NINTH EDITION

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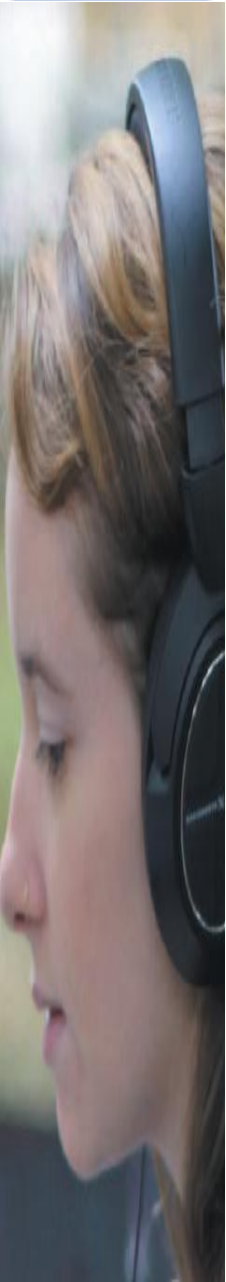
Computer Concepts

Introductory

Unit A: Computer and Internet Basics

Learning Objectives

- Define a personal computer and describe computer use in daily life

- Explain the four basic functions of a computer system

- Identify the main computer categories

- Describe digital devices that can be part of a personal computer

Learning Objectives (continued)

- Define software and give examples of operating systems

- Define the Internet and explain how to navigate Web pages

- Explain ways to use the Internet and digital devices to communicate with others

- Explain how to protect your digital data and devices
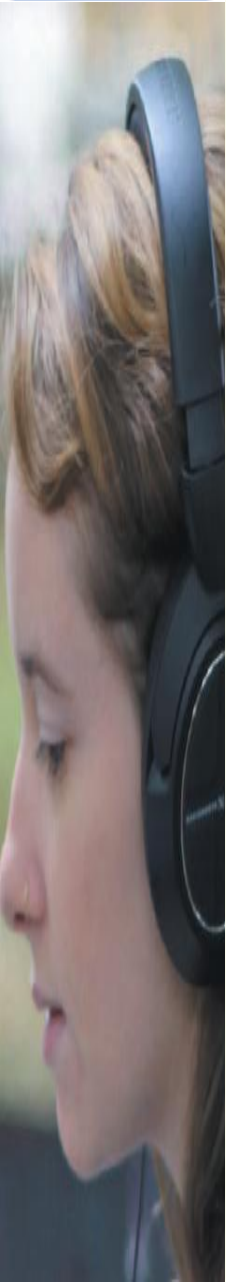
Computers in Your World

- Digital revolution – Change brought on by use of digital technology/devices

- Digital technology as a part of daily life

Figure A-1: Computers are a part of daily life

Computers in Your World (continued)

- Computer - An electronic device that:
  - ➤ Accepts input
  - ➤ Processes data
 - ➤ Stores data
  - ➤ Produces output

Computers in Your World (continued)

- Computer system includes:
  - ➢ Hardware - Electronic and mechanical parts
  - ➢ System Unit – Houses important components
  - ➢ Peripheral devices – Hardware to expand functionality
  - ➢ Software – Programs/codes of instructions

Computers in Your World (continued)

- Input devices:
  - Keyboard
  - Mouse
  - Touch screen, etc.

- Output devices:
  - Monitor
  - Printer
  - Speakers, etc.
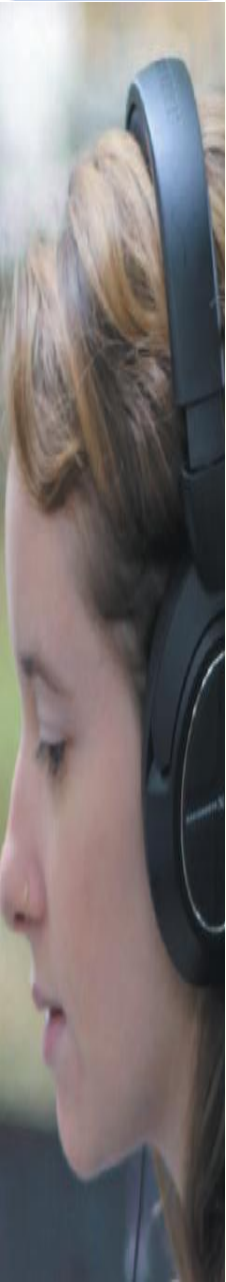
Computers in Your World (continued)

