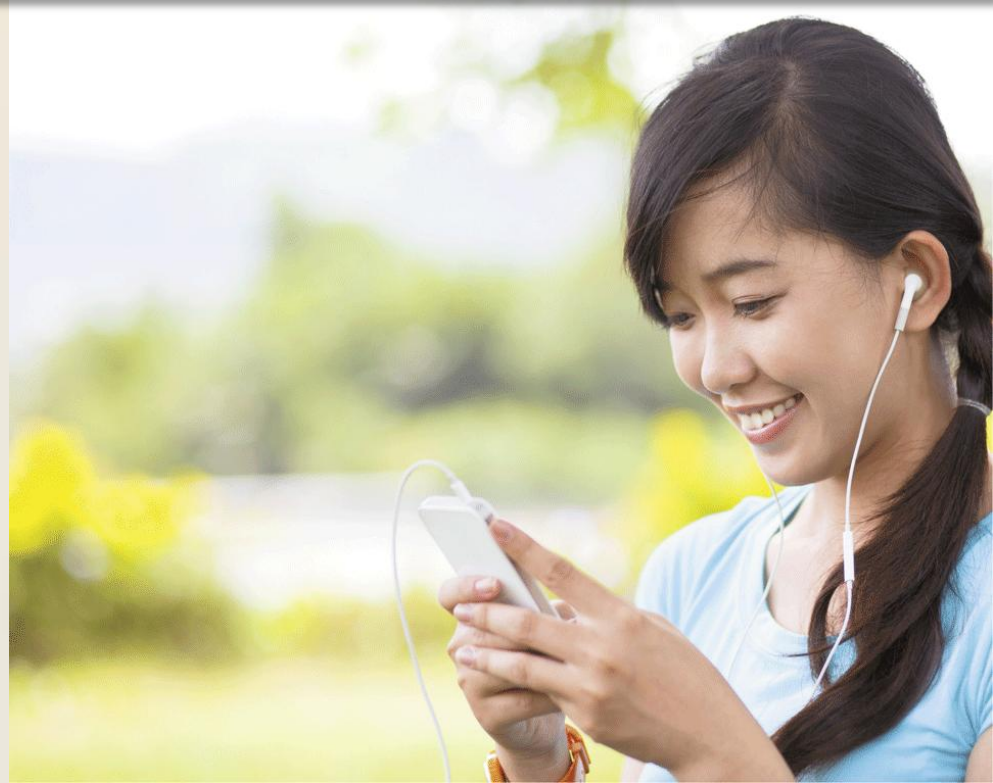


# Discovering Computers

Technology in a World of Computers,  
Mobile Devices, and the Internet

## Chapter 3

### Computers and Mobile Devices



# Objectives Overview

Describe the characteristics and uses of desktops, laptops, tablets, and handheld computers

Describe the characteristics and types of servers

Differentiate among POS terminals, ATMs, and self-service kiosks

Describe cloud computing and identify its uses

Describe the characteristics and uses of smartphones, digital cameras, portable media players, and e-book readers

# Objectives Overview

Describe the characteristics of and ways to interact with game devices

Identify uses of embedded computers

Differentiate a port from a connector, identify various ports and connectors, and differentiate among Bluetooth, Wi-Fi, and NFC wireless device connections

Identify safeguards against hardware theft and vandalism and hardware failure

Discuss ways to prevent health-related injuries and disorders caused from technology use, and describe ways to design a workplace ergonomically

# Computers and Mobile Devices

- Types of computers include:

Desktop and mobile computers

Servers and terminals

Smartphones, digital cameras, e-book readers and portable media players

Game devices

Embedded computers

# Desktops and Mobile Computers

- 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 easily can carry it from place to place

# Desktops and Mobile Computers



# Desktops and Mobile Computers

- 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





# Desktops and Mobile Computers

- A **laptop**, also called a notebook computer, is a thin, lightweight mobile computer with a screen in its lid and a keyboard in its base





