Discovering Computers Enhanced Edition ©2017

Tools, Apps, Devices, and the Impact of Technology

Chapter 7

Input and Output



Objectives Overview

Differentiate among various types of keyboards: standard, compact, on-screen, virtual, ergonomic, gaming, and wireless

Describe characteristics of various pointing devices: mouse, touchpad, and trackball

Describe various uses of touch screens

Describe various types of pen input: stylus, digital pen, and graphics tablet

Describe various uses of motion input, voice input, and video input

See Page 318
for Detailed Objectives

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Objectives Overview

- Differentiate among various scanners and reading devices
- Explain the characteristics of various displays
- Summarize the various types of printers
- Identify the purpose and features of speakers, headphones and earbuds, data projectors, interactive whiteboards, and force-feedback game controllers and tactile output
- Identify various assistive technology input and output methods

See Page 318
for Detailed Objectives

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What Is Input?

- **Input** is any data and instructions entered into the memory of a computer

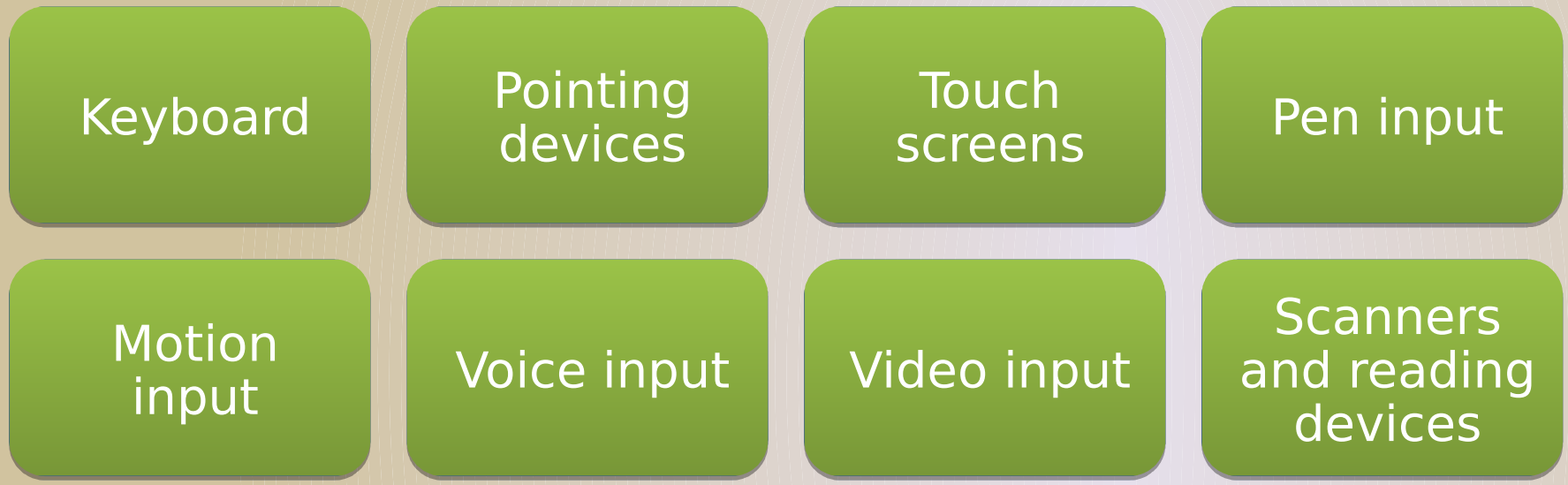


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Figure 7-1

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What Is Input?