- Digitization:

  ➢ Process of converting text, numbers, sound, photos, and video into data that can be processed by digital devices

- Digital convergence:

  ➢ Blending several technologies into a single product

How Computers Work

- Turn on/power up/booting a computer:
  - ➤ May need to enter user ID and password
- Computer program/software:
  - ➤ Instructions telling a computer how to carry out processing tasks

How Computers Work (continued)

- Processor/microprocessor:
  - ➢ Processes data
  - ➢ Central processing unit (CPU) – Main processor

- Memory:
  - ➢ Temporarily holds data waiting to be processed

- Storage:
  - ➢ Holds data on a permanent basis

How Computers Work (continued)

- File:
  - ➢ Named and stored collection of data

- Filename:
  - ➢ Meaningful label given to file

- Storage medium:
  - ➢ Hard disk
  - ➢ CD or DVD
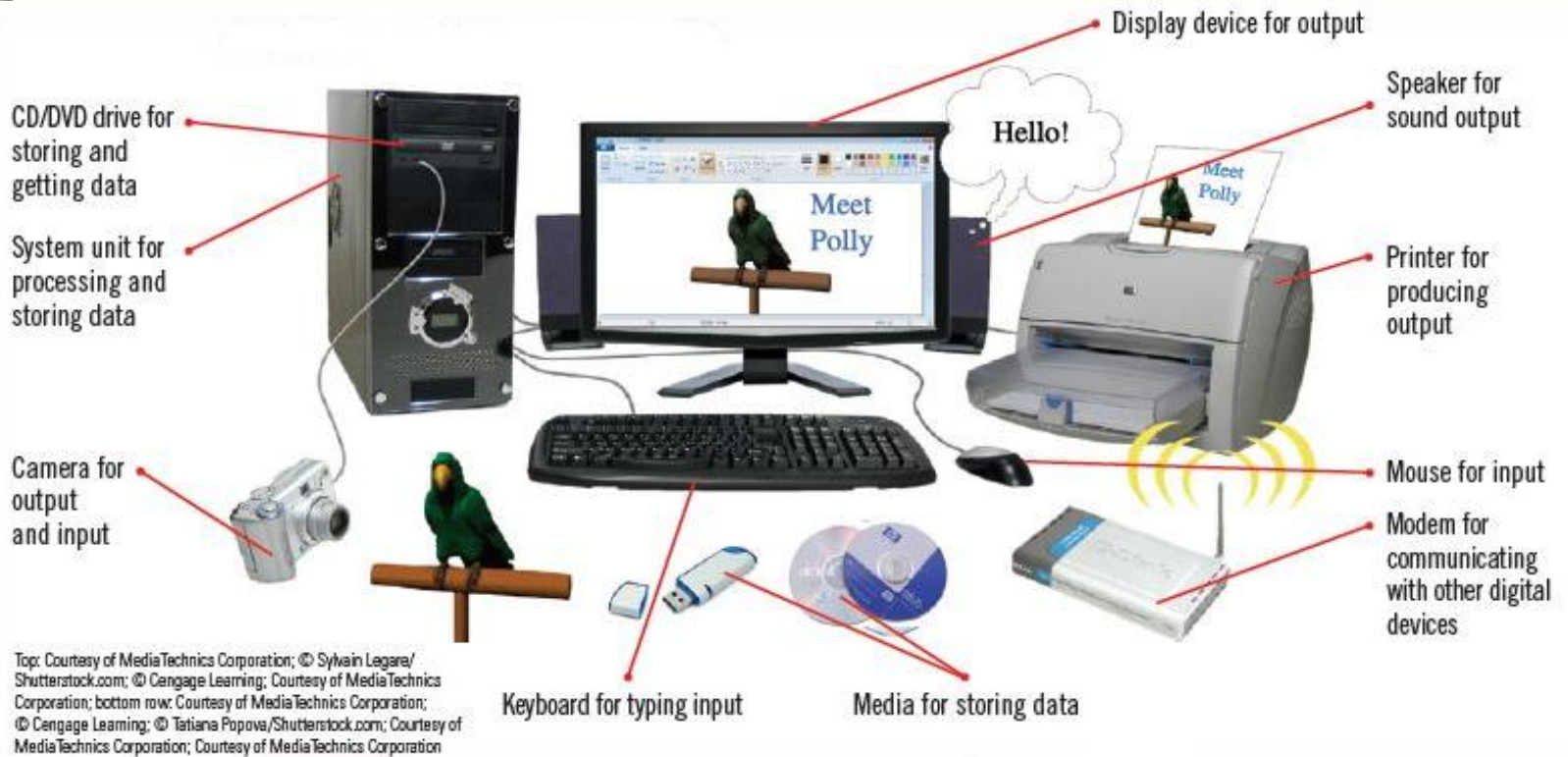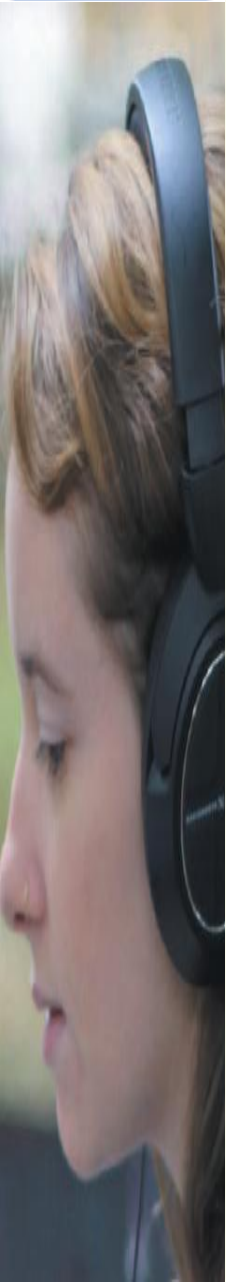 - ➢ Flash drive, etc.