# Desktops and Mobile Computers

- A **tablet** is a thin, lightweight mobile computer that has a touch screen



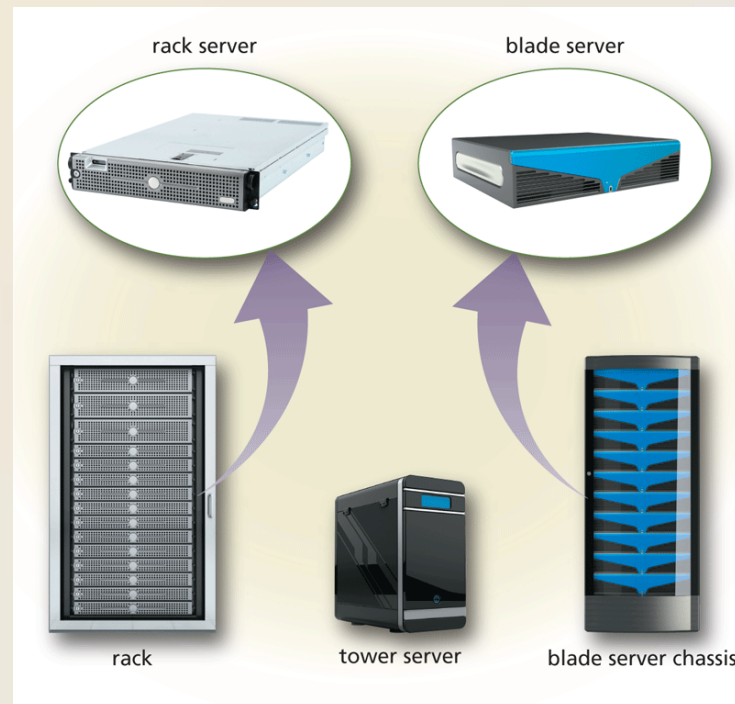
# Desktops and Mobile Computers

- A **handheld computer** is a computer small enough to fit in one hand



# Servers

- A **server** is a computer dedicated to providing one or more services to other computers or devices on a network
  - Rack server
  - Blade server
  - Tower server



# Servers

**Table 3-1 Dedicated Servers**

| Type                                   | Main Service Provided   |
|--|---|
| <i>Application server</i>              | Stores and runs apps  |
| <i>Backup server</i>                   | Backs up and restores files, folders, and media   |
| <i>Database server</i>                 | Stores and provides access to a database  |
| <i>Domain name server</i>              | Stores domain names and their corresponding IP addresses  |
| <i>File server (or storage server)</i> | Stores and manages files  |
| <i>FTP server</i>                      | Stores files for user upload or download via FTP  |
| <i>Game server</i>                     | Provides a central location for online game play  |
| <i>Home server</i>                     | Provides storage, Internet connections, or other services to computers and devices in a household |
| <i>List server</i>                     | Stores and manages email lists  |
| <i>Mail server</i>                     | Stores and delivers email messages  |
| <i>Network server</i>                  | Manages network traffic   |
| <i>Print server</i>                    | Manages printers and documents being printed  |
| <i>Web server</i>                      | Stores and delivers requested webpages to a computer via a browser                                |

# Servers

- A mainframe is a large, expensive, powerful server that can handle hundreds or thousands of connected users simultaneously





# Supercomputers

- A supercomputer is the fastest, most powerful computer — and the most expensive



# Terminals

- A terminal is a computer, usually with limited processing power, that enables users to send data to and/or receive information from a server, or host computer
- A thin client is a terminal that looks like a desktop but has limited capabilities and components
- Most retail stores use a POS terminal to record purchases, process credit or debit cards, and update inventory





# Terminals

- An ATM (automated teller machine) is a self-service banking terminal that connects to a host computer through a network



# Terminals

- A self-service kiosk is a freestanding terminal that usually has a touch screen for user interaction

