

DISCOVERING COMPUTERS: TOOLS, APPS, DEVICES, AND THE IMPACT OF TECHNOLOGY

CHAPTER ONE: DIGITAL LITERACY

END OF CHAPTER SOLUTIONS

STUDY GUIDE

Answers to Study Guide questions are below.

1. Digital literacy involves having a current knowledge and understanding of computers, mobile devices, the web, and related technologies.
2. 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. A user is anyone who interacts with a computer or mobile device, or utilizes the information it generates.
3. 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. A mobile computer is a portable personal computer, designed so that a user can carry it from place to place. Laptops are also called notebook computers.
4. A tablet is a thin, lighter-weight mobile computer that has a touch screen. A popular style of tablet is the slate, which does not contain a physical keyboard. Like laptops, tablets run on batteries or a power supply or both; however, batteries in a tablet typically last longer than those in laptops. Touch screen gestures include: tap, double-tap, press and hold, drag or slide, swipe, stretch, and pinch.
5. 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 display device (or simply display) that is separate from a tower, which is a case that contains the processing circuitry. Another type of desktop called an all-in-one does not contain a tower and instead uses the same case to house the display and the processing circuitry. The term, desktop, also sometimes is used to refer to an on-screen work area on desktops, tablets, and laptops.
6. A server is a computer dedicated to providing one or more services to other computers or devices on a network. Services provided by servers include storing content and controlling access to hardware, software, and other resources on a network.
7. The mobile devices discussed in this chapter 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.

8. A smartphone is an Internet-capable phone that usually also includes a calendar, an address book, a calculator, a notepad, games, and several other apps. Smartphones typically communicate wirelessly with other devices or computers. With most smartphone models, you also can listen to music, take photos, and record videos. Many smartphones have touch screens.

9. A voice mail message is a short audio recording sent to or from a smartphone or other mobile device. 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 video message is a short video clip, usually about 30 seconds, sent to or from a smartphone or other mobile device.

10. A digital camera is a device that allows you to take photos and store the photographed images digitally. A portable media player is a mobile device on which you can store, organize, and play or view digital media. An e-book reader is a mobile device that is used primarily for reading e-books. A wearable device or wearable is a small, mobile computing consumer device designed to be worn. Wearable devices include activity trackers, smartwatches, and smartglasses. A game console is a mobile computing device designed for single-player or multiplayer video games.

11. 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 digital device convergence, means that consumers may need fewer devices for the functionality that they require.

12. New home builders and existing homeowners are integrating features that automate a wide variety of tasks, save time and money, and enhance the overall at-home environment. Uses include: remotes that turn light fixtures on and off, and motion sensors turn on lights when a car or a visitor approaches the driveway or walkway; programmable thermostats that adjust to seasonal needs and can be set to control temperatures in individual rooms; smart appliances, such as dishwashers, can be programmed to run at nonpeak electrical times and refrigerators can track expiration dates and create shopping lists; security systems can detect break-ins at doors and heat from fires, and they can send text and email messages to alert a homeowner when someone has entered or left the home. Surveillance cameras keep a watchful eye on the premises and interior rooms.

13. Data is a collection of unprocessed items, which can include text, numbers, images, audio, and video. Information conveys meaning to users. Your name, address, term, course names, course sections, course grades, and course credits all represent data that is processed to generate your semester grade report. Other information on the grade report includes results of calculations such as total semester hours, grade point average, and total credits.

14. An input device is any hardware component that allows you to enter data and instructions into a computer or mobile device. Common input methods include: keyboards, pointing devices, voice and video input, and scanners. An output device is any hardware component that conveys information from a computer or mobile device to one or more people. Common output methods include: printers, displays, speakers, earbuds, and headphones.