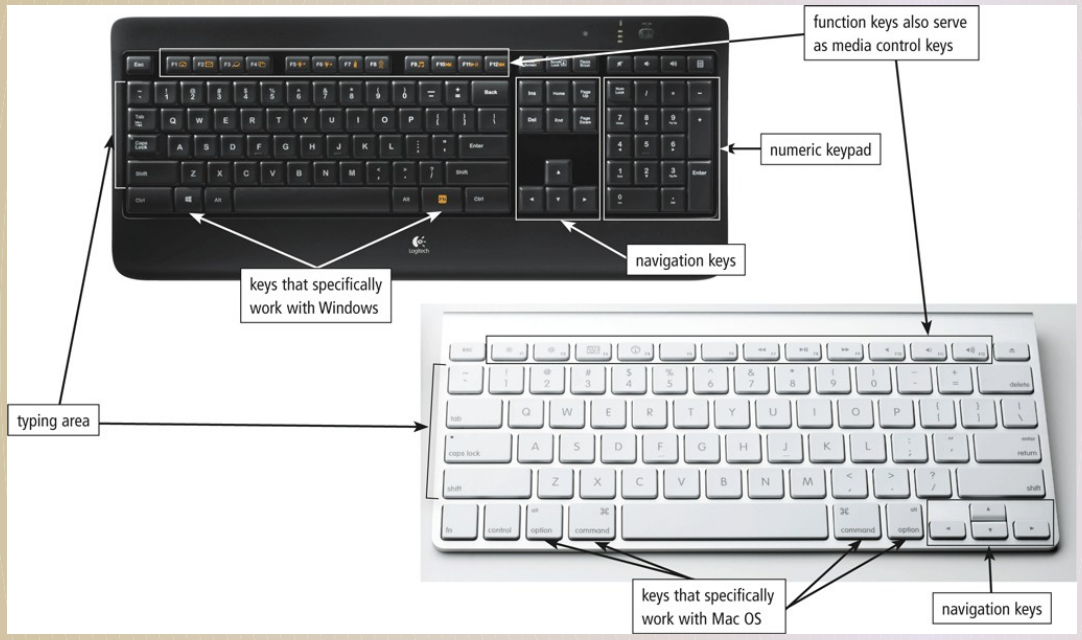
- Commonly used input methods include:



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Keyboards

- A **keyboard** is an input device that contains keys users press to enter data and instructions into a computer or mobile



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Figure 7-2

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Keyboards

- Most desktop computer keyboards have...

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Keyboards

- There are a variety of keyboard options for computers and mobile devices



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Figure 7-3

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Keyboards

- An ergonomic keyboard has a design that reduces the chance of repetitive strain injuries of wrist and hand
- Ergonomics incorporates comfort, efficiency, and



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Figure 7-4

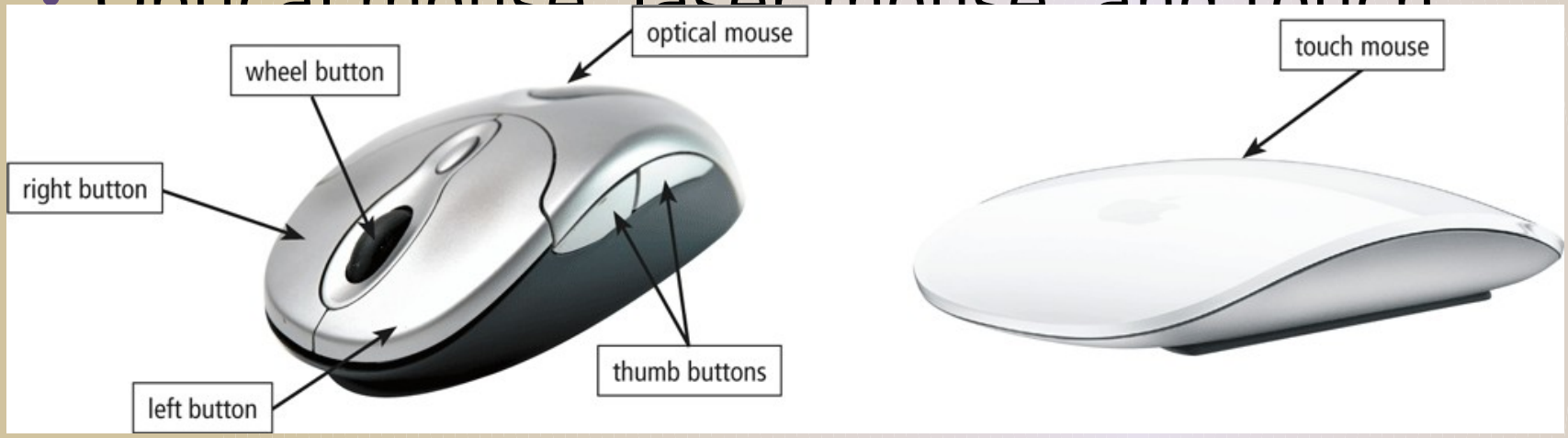
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Pointing Devices

