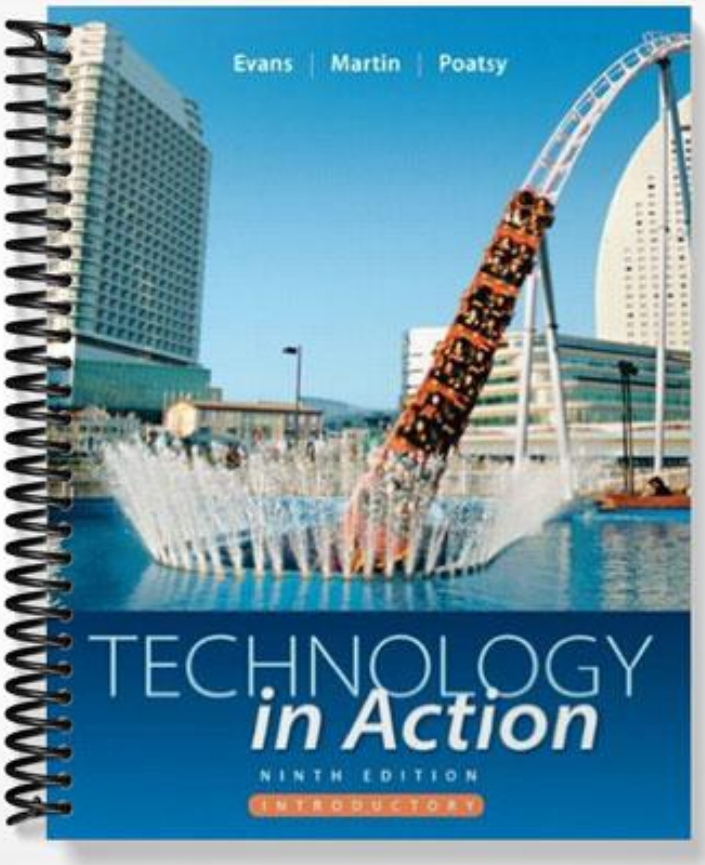
SOLUTIONS MANUAL



Technology in Action, Ninth Edition
Answer Key Chapter 2

BUZZ WORDS

Word Bank

• CPU

• DVI

• ergonomics

• external hard drive

• FireWire

• inkjet printer

• laser printer

• LED

• microphone

• monitor

• mouse

• notebook

• optical mouse

• QWERTY

• RAM

• ROM

• speakers

• SSD

• system unit

• USB

• webcam

Instructions: Fill in the blanks using the words from the Word Bank above.

Jackie had been getting a sore back and stiff arms when she sat at his desk, so she redesigned the (1) ERGONOMICS_____of her notebook setup. She placed the notebook in a stand so the (2) __MONITOR_____ was elevated to eye level and was 25 inches from her eyes. She decided to improve her equipment in other ways. Her (3) MOUSE_____ was old, so she replaced it with a wireless (4) __OPTICAL MOUSE_____ that didn't need a mouse pad. To plug in the wireless receiver, she used a(n) (5) ___USB_____ port on the front of her (6) _SYSTEM UNIT_____. She considered buying a larger (7) QWERTY_____ keyboard with a number pad so she could more easily input numeric data. Because she often printed papers for her classes, Jackie decided to buy a printer that could print text-based pages quickly. Although she decided to keep her (8) __INKJET PRINTER_____ to print photos, she decided to buy a new (9) __LASER PRINTER_____ to print her papers faster. While looking at printers, Jackie also noticed widescreen (10) __LED_____ monitors that would provide a larger display than that on her notebook, so she bought one on sale. She hooked up the monitor to the (11) ___DVI_____ port on the back of the notebook. Jackie also bought a(n) (12) __MICROPHONE_____ that was attached to a headset and a(n) (13) _WEBCAM_____ so she could talk to her friends over the Internet. Jackie also knew she had to buy a(n) (14) ___EXTERNAL HARD DRIVE_____ to back up all her files. Finally, knowing her system could use more memory, Jackie checked out prices for additional (15) ___RAM_____.

self-test

Instructions: Answer the multiple-choice and true–false questions below for more practice with key terms and concepts from this chapter.

