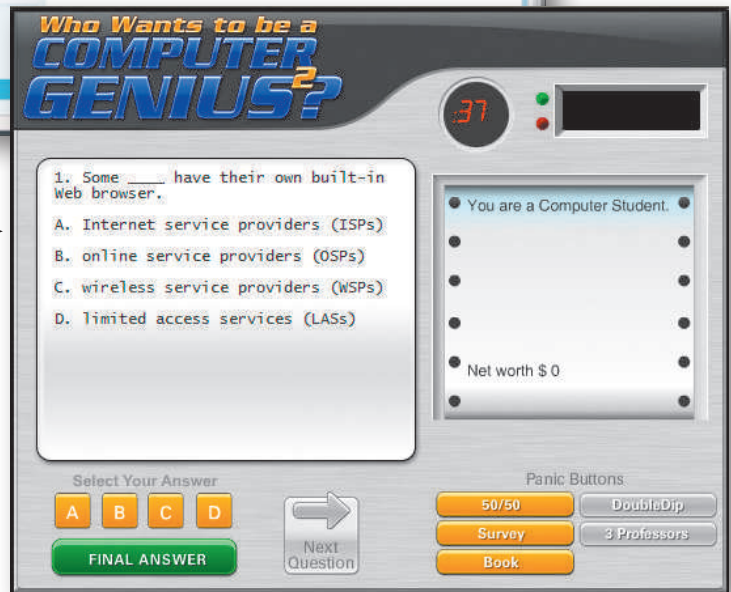
Interactive. Current. Engaging.
Your Interactive Guide to the Digital World!

Introduce the most current technology into the classroom with the Computer Concepts CourseMate for Discovering Computers. An integrated e-book and a wide range of online learning games, quizzes, practice tests, and Web links expand on the topics covered in the text with hands-on reinforcement.



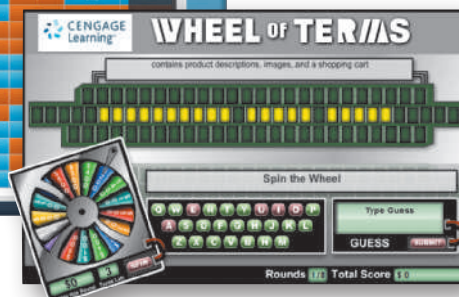
Who Wants to Be a Computer Genius?

The Who Wants to Be a Computer Genius? learning game allows students to quiz themselves on chapter content within a dynamic and entertaining game scenario. Question results are provided instantly so that students quickly see which concepts they understand and which concepts they need to study. Page remediation is included with question results so students know exactly where in the text to find the information they need.



EngagementTracker

EngagementTracker makes assessing students easy by tracking student progress on the interactive activities. Clear and visual reports illustrate the class progress as a whole.



Wheel of Terms

Wheel of Terms is an interactive study tool for learning the Key Terms in each chapter. This learning game presents students with a short definition of one of the chapter's Key Terms and prompts them to type the correct term as the answer.

Online Content



SAM: Skills Assessment Manager

Get your students workplace-ready with SAM, the market-leading proficiency-based assessment and training solution for Microsoft Office! SAM's active, hands-on environment helps students master Microsoft Office skills and computer concepts that are essential to academic and career success, delivering the most comprehensive online learning solution for your course!

Through skill-based assessments, interactive trainings, business-centric projects, and comprehensive remediation, SAM engages students in mastering the latest Microsoft Office programs on their own, giving instructors more time to focus on teaching. Computer concepts labs supplement instruction of important technology-related topics and issues through engaging simulations and interactive, auto-graded assessments. With enhancements including streamlined course setup, more robust grading and reporting features, and the integration of fully interactive MindTap Readers containing Cengage Learning's premier textbook content, SAM provides the best teaching and learning solution for your course.

Learn Online

CengageBrain.com is the premier destination for purchasing or renting Cengage Learning textbooks, eBooks, eChapters, and study tools at a significant discount (eBooks up to 50% off Print). In addition, CengageBrain.com provides direct access to all digital products including eBooks, eChapters and digital solutions (i.e., CourseMate and SAM) regardless of where purchased.

MindLinks

MindLinks is a new Cengage Learning Service designed to provide the best possible user experience and facilitate the highest levels of learning retention and outcomes, enabled through a deep integration of Cengage Learning's

digital suite into an instructor's Learning Management System (LMS). MindLinks works on any LMS that supports the IMS Basic LTI open standard. Advanced features, including gradebook exchange, are the result of active, enhanced LTI collaborations with industry-leading LMS partners to drive the evolving technology standards forward.