Figure A-3: Basic computer parts and functions

Types of Computers

- Types of personal computers:
  - ➤ Desktop computers
  - ➤ Portable computers
    - Notebook computers (sometimes called laptop computers)
    - Netbooks
    - Tablet computers

- Handheld computers include:
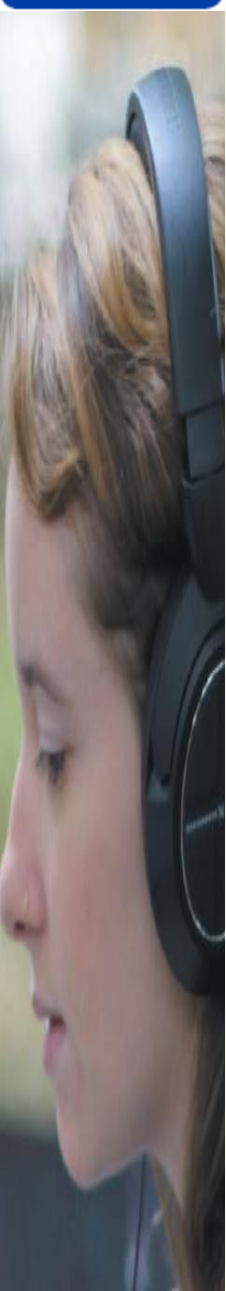 - ➤ Smartphones
  - ➤ Electronic readers

Figure A-6: Examples of portable personal computers

Types of Computers (continued)

- Workstations:
  - Powerful desktop computers designed for specialized tasks

- Mainframe computers:
  - Large, expensive computers that can process data for thousands of users