Multiple Choice

1. What is a gigabyte?

a. One million bytes

b. One billion bytes

c. One billion bits

d. One trillion bits

2. The type of computer that might help run your refrigerator or car is

a. a mainframe computer.

b. a supercomputer.

c. an embedded computer.

d. none of the above.

3. What enables your computer to connect with other computers?

a. Expansion card

b. Adapter card

c. Video card

d. Network interface card

4. Which is NOT a built-in input device for a notebook?

a. Trackpoint

b. Touch pad

c. Optical mouse

d. None of the above

5. To add ports to your computer, what do you need?

a. A digital media card reader

b. An external hard drive

c. An expansion card

d. A flash memory card

6. Which holds the instructions the computer needs to start up?

a. CPU

b. RAM

c. USB

d. ROM

7. Which is TRUE about mainframe computers?

a. They perform complex calculations rapidly.

b. They support hundreds of users simultaneously.

c. They execute many programs at a fast pace.

d. They excel at running a few programs quickly.

8. Which is NOT important to consider when buying a printer?

a. Paper

b. Duty cycle

c. Cost of consumables

d. Resolution

9. Which type of microphone is best for recording a single voice?

a. Omnidirectional

b. Bidirectional

c. Unidirectional

d. All of the above

10. What type of storage device can you use to transfer digital data between your computer and devices such as digital cameras?

a. Flash memory card

b. Optical drive

c. Connectivity port

d. HDMI port

True–False

__F___ 1. Data and information are interchangeable terms

__T___ 2. The hard drive is an example of a nonvolatile storage device.

__F___ 3. Ergonomics is important only with desktop computers, not mobile devices.

__F___ 4. LED and LCD monitors are considered legacy technology.

__F___ 5. The clock speed of the CPU is the only measure of a processor's expected performance.

making the transition to…next semester

1. Study Abroad

You are preparing for your semester abroad in an immersion program in France. All the work you turn in will be written in French. Investigate the differences between a keyboard that you'd use in France and a traditional American English keyboard. What options do you have to incorporate an international keyboard into your notebook computer?

Responses will vary, depending on student preferences. A student's proficiency in French as well as the strength/weakness of keyboarding ability will have an influence. The International Keyboard can be activated on a Windows computer from the Control Panel, with six versions of French keyboards available including Canadian and Swiss. If possible, students could contact previous participants in the immersion program and discuss their recommendations.

2. Watching Device Demos

YouTube is a great resource for product demonstrations. Open your browser, navigate to the YouTube Web site (**www.youtube.com**), and search on any type of computer peripheral discussed in this chapter to see if you can find a demonstration of a cool product.

How helpful are these demonstrations? Make a video demonstration of a computing device you have and post it to your course management system, or present it to your classmates (as specified by your instructor).

The videos on YouTube have made it a go-to site for students looking to learn more. If you ask students to evaluate a demonstration they watch on YouTube, they might respond by describing how helpful the video was, whether more than one brand was demonstrated, how old the video was, if troubleshooting tips were included, and whether anything was left out that the students believed was important.

If you ask students to create a demonstration video, a word of caution is in order. If there is a desire to maintain privacy, allow students to create a video but don't penalize them for not uploading it to YouTube. For the content, think what you would want to share with another future user about a device that you use regularly. What do you use it for and how has it benefited you? What do you wish was in the manual but wasn't there? Also, make sure that there is some uniformity and quality to creating the video, perhaps with everyone using the same type of recording device such as a Flip recorder or a digital camera, with video capability and tripod.

3. Communicating with the Computer

You are involved in many group projects at school. Between your work, your classes, and other outside responsibilities, you are finding it difficult to always meet in person. Investigate the devices you would need to be able to have virtual group meetings.