CourseCasts Learning on the Go

Always available. . . always relevant.



Our fast-paced world is driven by technology. You know because you are an active participant — always on the go, always keeping up with technological trends, and always learning new ways to embrace technology to power your life. Let CourseCasts, hosted by Ken Baldauf of Florida State University, be your guide to weekly updates in this ever-changing space. These timely, relevant podcasts are produced weekly and are available for download at <http://coursecasts.course.com> or directly from iTunes (search by CourseCasts). CourseCasts are a perfect solution to getting students (and even instructors) to learn on the go!

CourseNotes — Technology in a Flash!

Course Technology's CourseNotes are six-panel quick reference cards that reinforce the most important and widely used features of a software application in a visual and user-friendly format. CourseNotes serve as a great reference tool during and after the student completes the course. CourseNotes are available for software applications, such as Microsoft Office 2013, Word 2013, PowerPoint 2013, Excel 2013, Access 2013, and Windows 8. Topic-based CourseNotes are available for Best Practices in Social Networking, Hot Topics in Technology, and Web 2.0. Visit www.cengage.com to learn more!

About Our Covers

The Shelly Cashman Series is continually updating our approach and content to reflect the way today's students learn and experience new technology. This focus on student success is reflected on our covers, which feature real students from the University of Rhode Island using the Shelly Cashman Series in their courses, and reflect the varied ages and backgrounds of the students learning with our books. When you use the Shelly Cashman Series, you can be assured that you are learning computer skills using the most effective courseware available.

Digital Literacy

Introducing a World of Technology



Technology provides access to the digital world around you.


“I use computers, mobile devices, and the Internet to do homework, look up information, check email, play games, post updates, talk to friends, upload photos, sync music, and so much more! So, why am I in this class? What more could I possibly learn?”

True, you may be familiar with some of the material in this chapter, but do you know . . .

When to use a swipe and a pinch?


How to ease eyestrain while working on a computer or mobile device?

Why some educators shun some wikis as valid sources of research?

 Who helped build the first desktop and was on the cover of *Time* by age 26?

How to use a public Wi-Fi hot spot safely?

What steps occur after you place an online order?

 How a GPS knows where you are all the time?

When you would use a blog and a wiki?

Which features make your kitchen appliances smart?

How the health care industry relies on computers, mobile devices, and related technologies?

 Which health and fitness apps would fit your lifestyle best?

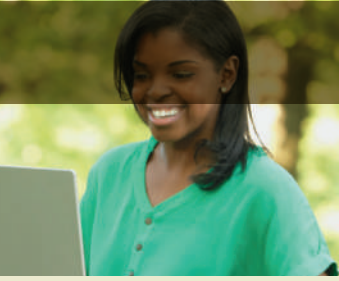
Why some of the text in this book is blue?

How to sign up for Computer Concepts CourseMate?

Why you should ‘like’ the Discovering Computers page on Facebook and ‘follow’ it on Twitter?

For these answers and to discover much more information essential to this course, read this chapter and visit the associated Computer Concepts CourseMate at www.cengagebrain.com.





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✓ Objectives

After completing this chapter, you will be able to:

- 1 Differentiate among laptops, tablets, desktops, and servers
- 2 Describe the purpose and uses of smartphones, digital cameras, portable media players, e-book readers, and game devices
- 3 Describe the relationship between data and information
- 4 Briefly explain various input options (keyboards, pointing devices, voice and video input, and scanners), output options (printers, displays, and speakers), and storage options (hard disks, solid-state drives, USB flash drives, memory cards, optical discs, and cloud storage)
- 5 Differentiate the Internet from the web, and describe the relationship among the web, webpages, websites, and web servers
- 6 Explain the purpose of a browser, a search engine, and an online social network
- 7 Briefly describe digital security risks associated with viruses and other malware, privacy, your health, and the environment
- 8 Differentiate between an operating system and applications
- 9 Differentiate between wired and wireless network technologies, and identify reasons individuals and businesses use networks
- 10 Discuss how society uses technology in education, retail, finance, entertainment, health care, travel, government, science, publishing, and manufacturing
- 11 Identify technology used by home users, small office/home office users, mobile users, power users, and enterprise users

A World of Technology

In the course of a day, you may . . . complete a homework assignment and watch a streaming video on your laptop, flip through news headlines and refill a prescription on your tablet, search for directions and the local weather forecast on your smartphone, book a flight and create a shipping label using your office computer, and listen to your favorite songs on a portable media player. These and many other technologies are an integral part of everyday life: at school, at home, and at work (Figure 1-1).