- Supercomputers:
  - Fastest computers that can handle tasks too complex for other computers

Types of Computers (continued)

- Servers:
  - ➢ Special networked computers that share/serve data to other computers

- Video game consoles:
  - ➢ Currently not considered replacements to personal computers

Personal Computers

- Basic parts of a desktop personal computer system:
  - ➤ System unit
  - ➤ Display device – monitor
  - ➤ Keyboard
  - ➤ Mouse
  - ➤ Storage devices:
    - • Hard disk drive
    - • USB flash drive
    - • Optical drives

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Personal Computers (continued)

- Basic parts of a desktop personal computer system (continued):
  - ➢ Sound system
  - ➢ Printer
  - ➢ Web cam
  - ➢ Digital media players
  - ➢ Digital cameras
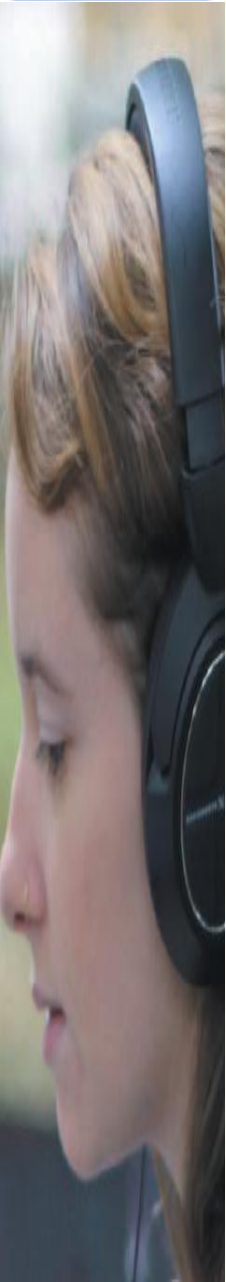 - ➢ Network and Internet access device
    - Modem

Figure A-9: Typical desktop computer system with examples of peripherals

Computer Software

- Operating system (OS):
  - ➢ Master controller for all activities within a computer system
  - ➢ Classified as system software

- Computer platform:
  - ➢ Determines hardware and software of system
  - ➢ PC platform – Windows operating system
  - ➢ Mac platform – Macintosh OS
  - ➢ Linux OS

Computer Software (continued)

