

# SOLUTIONS MANUAL



INTRODUCTORY

# Technology in Action

Sixth Edition

CD  Included

 PEARSON

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# Technology In Action, Sixth Edition

## Answer Key Chapter 2

### BUZZ WORDS

#### Word Bank

- CPU
- CRT
- Dvorak
- ergonomics
- FireWire
- inkjet printer
- laser printer
- LCD
- microphone
- monitor
- mouse
- optical
- QWERTY
- RAM
- ROM
- speakers
- system unit
- USB

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

Austin had been getting a sore back and stiff arms when he sat at his desk, so he redesigned the (1) **ergonomics** of his computer setup. He placed the (2) **monitor** so that it was 25 inches from his eyes, and he bought an adjustable chair. He also decided to improve his equipment in other ways. His (3) **mouse** was old, so he replaced it with a(n) (4) **optical** mouse that didn't need a mousepad. To plug in the mouse, he used a(n) (5) **USB** port on the back of his (6) **system unit**. He considered buying an alternative keyboard to replace the (7) **QWERTY** keyboard he got with his computer, but he didn't know much about alternative keyboards like the (8) **Dvorak** keyboard, so he decided to wait.

Because he often printed flyers for his band, Austin decided to buy a printer that could print text-based pages quickly. Although he decided to keep his (9) **inkjet printer** to print photos, he decided to buy a new (10) **laser printer** to print his flyers faster. While looking at printers, Austin also noticed widescreen (11) **LCD** monitors that would take up less space on his desk than the ancient (12) **CRT** monitor he had, so he bought one because it was on sale for \$200. He also decided to buy new (13) **speakers** because the ones that came with his computer didn't have subwoofers. He also bought a professional (14) **microphone** a while back for use with his band. Finally, knowing his system could use more memory, Austin checked out prices for additional (15) **RAM**.

### MULTIPLE CHOICE

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

1. Which devices below are considered output devices?
  - a. Keyboard and mouse
  - b. Monitor and printer**
  - c. Hard drive and speakers
  - d. Microphone and CD-ROM drive
2. Which of the following is NOT one of the four major functions of a computer?
  - a. Computation**
  - b. Storage
  - c. Processing
  - d. Input
3. Which of the following is NOT an output device?
  - a. Mouse**
  - b. Monitor
  - c. Printer
  - d. Speakers
4. The resolution of a monitor is governed by the
  - a. size of the screen.
  - b. cost of the monitor.
  - c. number of pixels on the screen.**
  - d. contrast of the pixels on the screen.
5. All of the following are important to consider when buying an LCD monitor EXCEPT
  - a. brightness.
  - b. pixel swap rate.**
  - c. viewing angle.
  - d. resolution.
6. Restarting the system while the computer is running is called
  - a. a warm boot.**
  - b. a standby start.
  - c. hibernation.
  - d. a cold boot.
7. An Ethernet port is used for connecting your computer to a
  - a. network.**
  - b. printer.
  - c. monitor.
  - d. digital camera.
8. Which of the following devices is considered the “brains” of the computer?
  - a. ROM
  - b. Motherboard
  - c. RAM
  - d. CPU**
9. Which of the following statements about hard drives is FALSE?
  - a. Hard drives are not always installed inside the system unit of a computer.
  - b. Hard drives are considered volatile storage devices.**
  - c. External hard drives are often used for backups.
  - d. Hard drives are considered nonvolatile storage devices.
10. Why is an ergonomically correct setup for your computer system essential?

- a. Reduces eyestrain
- b. Prevents repetitive strain injuries
- c. Complies with federal laws
- d. a & b
- e. b & c
- f. All of the above

## TRUE/FALSE

- F 1. The terms *data* and *information* can be used interchangeably.
- T 2. RAM is volatile storage that is located on the motherboard.
- F 3. The CPU is located on the ROM board.
- F 4. Firewire ports are the most popular port used for connecting peripherals to a computer.
- T 5. Keeping your wrists flat while typing at a computer will help prevent repetitive strain injuries.