Technology can enable you to more efficiently and effectively access and search for information; share personal ideas, photos, and videos with friends, family, and others; communicate with and meet other people; manage finances; shop for goods and services; play games or access other sources of entertainment; keep your life and activities organized; and complete business activities.

Because technology changes, you must keep up with the changes to remain digitally literate. **Digital literacy** involves having a current knowledge and understanding of computers, mobile devices, the Internet, and related technologies. This book presents the knowledge you need to be digitally literate today.

As you read this first chapter, keep in mind it is an overview. Most of the terms and concepts introduced in this chapter will be discussed in more depth later in the book.



Figure 1-1 Technology is an integral part of life at school, home, and work.

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Computers

A **computer** is an electronic device, operating under the control of instructions stored in its own memory, that can accept data (*input*), process the data according to specified rules, produce information (*output*), and store the information for future use. Computers contain many electric, electronic, and mechanical components known as *hardware*.

Electronic components in computers process data using instructions, which are the steps that tell the computer how to perform a particular task. A collection of related instructions organized for a common purpose is referred to as software or a program. Using software, you can complete a variety of activities, such as search for information, type a paper, balance a budget, create a presentation, or play a game.

One popular category of computer is the personal computer. A **personal computer (PC)** is a computer that can perform all of its input, processing, output, and storage activities by itself and is intended to be used by one person at a time. Most personal computers today also can communicate with other computers and devices.

Types of personal computers include laptops, tablets, and desktops, with the first two sometimes called mobile computers. A *mobile computer* is a portable personal computer, designed so that a user can carry it from place to place. A **user** is anyone who interacts with a computer or mobile device, or utilizes the information it generates.

Laptops

A **laptop**, also called a *notebook computer*, is a thin, lightweight mobile computer with a screen in its lid and a keyboard in its base (Figure 1-2). Designed to fit on your lap and for easy transport, laptops weigh up to 10 pounds (varying by manufacturer and specifications). A laptop that is less than one inch thick and weighs about 3 pounds or less sometimes is referred to as an ultrathin laptop. Most laptops can operate on batteries or a power supply or both.

Tablets

Usually smaller than a laptop but larger than a phone, a **tablet** is a thin, lighter-weight mobile computer that has a touch screen (read How To 1-1 for ways to interact with a touch screen). A popular style of tablet is the slate, which does not contain a physical keyboard (Figure 1-3). Like laptops, tablets run on batteries or a power supply or both; however, batteries in a tablet typically last longer than those in laptops.

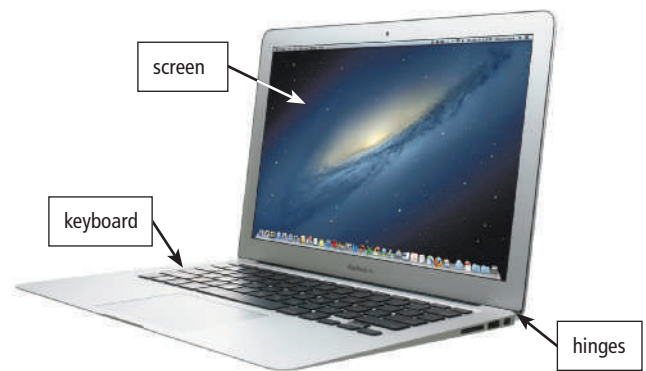


Figure 1-2 A typical laptop has a keyboard in the base and a screen in the lid, with the lid attaching to the base with hinges.

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Figure 1-3 A slate tablet.

© iStockphoto / franckreporter



Digital-Only Content

When you see **blue text** in this book, you can tap or click those words in the Discovering Computers e-book to display additional information intended to broaden your knowledge or share current news and information about that topic. Digital-only content also includes Technology Innovators, Innovative Computing, and High-Tech Talk articles.

CONSIDER THIS

If the slate tablet has no keyboard, how do you type on it?

You can use your fingers to press keys on a keyboard that appears on the screen, called an *on-screen keyboard*, or you can purchase a separate physical keyboard that attaches to or wirelessly communicates with the tablet.