**Table 3-2 Self-Service Kiosks**

| Type            | Typical Services Provided  |
|-----------------|--|
| Financial kiosk | Pay bills, add minutes to phone plans, add money to prepaid cards, and perform other financial activities.   |
| Photo kiosk     | Print photos from digital images. Some allow editing of digital photos. Users may print directly at the kiosk or may send an order to a photo lab to be printed. |
| Ticket kiosk    | Print tickets. Located in airports, amusement parks, movie theaters, rental companies, and train stations.   |
| Vending kiosk   | Dispense item after payment is received. Examples include DVD rentals and license plate renewals.  |
| Visitor kiosk   | Manage and track visitors upon check-in. Located in businesses, schools, hospitals, and other areas where access is controlled or registration is required.      |

# Cloud Computing

- **Cloud computing** refers to an environment of servers that house and provide access to resources users access through the Internet



# Mobile Devices

- A **smartphone** is an Internet-capable phone that usually also includes a calendar, an appointment book, an address book, a calculator, a notepad, games, browser, and numerous other apps
- Many smartphones have touch screens. Instead of or in addition to a touch screen, some have a built-in mini keyboard on the front of the phone or a keyboard that slides in and out from behind the phone

# Mobile Devices



on-screen  
keyboard



swipe  
keyboard app



mini keyboard



keypad



slide out keyboard



portable keyboard



virtual keyboard

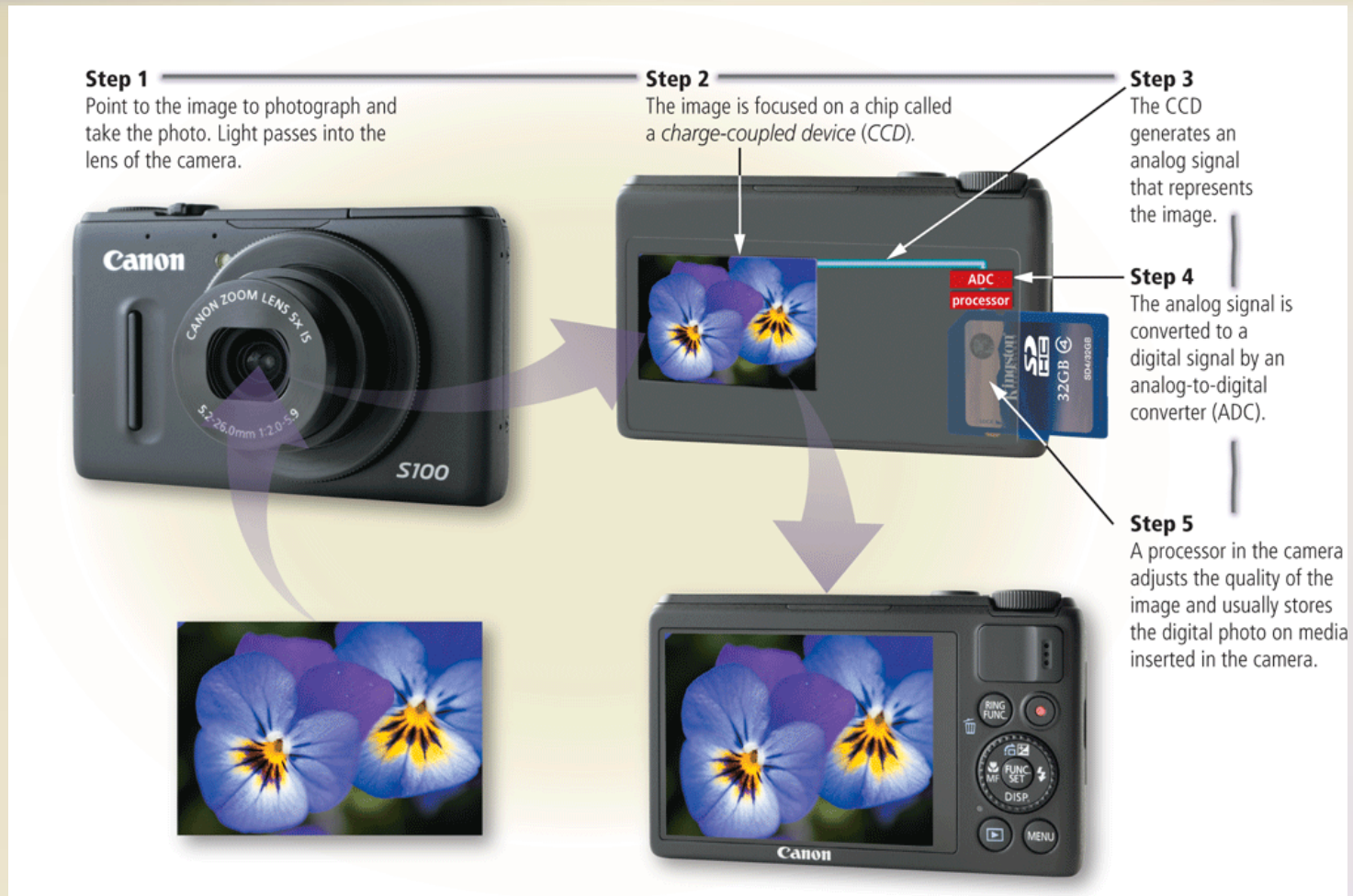
# Mobile Devices

- A **digital camera** is a mobile device that allows users to take photos and store the photographed images digitally





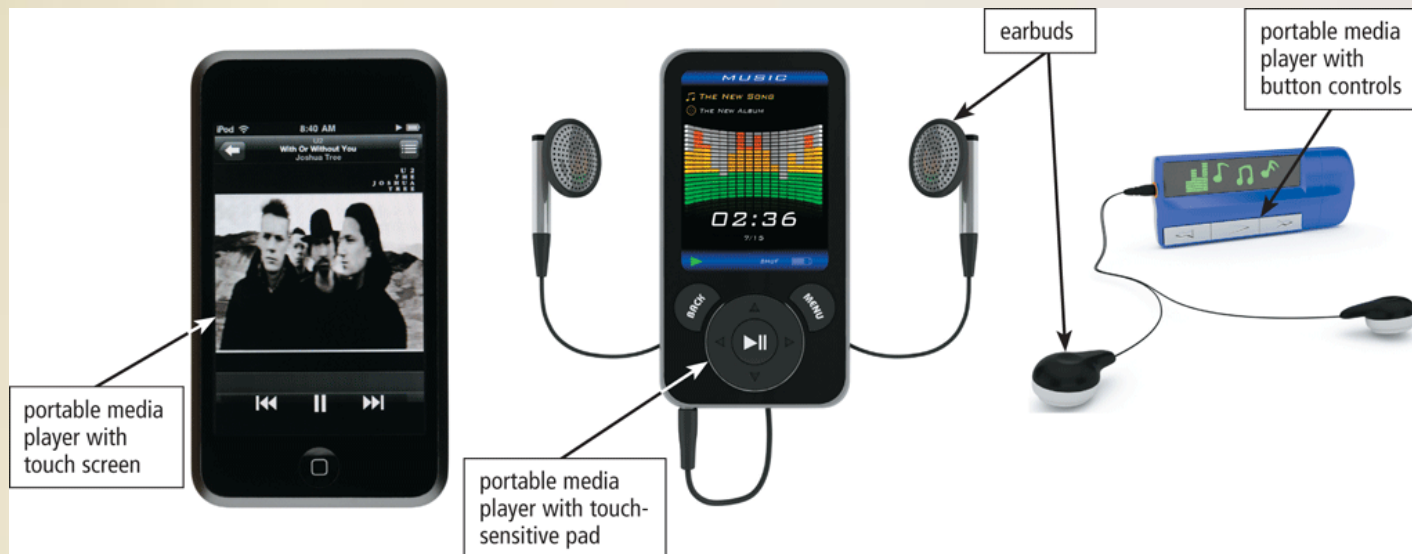
# Mobile Devices





# Mobile Devices

- A **portable media player**, sometimes called a personal media player, is a mobile device on which you can store, organize, and play or view digital media