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Pointing Devices

- A **mouse** is a pointing device that fits under the palm of your hand comfortably
  - Optical mouse, laser mouse, and touch



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Figure 7-5

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Pointing Devices

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Figures 7-6 – 7-7

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Touch Screens

- A **touch screen** is a touch-sensitive display



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Pen Input

- With **pen input**, you touch a **stylus** or **digital pen** on a flat surface to write, draw, or make selections

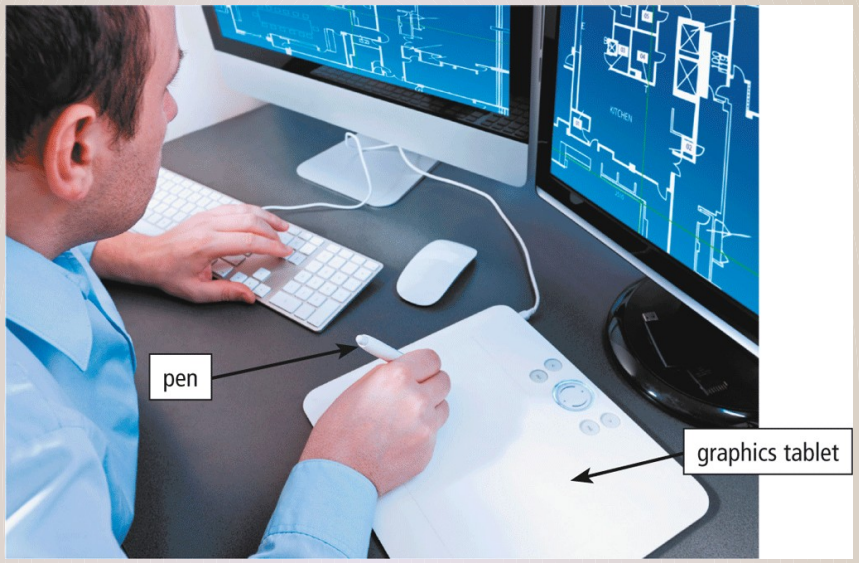


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Figure 7-9

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Pen Input

- A **graphics tablet**, also called a digitizer, is an electronic plastic board that detects and converts movements of a style or digital pen into signals that are sent to the computer