HOW TO 1-1








Interact with a Touch Screen

You usually can interact with a touch screen using gestures. A *gesture* is a motion you make on a touch screen with the tip of one or more fingers or your hand. Touch screens are convenient because they do not require a separate device for input. Tablets and smartphones typically have touch screens.

The table below presents common ways to interact with a touch screen.



Touch Screen Gestures

Motion	Description	Common Uses
 <p>Tap</p>	Quickly touch and release one finger one time.	<ul style="list-style-type: none"> Activate a link (built-in connection) Press a button Run a program or app
 <p>Double-tap</p>	Quickly touch and release one finger two times.	<ul style="list-style-type: none"> Run a program or app Zoom in (show a smaller area on the screen, so that contents appear larger) at the location of the double-tap
 <p>Press and hold</p>	Press and hold one finger to cause an action to occur, or until an action occurs.	<ul style="list-style-type: none"> Display a shortcut menu (immediate access to allowable actions) Activate a mode enabling you to move an item with one finger to a new location
 <p>Drag, or slide</p>	Press and hold one finger on an object and then move the finger to the new location.	<ul style="list-style-type: none"> Move an item around the screen Scroll
 <p>Swipe</p>	Press and hold one finger and then move the finger horizontally or vertically on the screen.	<ul style="list-style-type: none"> Scroll Display a bar that contains commands on an edge of the screen
 <p>Stretch</p>	Move two fingers apart.	Zoom in (show a smaller area on the screen, so that contents appear larger)
 <p>Pinch</p>	Move two fingers together.	Zoom out (show a larger area on the screen, so that contents appear smaller)

In addition to the motions listed in the table, what other motions do you think a touch screen should support?

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Desktop

The term, desktop, also sometimes is used to refer to an on-screen work area on desktops, tablets, and laptops.

Desktops

A **desktop**, or desktop computer, is a personal computer designed to be in a stationary location, where all of its components fit on or under a desk or table. On many desktops, the screen is housed in a device that is separate from a tower, which is a case that contains the processing circuitry (Figure 1-4a). Other desktops, sometimes called all-in-one desktops, do not contain a tower and instead use the same case to house the screen and the processing circuitry (Figure 1-4b). Some screens for desktops support touch.

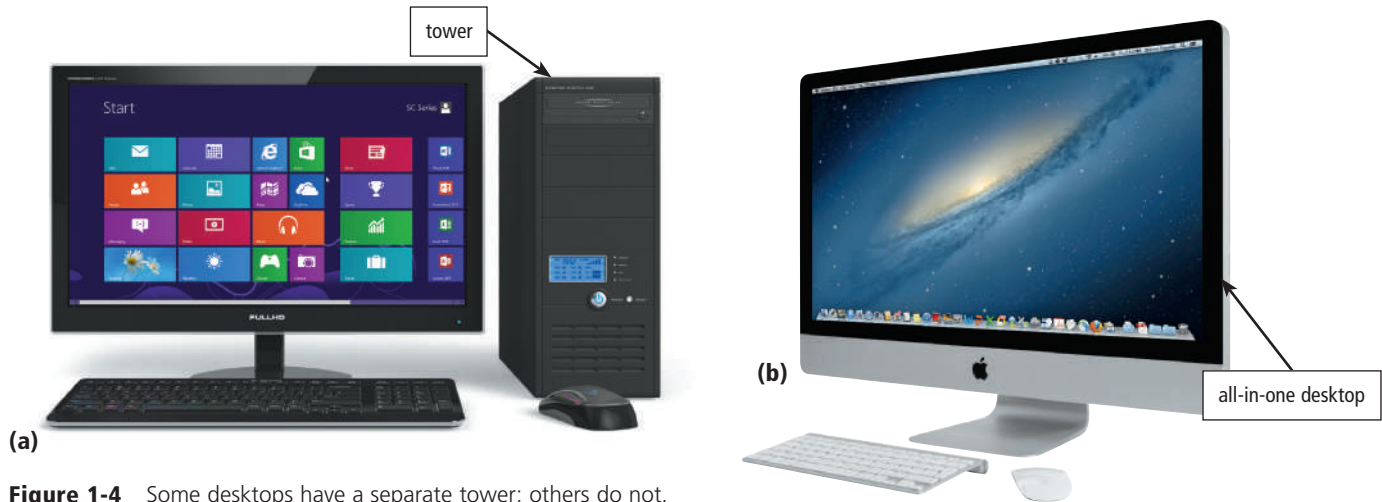


Figure 1-4 Some desktops have a separate tower; others do not.