To get students started, have them research the options for a new user of VoIP. In their analysis, consider these questions: What devices are needed? Do they need to purchase new equipment or do they have the capacity in their computer already? Does it require a lot of training to use or is it simple? Can free software be used? Will there be any monthly expense? How will this choice compare to other communication options?

Students can also search "free video conferencing" and find several sites where their meetings can be hosted at no cost. Facebook offers networking options and Skype is another option. In addition there is software which allows group input on a single document. Devices needed include a camera and microphone.

4. Turn Your Monitor into a TV

You've heard how easy it is to convert an LCD monitor into a TV. Your parents just bought a new computer and are giving you their old PC monitor. You need a new TV for your dorm room, so you decide to give it a try.

a. What does your monitor need to retrofit it into a TV? What other devices do you need?

b. How much will it cost? How much do new LDC TVs cost?

c. Is this something you would consider doing? Why or why not?

d. What would you do if your parents gave you their old LCD TV? Could you turn it into a monitor? If so, what would you need to do that?

This is a great project for college students, as they might need a TV in their dorm/apartment and can learn more about technology while doing so. In analyzing this possibility, guide students to ask questions and seek answers such as the following: How simple or complicated is this process? Would computer upgrades be needed? What kinds of channels can be viewed? Is a digital TV converter box needed? Can a remote control be used? What is the cost? Use the Internet or Sunday newspaper advertisements to find the cost of a comparable size TV. Would students recommend purchasing a TV or retrofitting the monitor? What would you do in this situation?

What devices would be necessary to turn an LCD TV into a monitor? What is the cost? Would the students recommend purchasing a new monitor instead? What would you do in this situation? No screen sizes are mentioned in the question, and this will influence student decisions.

5. Green Computing

Reducing energy consumption and promoting the recycling of computer components are key aspects of many businesses' "green" (environmentally friendly) initiatives. Using the Web, research the following:

a. What are the key attributes of the Energy Star and EPEAT Gold green PC certifications? Does your PC have these certifications?

b. What toxic components are contained in computers and monitors? Where can you recycle computers and monitors in your area?

c. Check out **www.goodcleantech.com** and find out which companies are currently working toward better green technology. If your school had to replace computers in a lab, which environmentally friendly company would you recommend? Why?

An Internet search for "technology recycling" will produce a list of companies that recycle technology. In considering these issues, students should be aware of a variety of viewpoints. Questions to ask include: How does each of these certifications impact the environment? Do you look for the Energy Star certification when buying equipment other than computers and peripherals? Would you consider a product that does not have one of these certifications? How are companies communicating to you that they have a commitment to green manufacturing and recycling of their components? How would you dispose of existing computers? Is there a green alternative that would allow you to offer the computers to students at a reduced cost because they are used?

Typically, electronic items cannot be recycled at as many places as other items. What ways can you recycle these kinds of items in your area? Also, just because you are done with the item does not always mean the item is worthless. Are there organizations that could benefit from your older electronics, such as a day care facility, elder care facility, church, or other group? Given the toxic items inside these devices, what is the proper handling of their disposal? Some electronic recycling is shipped to other countries for disposal and it actually poses a health and environmental hazard to the residents. How can you be sure that your recyclables are going to be disposed of properly? What criteria would you use in selecting a recycling company for their school to use?

making the transition to…the workplace

1. Backing up Your Work

You have embarked on a position as a freelance editor. You will be using your own computer. Until now you have not worked too much about backing up your data. Now, however, it's extremely important that you back up all your work frequently.

Research the various backup options that are available including online backup, external hard drives, and portable flash storage. What are the size limitations of each? What are the initial and ongoing costs of each? How frequently do the various options allow you to perform backups? Which option would you choose and why?

Losing data creates a horrible situation. Yet many users take for granted that technology will always do what we need it to do when we need it to work. What types of precautions would you take to ensure your personal files were protected and what would you do to keep your work files protected? What kind of option will you choose—a portable method, such as a flash or external hard drive, or will you look into an option off site using an external backup service in the "cloud"? Is this something you can do without an expert or will you need to hire someone to assist? What are the best case scenarios for retrieving the lost data and how often should you back up your data? Discuss your findings with others to evaluate alternative solutions.