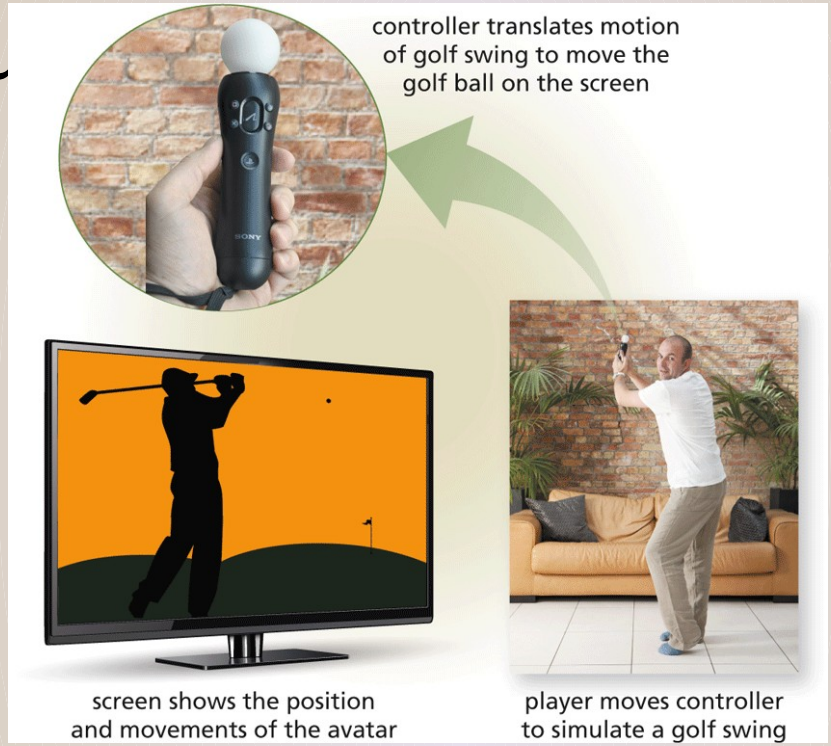


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Figure 7-11

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Motion, Voice, and Video Input

- With motion input, sometimes called gesture recognition, users can guide on-screen elements u



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Motion, Voice, and Video Input

- Voice input is the process of entering input by speaking into a microphone
- **Voice recognition**, also called speech recognition, is the computer or mobile device's capability of distinguishing spoken words



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Figure 7-12

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Motion, Voice, and Video Input

- Audio input is the process of entering any sound into the computer such as speech, music, and sound effects
- Music production software allows users to record, compose, mix, and edit music and sounds



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Figure 7-13

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Motion, Voice, and Video Input

- Video input is the process of capturing full-motion images and storing them on a computer or mobile device’s storage medium

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Motion, Voice, and Video Input

- A **webcam** is a type of DV camera that enables a user to:

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Motion, Voice, and Video Input

- A **videoconference** is a meeting between two or more geographically separa



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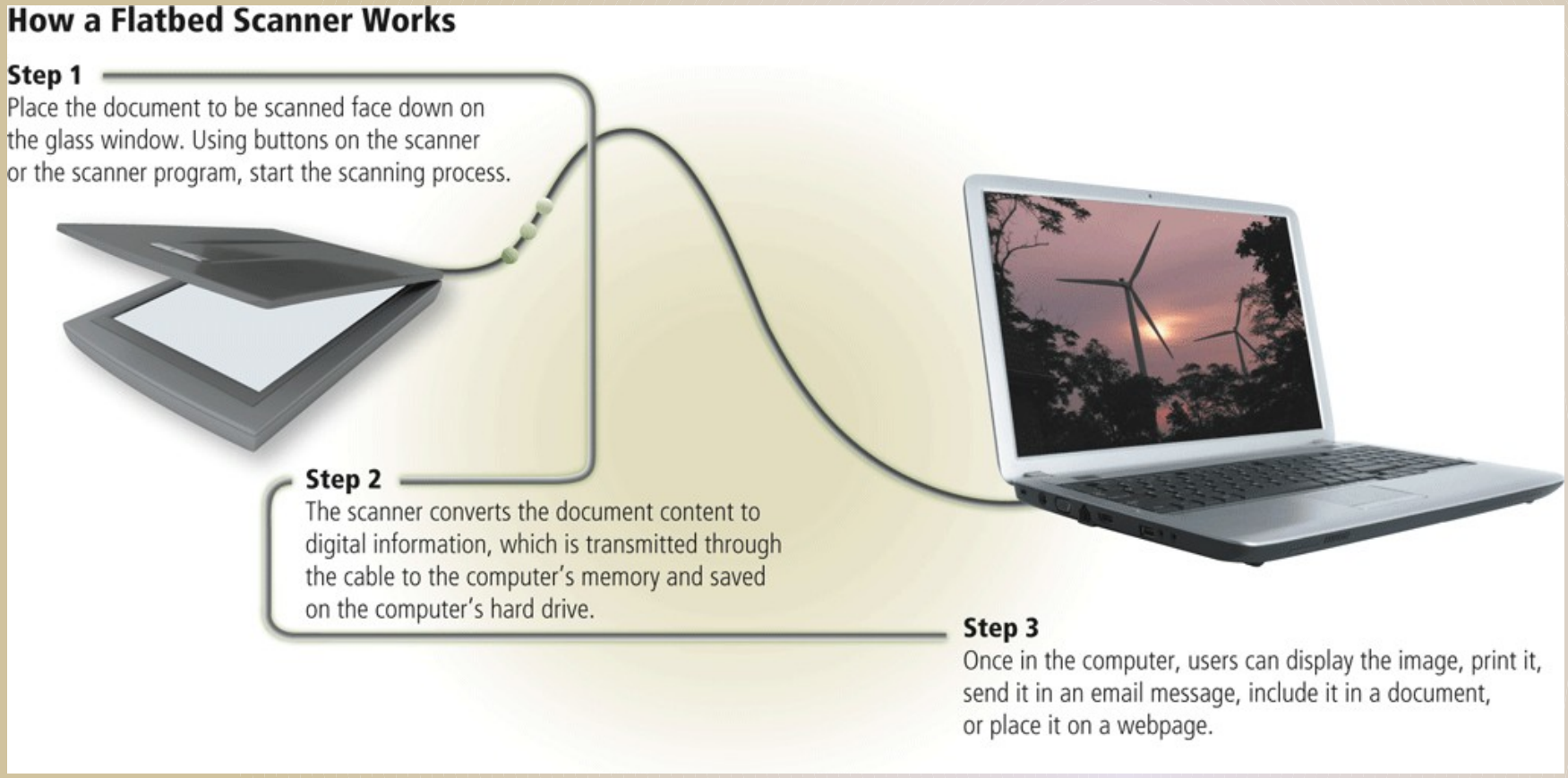
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Scanners and Reading Devices