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CONSIDER THIS

Which type of computer — laptop, tablet, or desktop — is best?

It depends on your needs. Because laptops can be as powerful as the average desktop, more people today choose laptops over desktops so that they have the added benefit of portability. Tablets are ideal for those not needing the power of a laptop or for searching for information, communicating with others, and taking notes in lectures, at meetings, conferences, and other forums where a laptop is not practical.



Online

When a computer or device connects to a network, it is *online*.



Figure 1-5 A server provides services to other computers or devices on a network.

© iStockphoto / alxpin

Servers

A **server** is a computer dedicated to providing one or more services to other computers or devices on a network. A network is a collection of computers and devices connected together, often wirelessly. Services provided by servers include storing content and controlling access to hardware, software, and other resources on a network.

A server can support from two to several thousand connected computers and devices at the same time. Servers are available in a variety of sizes and types for both small and large business applications (Figure 1-5). Smaller applications, such as at home, sometimes use a high-end desktop as a server. Larger corporate, government, and Internet applications use powerful, expensive servers to support their daily operations.

Mobile and Game Devices

A **mobile device** is a computing device small enough to hold in your hand. Because of their reduced size, the screens on mobile devices are small — often between 3 and 5 inches.

Some mobile devices are Internet capable, meaning that they can connect to the Internet wirelessly. You often can exchange information between the Internet and a mobile device or between a computer or network and a mobile device. Popular types of mobile devices are smartphones, digital cameras, portable media players, and e-book readers.

CONSIDER THIS

Are mobile devices computers?


The mobile devices discussed in this section can be categorized as computers because they operate under the control of instructions stored in their own memory, can accept data, process the data according to specified rules, produce or display information, and store the information for future use.

Smartphones

A **smartphone** is an Internet-capable phone that usually also includes a calendar, an appointment book, an address book, a calculator, a notepad, games, and several other apps (which are programs on a smartphone). Smartphones typically communicate wirelessly with other devices or computers. With several smartphone models, you also can listen to music and take photos.

Many smartphones have touch screens. Instead of or in addition to a touch screen, some smartphones have a built-in mini keyboard on the front of the phone or a keyboard that slides in and out from behind the phone (Figure 1-6). Others have keypads that contain both numbers and letters.



 **Figure 1-6** Smartphones may have a touch screen and/or a mini keyboard or slide out keyboard.

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Instead of calling someone's phone to talk, you can send messages to others by pressing images on an on-screen keyboard, keys on the mini keyboard, or buttons on the phone's keypad. Three popular types of messages that you can send with smartphones include text messages, picture messages, and video messages.

- A *text message* is a short note, typically fewer than 300 characters, sent to or from a smartphone or other mobile device.
- A *picture message* is a photo or other image, sometimes along with sound and text, sent to or from a smartphone or other mobile device. A phone that can send picture messages sometimes is called a *camera phone*.
- A *video message* is a short video clip, usually about 30 seconds, sent to or from a smartphone or other mobile device.

Read Ethics & Issues 1-1 on the next page to consider whether sending text messages affects writing skills.



Messaging Services

Providers of wireless communications services may charge additional fees for sending text, picture, or video messages, depending on the service plan.

ETHICS & ISSUES 1-1



Do Text Messages Affect Writing Skills?

When you send text messages, the goal is to communicate the most amount of information using the fewest words and characters. This type of rapid-fire communications places a higher priority on brevity and speed than spelling, capitalization, and punctuation. Educators wonder about the effect that text messages might have on the writing habits and grammar skills of today's students. Their use of **text acronyms** such as LOL (laugh out loud) and **text abbreviations** that include numbers, such as gr8 (for great) or 2 (for to, too, or two), is working its way into their formal writing. While adults also use text acronyms and abbreviations, the concern is

that teens and young adults use them so often before developing formal writing skills. The result could be students who are less able to use formal language when needed.

Research indicates that the more text messages students send, the more likely it is that they may have difficulty with formal writing. On the positive side, by reducing a message to as few words as possible, students learn to present the most important content first, without rambling or exaggeration. The downside is this can lead to short, choppy sentences that do not connect with each other and a lack of supporting details, which are essential in formal writing. Other positives are that students are writing more than ever, and that this

type of writing can be considered a form of journaling, or recording of thoughts, activities, and opinions. Some educators argue that rather than worrying about the writing style that students use in their text messages, they should focus on helping students distinguish between formal and informal communications, and what is appropriate in each.