# Making the Transition to...

## Next Semester

### 1. Choosing the Best Keyboard

Once you become more familiar with software products such as Microsoft Office, you may want to migrate to a customized keyboard design. Although keyboards have similar setups, some keyboards provide special keys and buttons to support different users. For example, some keyboards are designed specifically for multimedia use, Internet use, and gaming use. Which one is best for you?

- a. Examine the various keyboard setups at the Microsoft Web site ([www.microsoft.com/hardware/mouseandkeyboard/default.msp](http://www.microsoft.com/hardware/mouseandkeyboard/default.msp)). Which keyboard would best suit your needs and why? What features would be most useful to you? How would you evaluate the additional costs versus the benefits?
- b. When would you need a keyboard for your portable computing devices (such as a smartphone or PDA)? What is the current price for a portable folding keyboard? Would the virtual keyboard described in the chapter be a better choice for you? Explain your answers.

*Students should research the different types of keyboards on the Microsoft site. They should also research blogs and sites that give opinions based on experience that would help them make a suitable choice. Students should research portable and folding keyboards and weigh the costs versus the convenience of using portable computing devices.*

### 2. Choosing the Best Mouse

On the Web, research the different kinds of mice available and list their special features, functions, and costs. Of these mice, which do you think would be most useful to you? Why?

*Students can use the Microsoft site from question 1 to research the different mice that are available from that company. Additionally, there are other manufacturers of computer mice, such as Logitech, Hewlett-Packard, Belkin, and others, whose products should be researched and compared.. Reading blogs and customer satisfaction comments is also helpful in determining the kind of mouse to purchase.*

### **3. Pricing Computer Upgrades**

On the Web, investigate the following:

- a. How much would it cost to add a Blu-ray or HD DVD drive to your computer? Does your system have an extra drive bay to install such a device? Could you install this type of drive in a notebook?
- b. How much would it cost to buy a new 21-inch LCD monitor? What kind of monitor would be best to play games, view DVDs, or play back recorded TV shows?
- c. How much do various computer speaker systems cost? What speakers would be best to listen to CDs? What speakers would be useful when playing games?

*Students can research these devices on the Microsoft site. Additionally, there are other manufacturers and companies that sell computer equipment that should be consulted to verify the best price and quality. Reading blogs and customer satisfaction comments is also helpful in determining the kind of devices to purchase. Knowing your computer's current devices and system properties is important when deciding to install additional hardware.*

### **4. Exploring Scanners**

One input device you did not explore in the text is a scanner. Conduct the following research on the Web to find out about scanners:

- a. What are the different kinds of scanners on the market?
- b. What qualities do good scanners have?
- c. How much do scanners cost?
- d. Create a table comparing all the specifications listed earlier for several different scanners. Highlight the scanner you would be most interested in purchasing.

*Students can use the Internet to research scanners. Knowing how and when the scanner will be used is helpful in determining the required specifications. Additionally, there are other manufacturers of printers that include a scanning component in their products. These should also be researched and included in the comparison table.*

### **5. Green Computing**

Reducing energy consumption and promoting the recycling of computer components are key aspects of “green” (environmentally friendly) initiatives by businesses. 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?

*Students should define Energy Star and EPEAT as they relate to environmentally friendly computer equipment. They should review the bronze, silver, and gold standards on the EPEAT Web site to identify the attributes required for these certifications. Students should be aware of the presence of the toxic materials, such as mercury, contained in monitors and computers so that they can dispose of them properly. The Internet can be searched for companies that dispose of used monitors and computers in an environmentally safe manner.*

## Making the Transition to... the Workplace

### 1. Desktop Versus Notebook

There are two main types of computers in the workplace: desktop computers with separate system units and monitors, and notebook computers that are portable and have the monitors, keyboards and the system unit all contained within a single case. If you were being interviewed for a job, what types of questions would you need to ask your prospective boss about the job to determine whether you needed a desktop or a notebook computer?