- A **scanner** is a light-sensing input device that reads printed text and graphics and then translates the results into a form the computer can process
  - A flatbed scanner works in a manner similar to a copy machine except it creates a file of the document in memory instead of a paper copy

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Scanners and Reading Devices



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Scanners and Reading Devices

- An optical reader is a device that uses a light source to read characters, marks, and codes and then converts them into digital data that a computer can process
  - Optical character recognition (OCR)
  - Optical mark recognition (OMR)

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Scanners and Reading Devices





- A **bar code reader**, also called a bar code scanner uses laser beams to read **bar codes**
- A **QR code** stores information in both a vertical and horizontal direction

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Figures 7-17 – 7-18

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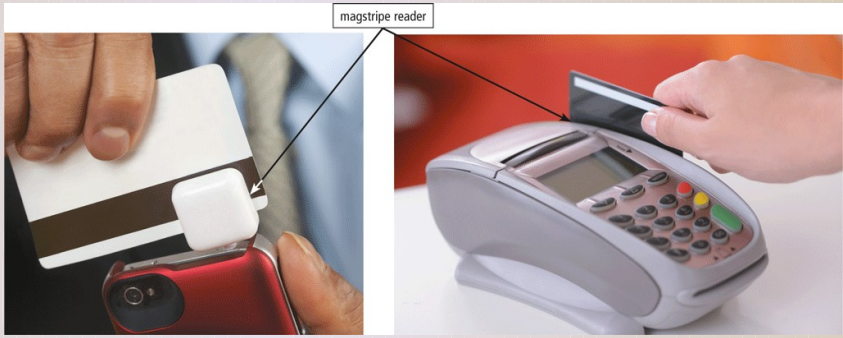
Scanners and Reading Devices

- **RFID** (radio frequency identification) uses radio signals to communicate with a tag placed in or attached to an object
- An **RFID reader** reads information on the tag via radio waves
- RFID can track:

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Scanners and Reading Devices

- **Magstripe readers** read the magnetic stripe on the back of cards such as:



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Figure 7-20

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Scanners and Reading Devices

- MICR (magnetic ink character recognition) devices read text printed with magnetized ink
- An MICR reader converts MICR characters into a form the computer can process
- Banking industry uses MICR for check processing



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Figure 7-21

Scanners and Reading Devices

- A data collection device obtains data directly at the location where the transaction [illegible] place



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Figure 7-22

What Is Output?