- Graphical user interface (GUI) – Displays on-screen graphical controls

- Application software – Programs that help perform tasks

- Apps/mobile apps – Programs that run on mobile devices
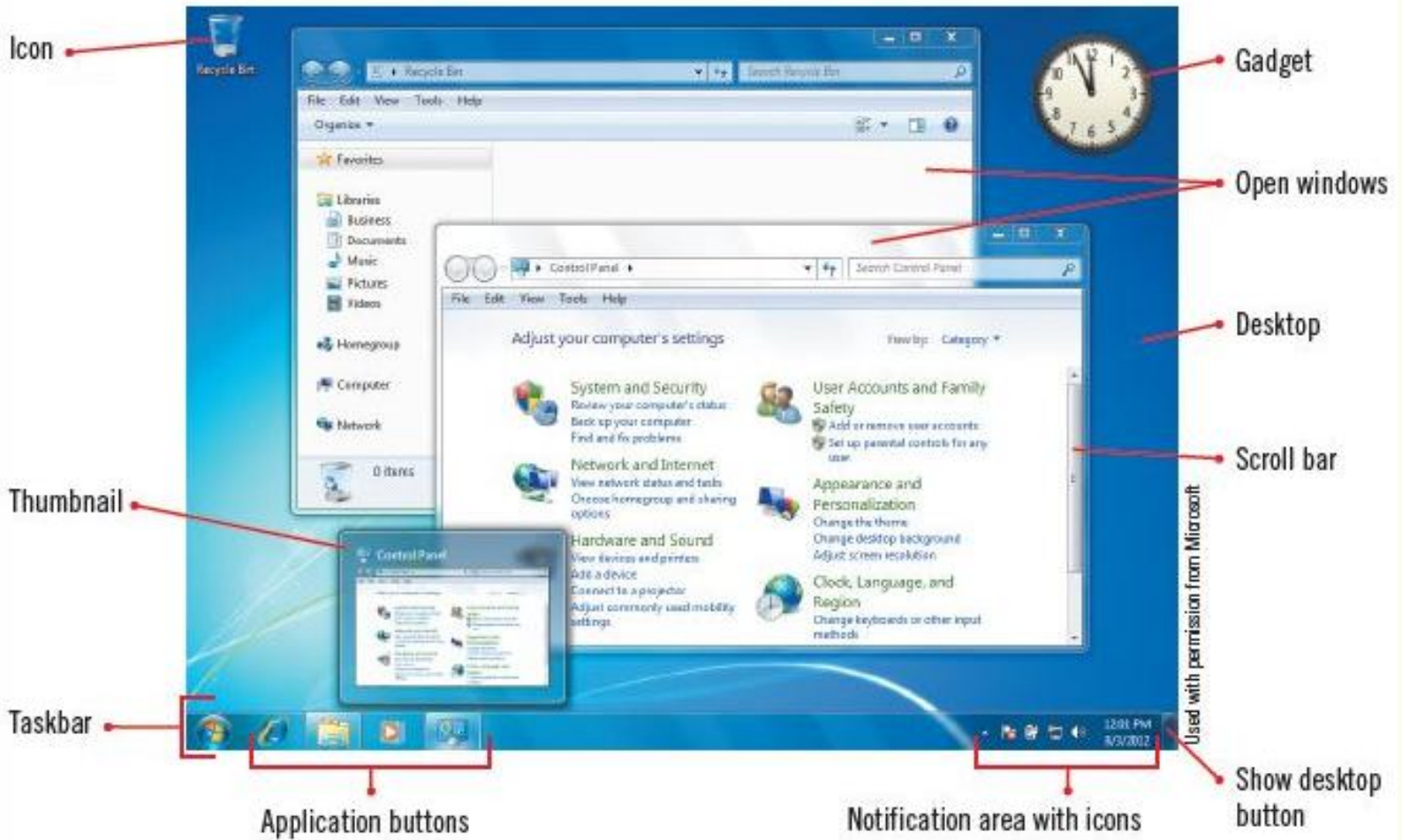
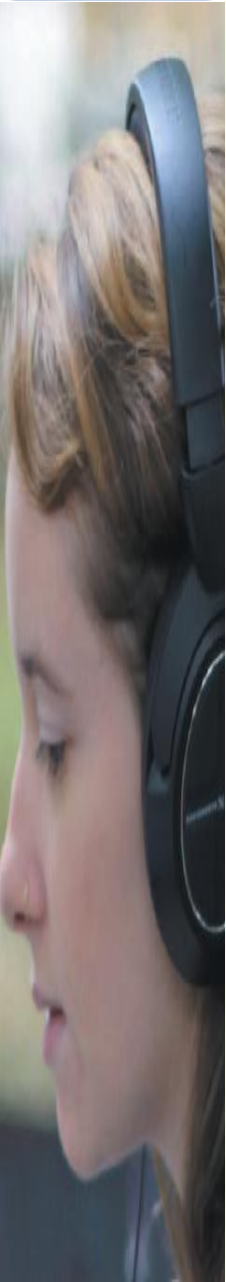- Sharing files – Depends on system compatibility

Figure A-11: Popular elements of a GUI

The Internet and the Web

- The Internet – World's largest computer network:

  - ➤ Accessed via routers through an Internet Service provider (ISP) using either wires/cables or wireless access

- Web (short for World Wide Web):

  - ➤ Collection of Web pages, interconnected through the use of hypertext or links

The Internet and the Web (continued)

- Uses of the Internet:
  - ➢ Communicate with others:
    - Electronic mail (also called email)
    - Chat group
    - Instant messaging (IM)
    - Internet telephony – Voice Over IP (VoIP)
    - Blog
  - ➢ E-commerce
  - ➢ Research