15. 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.
16. A microphone is an input device that enables you to speak into a computer or mobile device. A headset contains both a microphone and a speaker. A webcam is a digital video camera that allows you to capture video and usually audio input for your computer or mobile device.
17. Memory consists of electronic components that store instructions waiting to be executed and the data needed by those instructions. Although some forms of memory are permanent, most memory keeps data and instructions temporarily, which means its contents are erased when the computer is shut off. Storage, by contrast, holds data, instructions, and information for future use.
18. A computer keeps data, instructions, and information on storage media. Examples include: hard disks, solid-state drives, USB flash drives, memory cards, and optical discs.
19. Cloud storage is an Internet service that provides remote storage to computer users. Types of services offered by cloud storage providers vary. Some provide storage for specific types of media, such as photos, whereas others store any content and provide backup services.
20. Use a backup program to copy the contents of your entire hard drive to a separate device. Regularly copy music, photos, videos, documents, and other important items to an external hard drive, a USB flash drive, or a 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 drive using synchronization software. Some mobile device manufacturers provide cloud storage solutions.
21. The Internet is a worldwide collection of computer networks that connects millions of businesses, government agencies, educational institutions, and individuals. Some uses of the Internet include: email, instant messaging, VoIP, and FTP.
22. The Internet provides more than three billion home and business users around the world access to a variety of services. The World Wide Web is one of the widely used services of the Internet.
23. The web consists of a worldwide collection of electronic documents. Each electronic document on the web is called a webpage.
24. A browser is software that enables users with an Internet connection to access and view webpages on a computer or mobile device. A search engine is software that finds websites, webpages, images, videos, news, maps, and other information related to a specific topic.
25. An online social network, also called a social networking site, is a website that encourages members in its online community to share their interests, ideas, stories, photos, music, and videos with other registered users.
26. With Facebook, you share messages, interests, activities, events, photos, and other personal information — called posts — with family and friends. You also can 'like' pages of celebrities, companies, products, etc.. With Twitter, you 'follow' people, companies, and organizations in which you have an interest to stay current with the daily activities of those you are following via

their Tweets. On LinkedIn, you share professional interests, education, and employment history, and add colleagues or coworkers to your list of contacts.

27. Services of the Internet that facilitate communications include: email, messaging services, VoIP, and FTP.

28. Malware is software that acts without a user's knowledge and deliberately alters the computer's or mobile device's operations. Protect your computer by following these practices: use virus protection software; use a firewall; be suspicious of all unsolicited email and text messages; disconnect your computer from the Internet; download software with caution; close spyware windows; before using any removable media, scan it for malware; keep current with the latest updates for your computer software; and back up regularly.

29. Users use online social networks to share their photos, videos, journals, music, and other personal information publicly. Risks include sharing information that would allow others to identify or locate you, and disclosing identification numbers, user names, passwords, or other personal security details. To create a strong password: avoid using personal information; use at least eight characters; use a variety of uppercase and lowercase letters, numbers, punctuation marks, and symbols; change your password frequently; do not use the same password for all websites you access; use a passphrase; avoid common number or letter sequences; memorize all of your passwords, or store them securely using a password management app on your computer or mobile device; use online tools to evaluate password strength.

30. Prolonged or improper computer and mobile device use can lead to injuries or disorders of the hands, wrists, elbows, eyes, neck, and back. With the growing use of earbuds and headphones, some users are experiencing hearing loss. Two behavioral health risks are technology addiction and technology overload. Technology addiction occurs when someone becomes obsessed with using technology. Individuals suffering from technology overload feel distressed when deprived of computers and mobile devices.

31. Strategies that support green computing include recycling, using energy efficient hardware and energy saving features, regulating manufacturing processes, extending the life of computers, and immediately donating or properly disposing of replaced computers.

32. Software consists of a series of related instructions, organized for a common purpose, that tells the computer what tasks to perform and how to perform them. Software also is called a program.

33. An operating system is a set of programs that coordinates all the activities among computer or mobile device hardware. It provides a means for users to communicate with the computer or mobile device and other software. Many of today's computers and mobile devices use a version of Microsoft's Windows, Apple's Mac OS, Apple's iOS, or Google's Android.

34. A desktop app is an application stored on a computer. A web app is an application stored on a web server that you access through a browser. A mobile app is an application you download from a mobile device's app store or other location on the Internet to a smartphone or other mobile device.