2. What Hardware Will You Use?

When you arrive at a new position for a company, your employer will most likely provide you with a computer. Based on the career you are in now or are planning to pursue, answer the following questions:

a. What kind of computer system would the company most likely provide to you—desktop, notebook, tablet PC, or something else? How does that compare with the type of system you would prefer to work with?

b. If you were required to use a type of computer you had never used before (such as a Mac instead of a PC), how would you go about learning to use the new computer?

c. What other devices might your employer provide? Consider such items as smartphones or printers. How important is it for these devices to conform to the latest trends?

d. Should you be able to use employer-provided equipment, such as a smartphone, for personal benefit? Does your answer differ if you have to pay for part or all of the device?

Responses will vary, depending on career choice and individual preferences. What do those in this career typically use? For example, a graphic designer might own a laptop but use a large monitor or multiple monitors with a desktop computer. If you are moving into sales, you might use a netbook or a tablet PC. What is your preference?

It can be is difficult to begin using a program or operating system that is different from what you are used to using. Yet, it is easier to learn to use a computer now than it used to be, and likewise it should be even easier in the future. Think about sources for tutorials for the various operating systems. Are there videos on YouTube or from the manufacturer that you can use to learn? How do you best learn: watching and then doing, reading and then doing, or trying first instead?

Employees should not take advantage of the employer. What guidelines would be reasonable for personal use of equipment provided by the employer?

3. Exploring Monitors

You have been asked to help edit video for a friend. You have a great notebook computer, which is powerful enough to handle this type of task, but you need to buy a separate LCD monitor to hook up to your computer and are not exactly sure what to buy. You know it should be larger than 15 inches, capable of displaying HD, and can't cost more than $200.

a. Research five different monitors that would fit your needs. Create a table that lists each monitor and its specifications, including display type, screen size, aspect ratio, native resolution, and response time. Also list the types of ports and connectors the monitor has.

b. Note whether each monitor has HDMI. Why would HDMI capability be important or not important?

c. Research two LED monitors. Would an LED monitor be a viable option? Explain.

d. Explain which of the five monitors would best suit your needs and why.

Guide students to address questions like these in their responses: What brands did you find? Were you surprised that you were able to find so many monitors that could satisfy the request? What stores carry these monitors? Are there any special warranties or

discounts available? Is HDMI something that you require? Why is this format something you might want? Does the LED monitor have the minimum capabilities that you require? Is this within your budget? What kinds of stores carry this device? Are you able to use this instead of the other monitor?

4. Communications Devices

You have been assigned to create podcasts for the department in which you work. The podcasts will involve interviews and personal reflections, as well as capturing sound from groups of people. Investigate the best microphones for these jobs. Which type of microphone would work best for each type of function? Is there a microphone that could be used for all needs? If so, which one? Would buying one microphone be more economical than buying three different mics? Why or why not?

Students could research the types of microphones best used in interview situations. Bidirectional, unidirectional, omnidirectional, or clip-on microphones might be mentioned with an explanation of why they were selected or rejected for the project. Whether to use one or more microphones and cost considerations could be noted. Some students may wish to have multiple microphones simply because having a back-up can save a lot of time if there is a problem with a microphone.

5. Choosing the Best Laser Printer

You are looking to replace your inkjet printer with a laser printer. You haven't decided whether a color laser printer is necessary.

a. What are the cost considerations between getting a laser printer and a color laser printer (i.e., initial costs, costs of cartridges, and so on)?

b. Investigate wireless and Bluetooth options. What are the considerations involved with regard to these features?

c. Investigate all-in-one laser printers that have printer, scanner, and fax capabilities. How much more expensive are they than laser printers? Are there any drawbacks to these multi-purpose machines? Do they perform each function as well as their stand-alone counterparts do? Can you print in color on these machines?