*One main question that should be asked of a prospective employer is whether the position would require the employee to be mobile. If so, a notebook would be the better solution; if the position required the student to stay in one place, however, a desktop would be the better choice. The student would also want to know if they would need to do work outside of the office. If the student would need to bring work home, a notebook would be the better choice.*

### 2. What System Will You Use?

When you arrive at a new position for a company, you'll most likely be provided with a computer. Based on the career you are in now or are planning to pursue, answer the following questions:

- What kind of computer system would you most like to use (PC, Mac, desktop configuration, notebook, PDA, and so on)?
- If you were required to use a type of computer you had never used before (say a Mac instead of a PC), how would you go about learning to use the new computer?
- What kind of keyboard, mouse, monitor, and printer would you like to have?
- Would you need any additional input or output devices to perform your job?

*The student would need to draw from personal experience as well as the requirements of the new position to determine the hardware, input and output devices, and software he or she would like to use. The job description for the position would contain information that would help with the choices as well. The company's resources would also determine the components of the student's computer system. If he or she were required to use a PC instead*



*of a Mac or a Mac instead of a PC and had no knowledge of the operating system, the student could ask if there were in-house training sessions or seek outside training.*

### **3. What Hardware Will You Use?**

What types of computer hardware would make your work life more efficient? What adjustments would you need to make on your current system to accommodate those hardware devices? (For example, does your computer have the right kind of port or enough ports to support additional hardware devices?)

*Being knowledgeable about your system's properties and devices is important when deciding if your current computer is sufficient and able to accept any additional hardware that your position requires. For example, an animator would have a choice of hardware and may choose a MacBook Pro with a Core 2 Duo processor; a 2.6-GHz, 250-GB hard drive; and 4 GB of RAM. The student could visit [www.apple.com](http://www.apple.com) for additional information on what an animator would need as well as examples or completed work. A manager in an IT department would have a choice of hardware and may choose a Dell OptiPlex 755 Desktop with an Intel Core 2 Duo processor with Intel vPro technology, an 80-GB hard drive, and 8 GB of RAM. The student can visit [www.dell.com](http://www.dell.com) for additional information on the OptiPlex 755 and its uses for an IT manager.*

### **4. Choosing the Best Printer**

You are looking for a new printer for your home business. You have always had an inkjet printer, but now that the costs for color laser printers are dropping, you're considering buying a color laser printer. However, you're still unsure because they're more expensive than inkjet printers, although you've heard that there is an overall cost savings with laser printers when the cost of toner/ink and paper is taken into consideration.

- a. Using the Web, investigate the merits of different inkjet and color laser printers. Narrow in on one printer in each category and note the initial cost of each.
- b. Research the cost of ink/toner for each printer. Calculate the cost of ink/toner supplies for each printer, assuming you will print 5,000 color pages per year. How much will it cost per page of printing, not including the initial cost of the printer itself?
- c. Investigate the multipurpose printers that also have faxing, scanning, and copying capabilities. How much more expensive are they than a traditional inkjet or laser printer? Are there any drawbacks to these multipurpose machines? Do they perform each function as well as their stand-alone counterparts? Can you print in color on these machines?
- d. Based on your research, which printer would be the most economical?

*The Internet as well as individual office supply or warehouse stores are good sources of information when researching the differences between inkjet, laser, and all-in-one printers. It is important to check the cost of printing per page as well as the printing speed per page. You can also get information from printer manufacturers about the comparative costs and functions of the equipment that will help you make the decision.*

### **5. Office Ergonomics**

Your boss has designated you as the “ergonomics coordinator” for the department. She has asked you to design a flyer to be posted around the office informing your coworkers of the proper computer setup as well as the potential risks if such precautions are avoided. Create an ergonomics flyer, making sure it fits on an 8.5 × 11 piece of paper.

*To create this flyer, it is necessary that you understand the fundamentals of ergonomics as well as the health benefits and risks that need to be addressed when designing a computer workstation. The flyer should include information about good working positions such as having hands, wrists, and forearms straight, in-line, and parallel to the floor, and knees about the same height as the hips, to name two points. Potential risks of not using ergonomically proper computer stations could include repetitive injuries to hands, fingers, muscles, and wrists, and posture problems. Students should do a search on OSHA's web site for guidelines, risks, and precautions for proper ergonomic setup of computer workstations.*

## Critical Thinking Questions

Instructions: Albert Einstein used “Gedanken experiments,” or critical thinking questions, to develop his theory of relativity. Some ideas are best understood by experimenting with them in our own minds. The following critical thinking questions are designed to demand your full attention but require only a comfortable chair—no technology.