35. If you are installing a program on your computer from physical media such as a CD or DVD, insert the media in your computer. If the installation process does not start automatically, locate the installation program on the media and then double-tap or double-click the installation program. If the program or mobile app is available from a website or online store, download the

application to your computer or mobile device. Once the download is complete, if the installation process does not start automatically, locate and then double-tap or double-click the downloaded file to begin the installation.

36. Programs are available from retail stores, websites, and from other online services such as Apple's App Store or Google Play. Mobile apps are available from your device's app store. Installing involves inserting physical media or downloading the application from a website or app store, and initiating the installation. To run a program or app: if you are using a computer, tap or click the program's tile or double-tap or double-click the program's icon in the desktop; display a list of all programs and apps on your computer or mobile device and then tap or click the icon representing the program to run; or use the search feature in the operating system to locate the newly installed program or app and then tap or click the search result to run the program or app. A software developer is someone who develops programs and apps or writes the instructions that direct the computer or mobile device to process data into information.

37. A communications device is hardware capable of transferring items from computers and devices to transmission media and vice versa. Examples of wireless communications technologies include Wi-Fi, Bluetooth, and cellular radio,

38. A hot spot is a wireless network that provides Internet connections to mobile computers and devices. Wi-Fi hot spots provide wireless network connections to users in public locations, such as airports and airplanes, train stations, hotels, convention centers, schools, campgrounds, marinas, shopping malls, bookstores, libraries, restaurants, coffee shops, and more. Bluetooth hot spots provide location-based services, such as sending coupons or menus, to users whose Bluetooth-enabled devices enter the coverage range.

39. Home networks save the home user money and provide many conveniences, allowing the users to: connect to the Internet at the same time; share a single high-speed Internet connection; access photos, music, videos, and other content on computers and devices throughout the house; share devices such as a printer, scanner, or external hard drive; play multiplayer games with players on other computers and mobile devices in the house; connect game consoles to the Internet; subscribe to and use VoIP; and interact with other devices in a smart home. Some reasons that businesses network their computers and devices together include the following: facilitate communications; share hardware; and share data, information, and software.

40. Criminals sometimes use unsecured wireless networks to cover up technology-related crimes. Others may steal connections to avoid the costs of Internet service. In other cases, a user's laptop or mobile device may connect automatically to an open wireless network, without the user's authorization or knowledge. If you are using an unsecured wireless network, hackers may be able to capture your passwords, hijack your accounts, or send spam or a virus.

41. When you synchronize computers and mobile devices, you match the files in two or more locations with each other, as shown in the figure below. With a one-way sync, also called mirroring, you add, change, or delete files in a destination location, called the target, without altering the same files in the original location, called the source. In two-way sync, any change made in one location also is made in any other sync location. Strategies for keeping your files in sync include the following: use a cable and software; use cloud storage; and use web apps.

42. Digital technology offers flexibility and a revised classroom setting, including: allowing students to bring their own devices; virtual field trips; games and simulations; interactive whiteboards; share projects; and use 3-D printers.