Does the use of text messages make students less likely to perform well in formal writing assignments? Why or why not? Should teachers allow students to use text acronyms and abbreviations in formal writing? Why or why not? Do text messages have any positive impact on communications skills? Why or why not?

Digital Cameras

A **digital camera** is a device that allows you to take photos and store the photographed images digitally (Figure 1-7). While many digital cameras look like a traditional camera, some are built into smartphones and other mobile devices.

Digital cameras typically allow you to review, and sometimes modify, images while they are in the camera. You also can transfer images from a digital camera to a computer, so that you can review, modify, share, organize, or print the images. Digital cameras often can connect to or communicate wirelessly with a computer, a printer, or the Internet, enabling you to access the photos on the camera without using a cable. Some also can record videos. Many digital devices, such as smartphones and tablets, include an integrated digital camera.



Figure 1-7 With a digital camera, you can view photographed images immediately through a small screen on the camera to see if the photo is worth keeping.

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Internet Research

What is a digital SLR camera?

Search for: digital slr camera introduction

Internet Research

What are popular portable media players?

Search for: portable media players

Portable Media Players

A **portable media player**, sometimes called a *personal media player*, is a mobile device on which you can store, organize, and play or view digital media (Figure 1-8). Digital media includes music, photos, and videos. Portable media players enable you to listen to music, view photos, and watch videos, movies, and television shows. With most, you transfer the digital media from a computer (or the Internet, if the device is Internet capable) to the portable media player.



Figure 1-8 Portable media players, such as the iPod shown here, typically include a set of earbuds.

© iStockphoto / Sebastien Cote

Portable media players usually include a set of *earbuds*, which are small speakers that rest inside each ear canal. Some portable media player models have a touch screen, while others have a pad that you operate with a thumb or finger, so that you can navigate through digital media, adjust volume, and customize settings. Some portable media players also offer a calendar, address book, games, and other apps (discussed later in this chapter).

E-Book Readers

An **e-book reader** (short for electronic book reader), or *e-reader*, is a mobile device that is used primarily for reading e-books (Figure 1-9). An *e-book*, or digital book, is an electronic version of a printed book, readable on computers and other digital devices. In addition to books, you typically can purchase and read other forms of digital media such as newspapers and magazines.

Most e-book reader models have a touch screen, and some are Internet capable. These devices usually are smaller than tablets but larger than smartphones.



Internet Research

What are the features of the top e-book readers?

Search for: e-book reader comparison

Figure 1-9 An e-book reader.

© iStockphoto / Michael Bodmann

Game Devices

A **game console** is a mobile computing device designed for single-player or multiplayer video games. Gamers often connect the game console to a television so that they can view their gameplay on the television's screen (Figure 1-10). Many game console models are Internet capable and also allow you to listen to music and watch movies or view photos. Typically weighing between three and eleven pounds, the compact size of game consoles makes them easy to use at home, in the car, in a hotel, or any location that has an electrical outlet and a television screen.



A handheld game device is small enough to fit in one hand, making it more portable than the game console. Because of their reduced size, the screens are small — similar in size to some smartphone screens. Some handheld game device models are Internet capable and also can communicate wirelessly with other similar devices for multiplayer gaming.

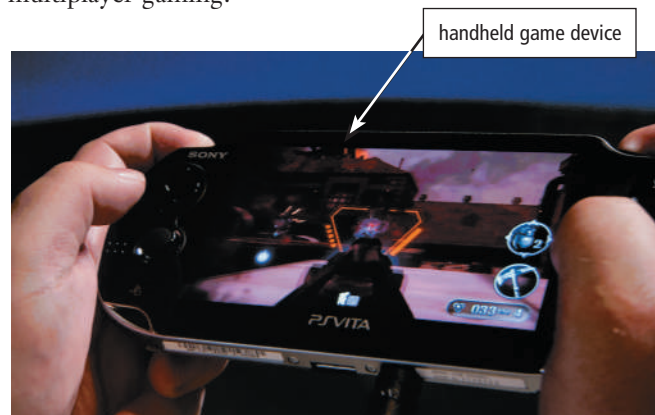


Figure 1-10 Game consoles often connect to a television; handheld game devices contain a built-in screen.

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