# Mobile Devices

- An **e-book reader** (short for electronic book reader), or e-reader, is a mobile device that is used primarily for reading e-books and other digital publications



# Game Devices

- A **game console** is a mobile computing device designed for single-player or multiplayer video games
- A **handheld game device** is a small mobile device that contains a screen, speakers, controls, and game console all in one unit
- Game controllers include gamepads, joysticks and wheels, dance pads, and a variety of motion-sensing controllers

# Game Devices



gamepad



joystick



pedals and wheel



dance pad



motion-sensing game  
controller



guitar



balance board

# Embedded Computers

- An **embedded computer** is a special-purpose computer that functions as a component in a larger product

Consumer  
electronics

Home  
automation  
devices

Automobiles

Process  
controllers and  
robotics

Computer  
devices and  
office machines



# Embedded Computers



# Putting It All Together

**Table 3-3 Categories of Computers and Mobile Devices**

| <b>Category</b>                     | <b>Physical Size</b>                    | <b>Number of Simultaneously Connected Users</b> | <b>General Price Range</b>                              |
|-------------------------------------|---|---|---|
| Personal computers (desktop)        | Fits on a desk                          | Usually one (can be more if networked)          | Several hundred to several thousand dollars             |
| Mobile computers and mobile devices | Fits on your lap or in your hand        | Usually one                                     | Less than a hundred dollars to several thousand dollars |
| Game consoles                       | Small box or handheld device            | One to several                                  | Several hundred dollars or less                         |
| Servers                             | Small cabinet to room full of equipment | Two to thousands                                | Several hundred to several million dollars              |
| Supercomputers                      | Full room of equipment                  | Hundreds to thousands                           | Half a million to several billion dollars               |
| Embedded computers                  | Miniature                               | Usually one                                     | Embedded in the price of the product                    |



# Ports and Connections


- A **port** is the point at which a peripheral device attaches to or communicates with a computer or mobile device so that the peripheral device can send data to or receive information from the computer or mobile device



# Ports and Connections

- A **connector** joins a cable to a port. A connector at one end of a cable attaches to a port on the computer or mobile device, and a connector at the other end of the cable attaches to a port on the peripheral device

# Ports and Connections

| Table 3-4 Popular Ports and Connectors |   |   |                         |   |   |
|--|---|---|-------------------------|---|---|
| Port Type                              | Connector Photo   | Port Photo  | Port Type               | Connector Photo   | Port Photo  |
| DisplayPort (audio/video)              |    |    | Mini HDMI (audio/video) |    |    |
| DVI (digital video interface)          |    |    | Network (Ethernet)      |    |    |
| FireWire                               |    |    | Speaker                 |    |    |
| HDMI (audio/video)                     |    |    | Thunderbolt             |    |    |
| Headphones                             |    |    | USB (Type A)            |    |    |
| Lightning                              |   |   | USB (Type B)            |  |  |
| Microphone                             |  |  | VGA                     |  |  |
| Mini USB                               |  |  |                         |   |   |

# Ports and Connections

- A **USB port**, short for universal serial bus port, can connect up to 127 different peripheral devices together with a single connector
- Instead of connecting peripheral devices directly to ports on a mobile computer, some mobile users prefer the flexibility of port replicators and docking stations

# Ports and Connections



# Ports and Connections

- Instead of connecting computers and mobile devices to peripheral devices with a cable, some peripheral devices use wireless communications technologies