43. People in the United States access government websites to view census data, file taxes, apply for permits and licenses, pay parking tickets, buy stamps, report crimes, apply for financial aid, and renew vehicle registrations and driver's licenses. Many people and companies use online banking or finance software to pay bills, track personal income and expenses, manage investments, and evaluate financial plans. You can purchase just about any product or service on the web, including groceries, flowers, books, computers and mobile devices, music, movies, airline tickets, and concert tickets, from an online retailer. You can use computers and mobile devices to listen to audio clips or live audio; watch video clips, television shows, or live performances and events; read a book, magazine, or newspaper; and play a myriad of games individually or with others. Hospitals and doctors use computers and mobile devices to maintain and access patient records; computers and mobile devices monitor patients' vital signs in hospital rooms and at home; patients use computers to manage health conditions, such as diabetes; robots deliver medication to nurses' stations in hospitals; computers and computerized devices assist doctors, nurses, and technicians with medical tests; doctors use the web and medical software to assist with researching and diagnosing health conditions; doctors use email, text messaging, and other communications services to correspond with patients; patients use computers and mobile devices to refill prescriptions, and pharmacists use computers to file insurance claims and provide customers with vital information about their medications; surgeons implant computerized devices, such as pacemakers, that allow patients to live longer; surgeons use computer-controlled devices to provide them with greater precision during operations; ; medical staff create labels for medicine, hospital ID bracelets, and more. GPS technology assists travelers with creating maps, determining the best route between two points, locating a lost person or stolen object, monitoring a person's or object's movement, determining altitude, calculating speed, and finding points of interest. Many websites offer services to the public where you can search for and compare flights and prices, order airline tickets, or reserve a rental car. Scientists use computers to assist them with collecting, analyzing, and modeling data. Scientists also use the Internet to communicate with colleagues around the world. Many publishers of books, magazines, newspapers, music, film, and video make their works available online. Computer-aided manufacturing (CAM) refers to the use of computers to assist with manufacturing processes, such as fabrication and assembly.

44. A blog is an informal website consisting of time-stamped articles (posts) in a diary or journal format, usually listed in reverse chronological order. Podcasts are a popular way to distribute audio or video on the web. A podcast is recorded media that users can download or stream to a computer or portable media player. A wiki is a collaborative website that allows users to create, add to, modify, or delete the content via their browser.

45. A home user is any person who spends time using technology at home. A small/home office user includes employees of companies with fewer than 50 employees, as well as the self-employed who work from home. A mobile user includes any person who works with computers or mobile devices while away from a main office, home, or school. A power user is a user who requires the capabilities of a powerful computer. An enterprise has hundreds or thousands of employees or customers who work in or do business with offices across a region, the country, or

the world. Each employee or customer who uses computers, mobile devices, and other technology in the enterprise is an enterprise user.

46. Healthcare employees use technology in a variety of ways, including: to record your personal data and symptoms; to verify your insurance coverage and co-payment; schedule services, digitally record imaging data; add a diagnosis to the database that stores your medical records; send a prescription electronically; and bill your insurance company electronically.

CHECKPOINT

TRUE/FALSE		MULTIPLE CHOICE	MATCHING
1.	T	C	G
2.	F	A	I
3.	F	D	B
4.	F	B	A
5.	T	B	D
6.	F	C	J
7.	T	B	C
8.	F	D	F
9.	F		H
10.	T		E
11.	T		
12.	T		

Consider This

Answers to the Consider This questions will vary, and may require students to think beyond what they have learned in the chapter.

- Answers to the Critical Thinking questions posed in the boxed elements in this chapter will vary.
- Being digitally literate involves having a current knowledge and understanding of computers, mobile devices, the web, and related technologies. It is important to keep up with technology as it changes in order to remain digitally literate.
- Touchscreen gestures include tap, double-tap, press and hold, drag or slide, swipe, stretch, and pinch. Each gesture has several possible uses, such as activating links, pressing a button, running programs or apps, scrolling, moving an item around the screen, and zooming in and out.
- On-screen keyboards on a touch screen, mini keyboards, and slide out keyboards are some options for smartphones and tablets.
- In addition to e-books, you typically can read other items, such as newspapers and magazines, on an e-book reader.