Based on your research, which printer would be your choice, and why?

What costs are most important to you: the monthly cost to use the printer or the up-front cost? Is the printer you want Energy Star certified or green? Will you have to purchase anything else to use a printer in your home? Do you have a less expensive option by choosing a multipurpose device versus a laser printer? Are these devices available in wireless versions? Is there a brand preference for any of these machines? Depending on your situation, students could share their research findings and recommendations with the class.

critical thinking questions

1. **Computer of the Future**

   Think about how mobile our computing devices have become and the convergence of different devices such as cameras, phones, and computers. What do you think the computer of the future will be like? What capabilities will it have that computers currently don't have? Do you see desktop computers becoming obsolete in the near future?

   Students have an opportunity to consider their "dream" computer, by responding to questions such as: What is the ideal computer in your mind? Are science fiction movies and television shows showing you potential future tools and machines? What would you want in your computer? What would be the capacities and how would you interact with it?

2. **Table Monitors and Surface Monitors**

   Table monitors and surface monitors are tabletop devices that are designed to "grab" and manipulate objects on the display. Like an iPod Touch or iPhone, the display is multi-touch and can accept simultaneous input from multiple users, so the table monitor can be helpful with games or other products that require interactivity. Microsoft launched a product called Surface in 2007, and although it never really took off, you see similar devices features on some TV crime-fighting shows as detectives manipulate crime evidence and photos. Why do you think this device never really captured the interest of the public? Would this be a useful object to have in your home, classroom, or office? Why or why not?

Has the launch of the iPad and other tablet devices made this type of device a future reality? Do you see any use for this in education, business, or the home? What if the device was a vertical see-through glass monitor with the same capability?

3. External Storage

Hard drives are great for storing data and information on your computer, but there are many reasons why you might want to have alternate storage devices. List various external and mobile storage devices that are discussed in this chapter, and describe the purposes and uses of each one. Note which of these device types you currently use, and for what purpose. Note also the device(s) you might have a need to use in the next year or so.

Various storage options should be considered, looking at both advantages and disadvantages of each. Students might include portable devices, permanent devices, and cloud storage. What is the capacity of each option? How vulnerable to loss is each option? How certain can you be that your data is always protected from any outside intrusion? When you put your data into the cloud, is it still safe? Do you still have complete ownership? How often do you need to back up the data? Is there an easier alternative that involves having a portable hard drive or another backup service?

4. Ethics Violations

Review the Ethics piece in this chapter. Which of the Ten Commandments of Ethical Computing do you think your classmates have violated? Why do you think these violations occur, and what do you think could be done to reduce or eliminate such unethical behaviors?

Responses will cover a wide range of viewpoints and perspectives. Students should become aware that not everyone has the same views and beliefs about these issues. In various situations, some may be certain that an ethics violation had occurred while others may question whether any violation has even occurred. When feasible, a class discussion could help students in learning about opinions that do not match their own.

5. "Smart" Cars

Cars are becoming more technically advanced every day. They are now able to parallel park by themselves, avoid collisions, alert you if you are falling asleep at the wheel, provide emergency response, and sense if you are going to back up over something

inadvertently. What other technical advances do you see cars incorporating? Do you think that any of these current or potential advancements could result in unexpected negative consequences? If so, what?

Use the Internet to research this type of technology. Compare features of current offerings. Are you aware of testing to have cars drive themselves and maintain the proper interval between cars? Investigate other technologies that are in development or are being tested.

6. iPad

The Apple iPad has been enthusiastically accepted because of its multi-touch screen, useful applications, and small, light frame. The iPad 2 includes two cameras, but it is without certain features that might make it even better. If Steven Jobs, the CEO of Apple, were to ask you for your advice as to what to include in the next version of the iPad, what would you suggest?

What experience do you have with one of these devices? What are your likes and dislikes? If you have not used one of these devices, what have you heard others report? Would you want one? Which features are most important to you? What will it take for you to adopt this technology?