The Internet and the Web (continued)

- Web Browser – Software to view Web pages

- Web site – Group of Web pages
  - ➢ Home page – Main page of Web site

- Search site – Provides search capabilities
  - ➢ Keyword – Describes search criteria
  - ➢ Search engine – Uses keywords to locate Web sites

The Internet and the Web (continued)

- URL (Uniform Resource Locator) – Location/address of Web resources:
  - ➢ Every Web page has a unique URL

Figure A-14: Parts of a URL

- HTTP (Hypertext Transfer Protocol):
  - ➢ Communications standard used to transport Web pages over the Internet

Type a search word or phrase, then click Go

Click the arrow to see a list, then click a national park name

www.nps.gov

Click a link to view a different page

Figure A-15: Navigating a Web page

The Internet and the Web (continued)

- Web Application – Software accessed through a Web Browser

- Cloud Computing – Data stored on the Web
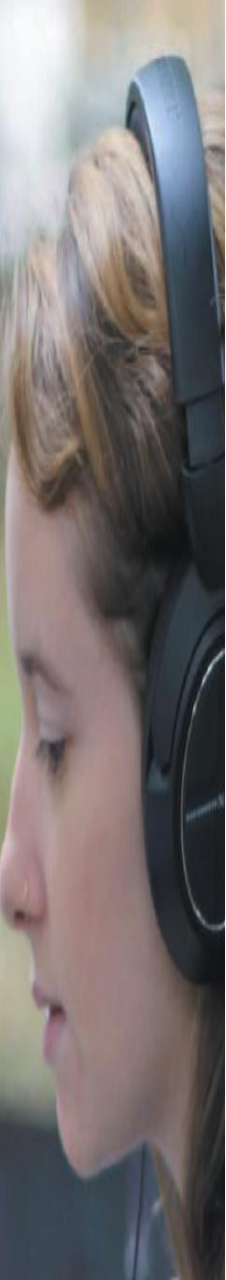
How to Communicate Using Digital Devices

- Email – Electronic mail

- Email account:

  ➢ Need an email provider, such as an Internet service provider, university, Gmail, Hotmail, etc.

  ➢ Email address – Unique identifier

David_velez@rutgers.edu		
User ID	"at" symbol	Name of email provider

Figure A-16: Parts of an email address

How to Communicate Using Digital Devices (continued)

- Email message parts:
  - Recipient's email address
  - Address of additional recipients
  - Message subject and body
  - Optional – File attachments

How to Communicate Using Digital Devices (continued)

- Internet Forum – Web site where users can post/discuss by topic/thread

- Wiki – Collaborative Web site allowing posted material to be edited by users

- Text messages - Typed messages sent using smartphones or other mobile devices

# How to Communicate Using Digital Devices (continued)

- Social networking – Online activity allowing registered members to communicate with others in the network

Figure A-18: Social networking with friends, family, and coworkers

How to Protect Your Privacy, Data, and Devices

- Computer vulnerabilities:
  - ➤ Physical Damage
  - ➤ Theft
  - ➤ Unauthorized access
  - ➤ Malware and viruses
  - ➤ Loss of hardware and/or data
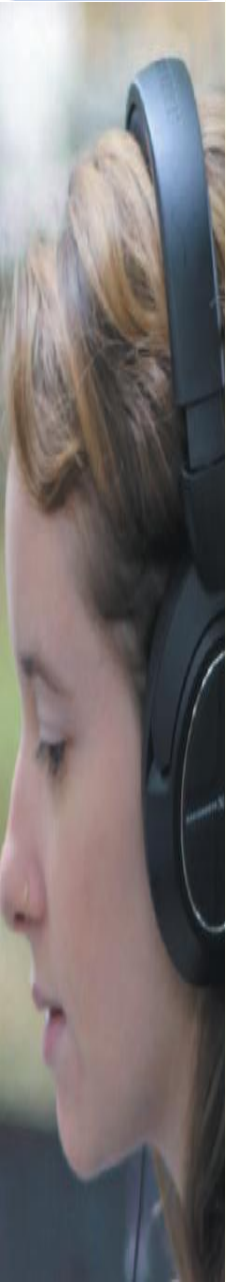
How to Protect Your Privacy, Data, and Devices (continued)