6. In addition to keeping time, a smartwatch can communicate with a smartphone to make and answer phone calls, read and send messages, access the web, play music, work with apps, such as fitness trackers and GPS, and more.
7. The stand-alone device may have more features and functionality than the combined device offers; you might want to be able to use both devices at the same time; or you might want protection if your combined device breaks.
8. To ease eyestrain, position the display about 20 degrees below eye level. Clean the screen regularly. Blink your eyes every five seconds. Adjust the room lighting. Face into an open space beyond the screen. Use larger fonts or zoom the display. Take an eye break every 30 minutes. If you wear glasses, ask your doctor about computer glasses.
9. Memory cards and USB flash drives are convenient for mobile users because they are small and lightweight enough to be transported on a keychain or in a pocket. They typically store files you intend to transport from one location to another, such as a homework assignment or photos.
10. A backup plan could include the following: use a backup program, either included with the computer's operating system or purchased separately, to copy your hard drive's contents to a separate device; regularly copy important items to an external hard drive, USB flash drive, or DVD; subscribe to a cloud service provider; and schedule your files to be backed up regularly.
11. LinkedIn users share professional interests, education, and employment history, and add colleagues or coworkers to their list of contacts. You also can include recommendations from people who know you professionally. Many employers post jobs using LinkedIn. Facebook users share messages, interests, activities, events, photos, and other personal information with family and friends.
12. If you notice any unusual changes in the performance of your computer or mobile device, it may be infected with malware. Some malware causes harmless pranks that temporarily freeze, play sounds, or display message; others destroy or corrupt data, instructions or information stored on the infected device.
13. Antivirus programs; hardware and software firewalls; and spyware, adware, and other malware removers can protect your computer from malware.
14. Once criminals have stolen a password, they attempt to use that password for other accounts they find on your computer or mobile device, especially banking websites.
15. Technology addiction occurs when someone becomes obsessed with using technology. Symptoms of technology overload include feeling distressed when deprived of computers and mobile devices.
16. Green computing reduces electricity consumption and environmental waste.
17. To contribute to green computing, do not leave a computer or device running overnight; turn off the monitor, printer, and other devices when not in use; use energy efficient hardware; use paperless methods to communicate; recycle paper and buy recycled paper; recycle toner, computers, mobile devices, printers, and other devices; telecommute; and use videoconferencing and VoIP for meetings.

18. System software consists of the programs that control or maintain the operations of the computer and its devices. Application software consists of programs designed to make users more productive and/or assist them with personal tasks.
19. Popular operating systems include Microsoft's Windows, Apple's Mac OS, Apple's iOS, or Google's Android.
20. A desktop app is stored on a computer. A web app is stored on a web server that you access through a browser. A mobile app is downloaded from a mobile device's application store or other location on the Internet to a smartphone or other mobile device.
21. You can obtain programs or apps from retail stores, websites, and other online services, such as Apple's App Store or Google Play. Mobile apps are available from the device's app store.
22. The user interface controls how you enter data and instructions and how information is displayed on the screen.
23. Popular programming languages include C++, Java, JavaScript, Visual C#, and Visual Basic.
24. Many users opt for wireless communications, because it is more convenient than installing wires and cables.
25. The server typically has more power, more storage space, and expanded communications capabilities than the client.
26. In a one-way sync, you add, change, or delete files in a destination location without altering the same files in the original location. With a two-way sync, any change made in one location also is made in any other location. Two-way syncs can be used to collaborate on a document, for example.
27. CAM is used in a variety of industries, including oil drilling, power generation, food production, and automobile manufacturing.

PROBLEM SOLVING

These exercises ask students to solve practical computer problems by using outside resources available to them, including but not limited to a computer or mobile device, articles on the web or in print, blogs, podcasts, videos, television, user guides, other individuals, and electronics or computer stores. Tip Sheets, which are suggested starting points for the Problem Solving exercises, are included within the End of Chapter Solutions folder on your Instructor Resources disc. Answers may vary.

HOW TO: YOUR TURN

These hands-on activities solidify the concepts presented in the chapter with practical application. Answers may vary.

INTERNET RESEARCH

In these exercises, students use various web resources to discover additional information related to this chapter. Encourage students to use their browsers and the link in each exercise or a search engine to complete selected exercises. Answers will vary for the Making Use of the Web, Social Media, Search Skills, Security, and Cloud Services exercises.

CRITICAL THINKING

Thought-provoking situations exercise students' minds and challenge them to construct creative solutions. The Critical Thinking exercises are intended to be discussed or presented in class, assigned for student research, or completed as a team. The Case Study will provide students with a common framework within to explore and find answers as they complete the chapters in the book. Answers will vary.