- **Output** is data that has been processed into a useful form



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Figure 7-23

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Displays

- A **display** visually conveys text, graphics, and video information
- A **monitor** is a display that is packaged as a separate peripheral device
  - **LCD** monitor



Pages 340 - 341
Figure 7-24

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Displays

- The quality of a display depends primarily on its:

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Displays

- Today’s monitors use a digital signal to produce a picture
- To display the highest quality images, the monitor should plug into:
  - A DVI port
  - An HDMI port
  - A DisplayPort

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Displays

- Home users sometimes use a digital television (DTV) as a display
- **HDTV** is the most advanced form of digital television
- A Smart TV is an Internet-enabled HDTV

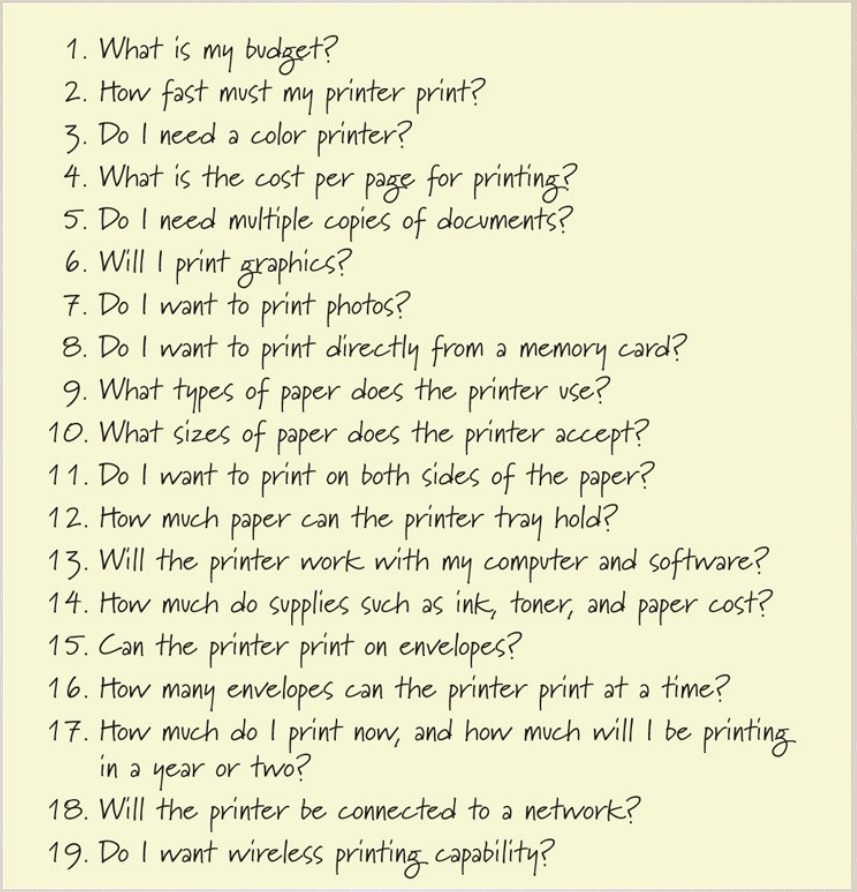


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Figure 7-25

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Printers

- A **printer** produces text and graphics on a physical medium
- Before purchasing a printer, ask yourself a series of questions


1. What is my budget?
2. How fast must my printer print?
3. Do I need a color printer?
4. What is the cost per page for printing?
5. Do I need multiple copies of documents?
6. Will I print graphics?
7. Do I want to print photos?
8. Do I want to print directly from a memory card?
9. What types of paper does the printer use?
10. What sizes of paper does the printer accept?
11. Do I want to print on both sides of the paper?
12. How much paper can the printer tray hold?
13. Will the printer work with my computer and software?
14. How much do supplies such as ink, toner, and paper cost?
15. Can the printer print on envelopes?
16. How many envelopes can the printer print at a time?
17. How much do I print now, and how much will I be printing in a year or two?
18. Will the printer be connected to a network?
19. Do I want wireless printing capability?