- Computer safeguards:

  ➢ Updated operating systems

  ➢ Installed anti-virus and anti-malware software

  ➢ Strong passwords

  ➢ Important data backed up

  ➢ Physically anchored/locked computers
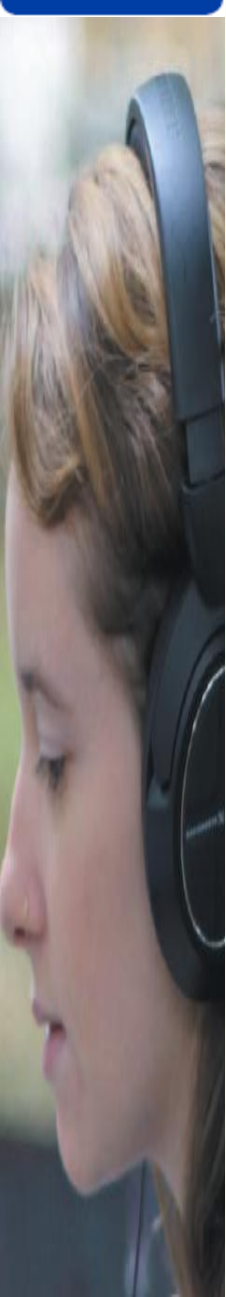
| Tips	Tips
Do not publish or post personal information, such as your home address, passwords, Social Security number, phone number, or account numbers.	Do not submit data to a social networking site until you've read its privacy policy and have made sure that you can remove your data when you no longer want to participate.
If asked for personal information, verify the Web site is legitimate, or make a phone call to confirm that you have to submit the information, and then confirm that the information will be securely transmitted and stored.	Avoid financial transactions when using a public computer. Never click the save my password box and make sure you log out from password-protected sites.
Be wary of contacts you make in public chat rooms and on social networking sites.	Never use a password-protected Web site on a public computer that doesn't give you the option to save the password.

Table A-1: Ways to protect your privacy
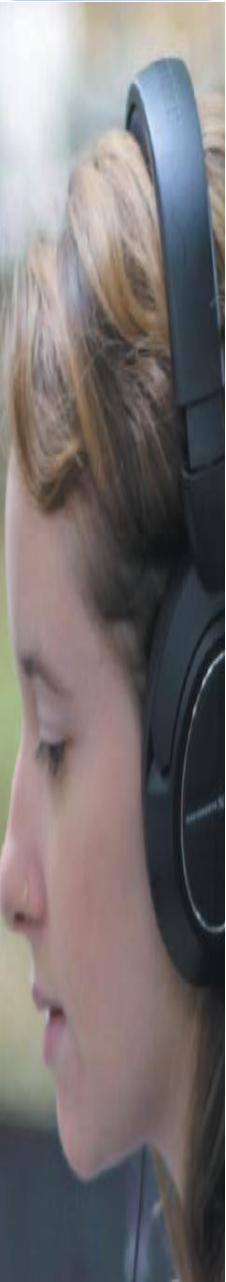
Talking Points:
Who Is Reading Your E-Mail?

- Think of email as a postcard rather than a letter

  - FBI has e-mail scanning technology

  - Many U.S. businesses monitor employee email

  - Email may be forwarded to others

  - Email providers store backups and can gather data from them

  - Court decisions seem to state that email messages on an organization's system are the property of the organization

Summary

- This unit introduced:
  - ➤ Computer in your world
  - ➤ How computers work
  - ➤ Types of computers
  - ➤ Personal computers
  - ➤ Computer software
  - ➤ The Internet and the Web
  - ➤ How to communicate using digital devices
  - ➤ How to protect your privacy, data, and devices