### 1. Keyboard of the Future

What do you think the keyboard of the future will look like? What capabilities will it have that keyboards currently don't have? Will it have ports? cables? special communications capabilities?

*Students can brainstorm ideas together or work alone to come up with their ideas. They can illustrate and describe the keyboard of the future and then share their vision with the class.*

### 2. Mouse of the Future

What do you think the mouse (or other pointing device) of the future will look like? What sorts of improvements on the traditional mouse can you imagine? Do you think there will ever be a day when we won't need mice and keyboards to use our computers?

*Students can brainstorm ideas together or work alone to come up with their ideas. They can illustrate and describe the mouse of the future and then share their vision with the class. Some students may feel that a mouse is not necessary in all instances due to the voice-recognition capabilities of the newer versions of Office applications.*

### 3. Storage Devices of the Future

How do you think storage devices will change in the future? Will increased storage capacity and decreased size affect the ways in which we use computers? Will we need storage devices in the future, or will we access all of our data via the Internet?

*Students will likely note that storage devices are getting smaller in size while having greater storage capacity. Students can debate the option of storing data on the Internet and discuss privacy issues where this is concerned.*

### 4. Computers Decreasing Productivity?



Can you think of any situations in which computers actually decrease productivity? Why? Should we always expect computers to increase our productivity? What do you think the impact of using computers would be:

- a. in a third-grade classroom?
- b. in a manager's office for a large chain supermarket?
- c. for a retired couple who purchases their first computer?

*Students who are not computer savvy may say that computers decrease their productivity whereas those who are comfortable with computers may say that their productivity is increased. Computers do not always increase productivity, but they do make many tasks—such as data processing with calculations and database management—easier. Students may argue that they need to have proficient skills in order to be productive. Computers in a third-grade classroom would enable students to receive computerized tutoring, communicate with other classrooms, and play educational games and would be used often. A manager in a large chain supermarket would use computers to maintain employee scheduling, review inventory and purchasing, and communicate with sister supermarkets and the home office. The productivity of a retired couple as a result of having their first computer might be affected the least. They would probably use their computer for e-mail and possibly visiting specific Web sites on the Internet. Students will have additional ideas on how computers affect people in differing situations.*

## **5. “Smart” Homes**

The Smart Medical Home project of the University of Rochester's Center for Future Health is researching how to use technology to monitor many aspects of your health. The Smart Medical Home is the creation of a cross-disciplinary group of scientists and engineers from the college, the Medical Center, and the university's Center for Future Health. This particular “smart home” includes a sophisticated computer system that helps keep track of items such as eyeglasses or keys, and the kitchen is equipped with a new kind of packaging to signal the presence of dangerous bacteria in food. Spaces between ordinary walls are stuffed with gadgetry, including banks of powerful computers.

- a. What abilities should a smart home have to safeguard and improve the quality of your life?
- b. Could there be potential hazards of a smart home?

*Students should do research on the Smart Medical Home project to understand exactly all that is being monitored. They may add that the smart home should monitor the resident's vital signs (e.g., respiration, blood pressure, pulse), collect and analyze data, and draw conclusions or predict any health issues. To help the resident stay fit, the smart home should also monitor and record food intake and exercise. The air inside the home should be clean and free from allergens. Students can also brainstorm ideas about other ways a smart medical home could be helpful to quality of life. Potential hazards might include harm from infrared devices and incorrect data analysis.*

## **6. Toy or Computer?**

When do you think a toy becomes a computer? The Microsoft Xbox 360 has a hard disk drive, a processor with three cores, internal RAM, and wireless capability. Apple iPods also have hard disk drives (or flash memory and a processor). Are these devices computers or toys? What capabilities do you think the next generation gaming consoles and iPods should have?

*Students can debate the toy versus computer idea, but most will probably think that the Xbox, Wii, and iPods are all versions of computers because they have hard drives and memory and are wireless. The next generation of gaming consoles can be discussed by those students who are familiar with using gaming devices. Those students who do not have that familiarity can do research to help them predict the future of gaming.*