**Bluetooth**

**Wi-Fi**

**NFC**

# Protecting Hardware

- Some schools and businesses use cables to lock computers and help prevent theft of equipment





# Protecting Hardware

- Hardware can fail for a variety of reasons: aging hardware; random events such as electrical power problems; and even errors in programs or apps
  - Undervoltage
  - Overvoltage or power surge

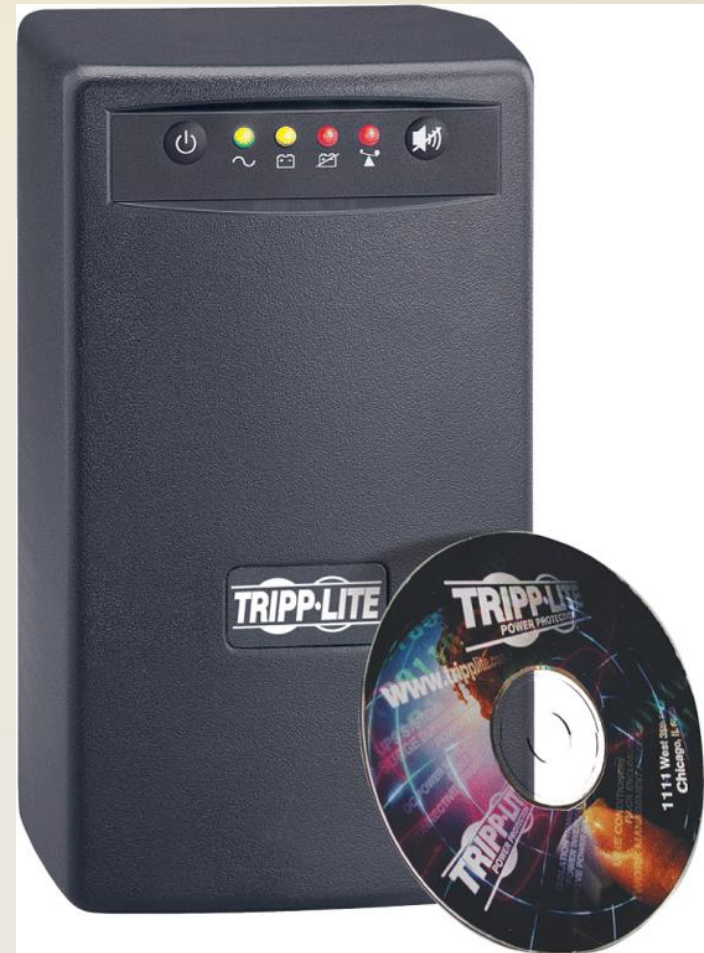
# Protecting Hardware

- A **surge protector**, also called a surge suppressor, uses electrical components to provide a stable current flow and minimize the chances of an overvoltage reaching the computer and other electronic equipment



# Protecting Hardware

- An **uninterruptible power supply (UPS)** is a device that contains surge protection circuits and one or more batteries that can provide power during a temporary or permanent loss of power



# Health Concerns of Using Technology

- A repetitive strain injury (RSI) is an injury or disorder of the muscles, nerves, tendons, ligaments, and joints
- **Computer vision syndrome** (CVS) is a technology-related health condition that affects eyesight
- **Ergonomics** is an applied science devoted to incorporating comfort, efficiency, and safety into the design of items in the workplace
- **Technology addiction** occurs when the technology consumes someone's entire social life

# Health Concerns of Using Technology



# Summary

Characteristics of and purchasing guidelines for desktops, laptops, tablets, smartphone, digital cameras, and portable media players

Handheld computers, servers, supercomputers, point-of-sale terminals, ATMs, self-service kiosks, e-book readers, game devices, embedded computers, and cloud computing

Ports and connections

Ways to protect hardware

Health concerns of using technology and preventative measures



# Discovering Computers

Technology in a World of Computers,  
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## Chapter 3

### Computers and Mobile Devices

Chapter 3 Complete