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Figure 7-26

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Printers

- A **nonimpact printer** forms characters and graphics on a piece of paper without actually contacting the paper

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Printers

- An **ink-jet printer** forms characters and graphics by spraying tiny drops of liquid ink onto a piece of paper
  - Color or black-and-white
  - Speed is measu… per minute (ppm) it…



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Figure 7-27

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Printers

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Printers



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Printers



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Figure 7-30

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Printers

- An **all-in-one printer** is a single device that prints, scans, copies, and in some cases, faxes
  - Also cal[illegible]er

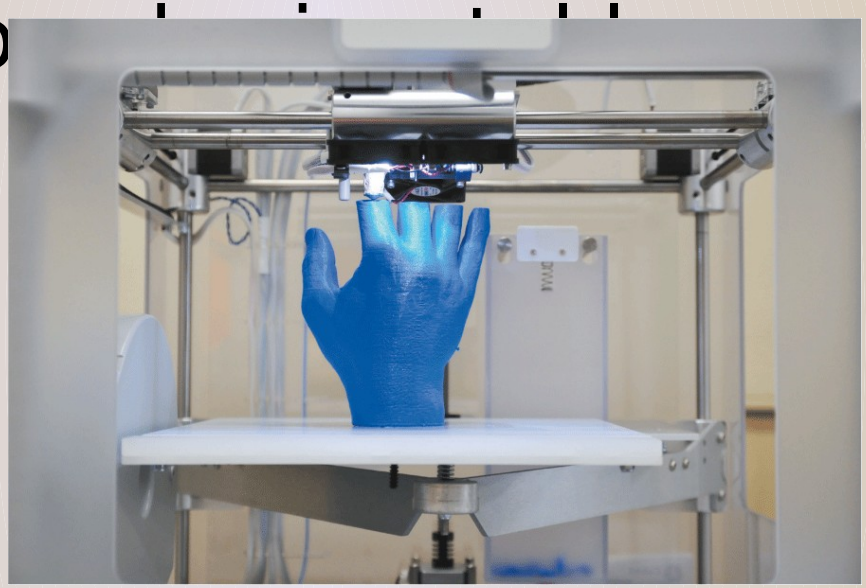


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Figure 7-32

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Printers

- A **3-D printer** uses a process called additive manufacturing to create an object by adding material to a three-dimensional object, o
at a time



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Figure 7-33

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Printers

- A **thermal printer** generates images by pushing electrically heated pins against the heat-sensitive pa



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Figure 7-34

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Printers

- A **mobile printer** is a small, lightweight, battery-powered printer that allows a mobile user to print from a mo



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Figure 7-35

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Printers

- A **label printer** is a small printer that prints on an adhesive-type material that can be placed on a variety of items



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Figure 7-36

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Printers

- **Plotters** are used to produce high-quality drawings
- **Large-format printers** create photo-realistic quality c

