Discovering Computers 2018: Digital Technology, Data, and Devices

Module One: Introducing Today’s Technologies: Computers, Devices, and the Web

End of Module 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. Computers contain many electric, electronic, and mechanical components known as hardware. 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 module 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. Most smartphones have a touch screen.

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 and smartwatches. 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 provides more than 3.5 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.

22. The Internet is a worldwide collection of computer networks that connects millions of businesses, government agencies, educational institutions, and individuals. Many everyday devices and objects or “things” are equipped with sensors that transmit data to and from the Internet, collectively called the Internet of Things (IoT). Some uses of the Internet include email, instant messaging, VoIP, and FTP.

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 typically 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; and 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. 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.

36. 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.

37. 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.

38. 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.

39. When you synchronize computers and mobile devices, you match the files in two or more locations with each other. 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.

40. Crowdsourcing is the practice of involving a large group of people — the crowd — to collectively contribute time, services, funds, expertise, or ideas to a project, cause, or other goal. Many crowdsourcing activities today are organized and promoted via online social networks, websites, or apps.

41. 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 3-D printers.

42. 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 use virtual reality (VR) to simulate education and training environments, and patients use VR for recovery treatments; and medical staff create labels for medicine, hospital ID bracelets, and more. Scientists use computers to assist them with collecting, analyzing, and modeling data. Scientists also use the Internet to communicate with colleagues around the world. 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. 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.

43. 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.

44. 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.

# **CHECKPOINT**

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| --- | --- |
| True/False (Rewritten as true show one possible solution) | Matching |
| 1. T | H |
| 2. F  Rewritten as true: An all-in-one does not contain a separate tower. | A |
| 3. F  Rewritten as true: A wearable device or wearable is a small, mobile computing consumer device designed to be worn. | I |
| 4. F  Rewritten as true: Information conveys meaning to users, and data is a collection of unprocessed items, which can include text, numbers, images, audio, and video. | F |
| 5. F  Rewritten as true: Earbuds are a type of output device. | J |
| 6. F  Rewritten as true: A scanner is a light-sensing input device. | G |
| 7. T | C |
| 8. F  Rewritten as true: A hard disk contains one or more inflexible, circular platters that use magnetic particles to store data, instructions, and information. | E |
| 9. F  Rewritten as true: The terms, web and Internet, are not interchangeable. | D |
| 10. T | B |
| 11. T |  |
| 12. T |  |

**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 with your Instructor Resources. Answers may vary.

**How To: Your Turn**

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

**Internet Research**

In these exercises, students use various web resources to discover additional information related to this module. 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 modules in the book. Answers will vary.