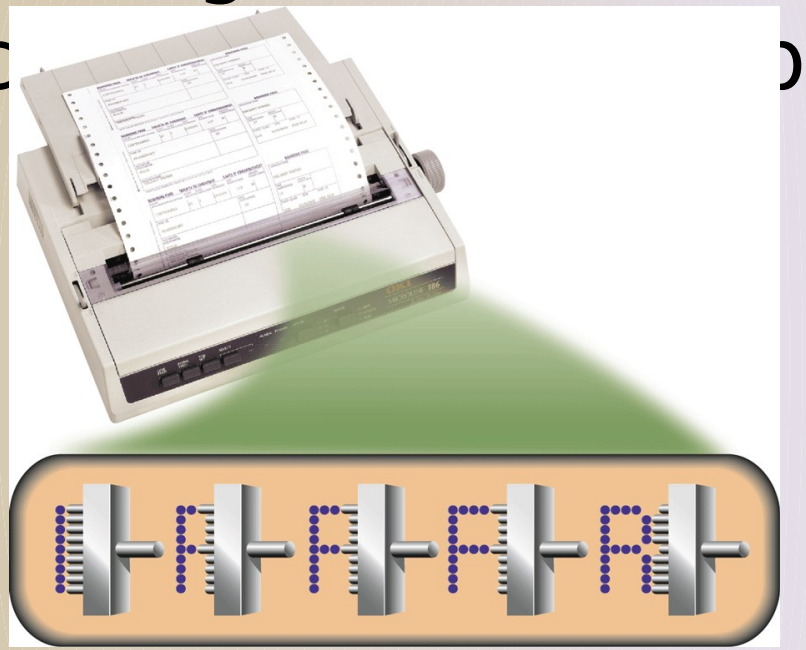


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Figure 7-37

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Printers

- **Impact printers** form characters and graphics on a piece of paper by striking a mechanism against an inked ribbon that physic paper

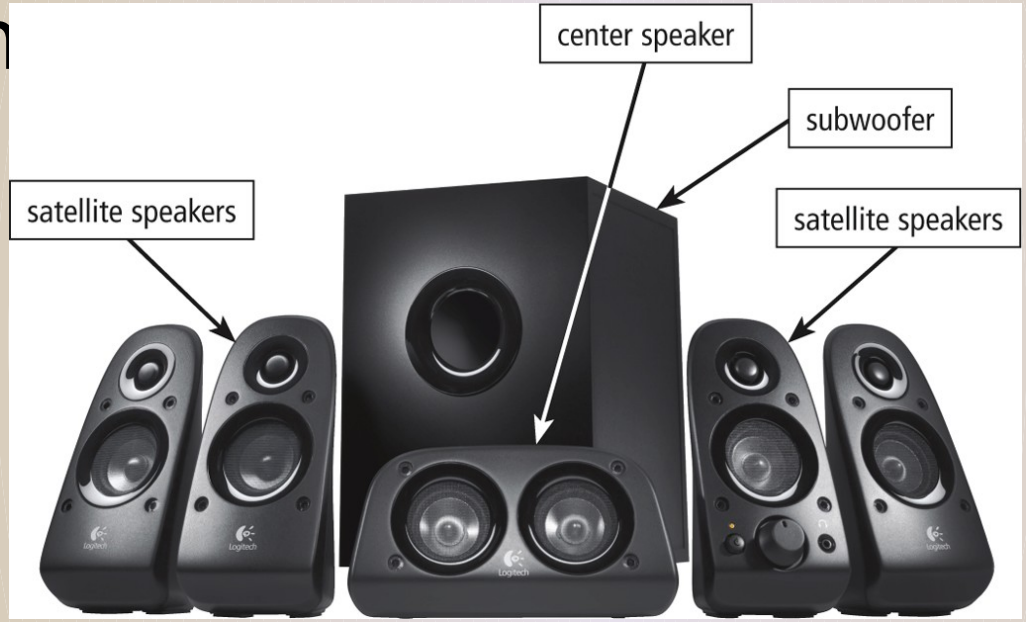


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Figure 7-38

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Other Output Devices

- Many users attach surround sound **speakers** or speaker systems to their computers, game consoles, and mobile devices to gen
sounds



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Figure 7-39

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Other Output Devices

- **Headphones** are speakers that cover or are placed outside of the ear
- **Earbuds** (also called earphones) rest inside the ear canal



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Figure 7-40

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Other Output Devices

- A **data projector** is a device that projects the text and images displaying on a computer or mobile device screen on a larger screen so that an audience can see the image clearly



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Figure 7-41

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Other Output Devices

- An **interactive whiteboard** is a touch-sensitive device, resembling a dry-erase board, that displays the image on a connected computer screen



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Figure 7-42

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Other Output Devices

- Joysticks, wheels, gamepads, and motion-sensing game controllers can be considered output devices when they include force feedback
  - Technology that sends resistance to the



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Figure 7-43

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Assistive Technology Input and Output

Head-mounted pointer



Braille printer



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Figures 7-44 – 7-45

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Summary

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Tools, Apps, Devices, and the Impact of Technology

Chapter 7

Input and Output



Chapter 7 Complete