Discovering Computers Enhanced Edition ©2017

Tools, Apps, Devices, and the Impact of Technology

Chapter 3

Computers and Mobile Devices



Objectives Overview

- Describe the characteristics and uses of laptops, tablets, desktops, and all-in-ones
- 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 and digital media players, e-book readers, and wearable devices

See Page 108
for Detailed Objectives

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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

See Page 108
for Detailed Objectives

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Computers and Mobile Devices

- Types of **computers** and **mobile devices** include:

Laptops, tablets, and desktops

Servers and terminals

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

Game devices

Embedded computers

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Mobile Computers and Desktops

- A **mobile computer** is a portable personal computer, designed so that a user easily can carry it from place to place
- A personal computer (PC) is a mobile computer or desktop 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

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Mobile Computers and Desktops



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Figure 3-1

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Mobile Computers and Desktops

- 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



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Figure 3-3

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Mobile Computers and Desktops

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



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Figure 3-4

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Mobile Computers and Desktops

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

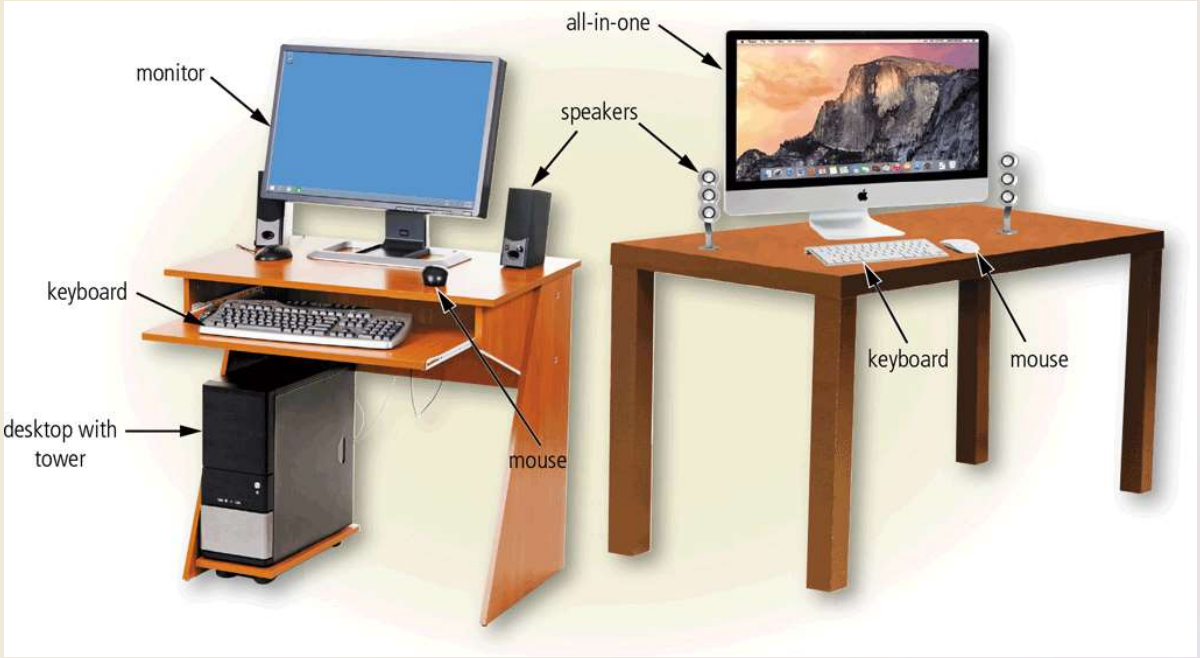


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Figure 3-6

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Mobile Computers and Desktops

- 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

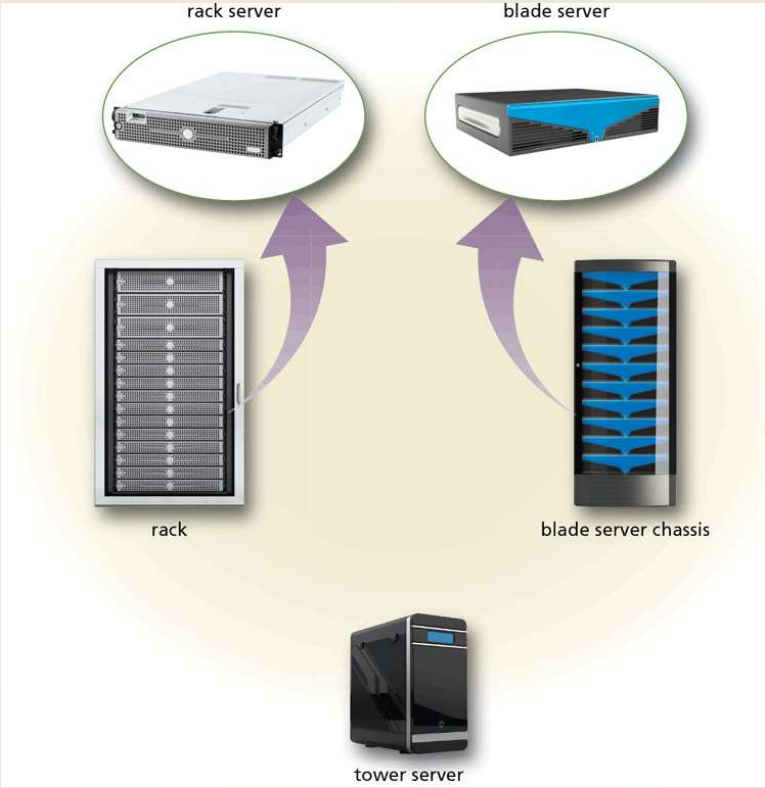


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Figure 3-7

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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



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Figure 3-8

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Servers

Table 3-1 Dedicated Servers

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

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Table 3-1

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Servers

- Virtualization is the practice of sharing or pooling computing resources, such as servers and storage devices
  - Server virtualization uses software to enable a physical server to emulate the hardware and computing capabilities of one or more servers, known as virtual servers
- A server farm is a network of several servers together in a single location

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Servers

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



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Figure 3-9

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



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Figure 3-10

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Terminals

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



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Figure 3-11

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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.

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Table 3-2

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Supercomputers

- A supercomputer is the fastest, most powerful computer – and the most expensive
  - Capable of processing many trillions of instructions in a single second



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Figure 3-13

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Cloud Computing

- **Cloud computing** refers to an environment that provides resources and services accessed via the Internet



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Mobile Devices

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

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Mobile Devices



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Figure 3-15

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Mobile Devices

Short Message Service (SMS)

- Mobile to mobile
- Mobile to email
- Mobile to provider
- Web to mobile

Multimedia Message Service (MMS)

- Mobile to mobile
- Mobile to email

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Mobile Devices

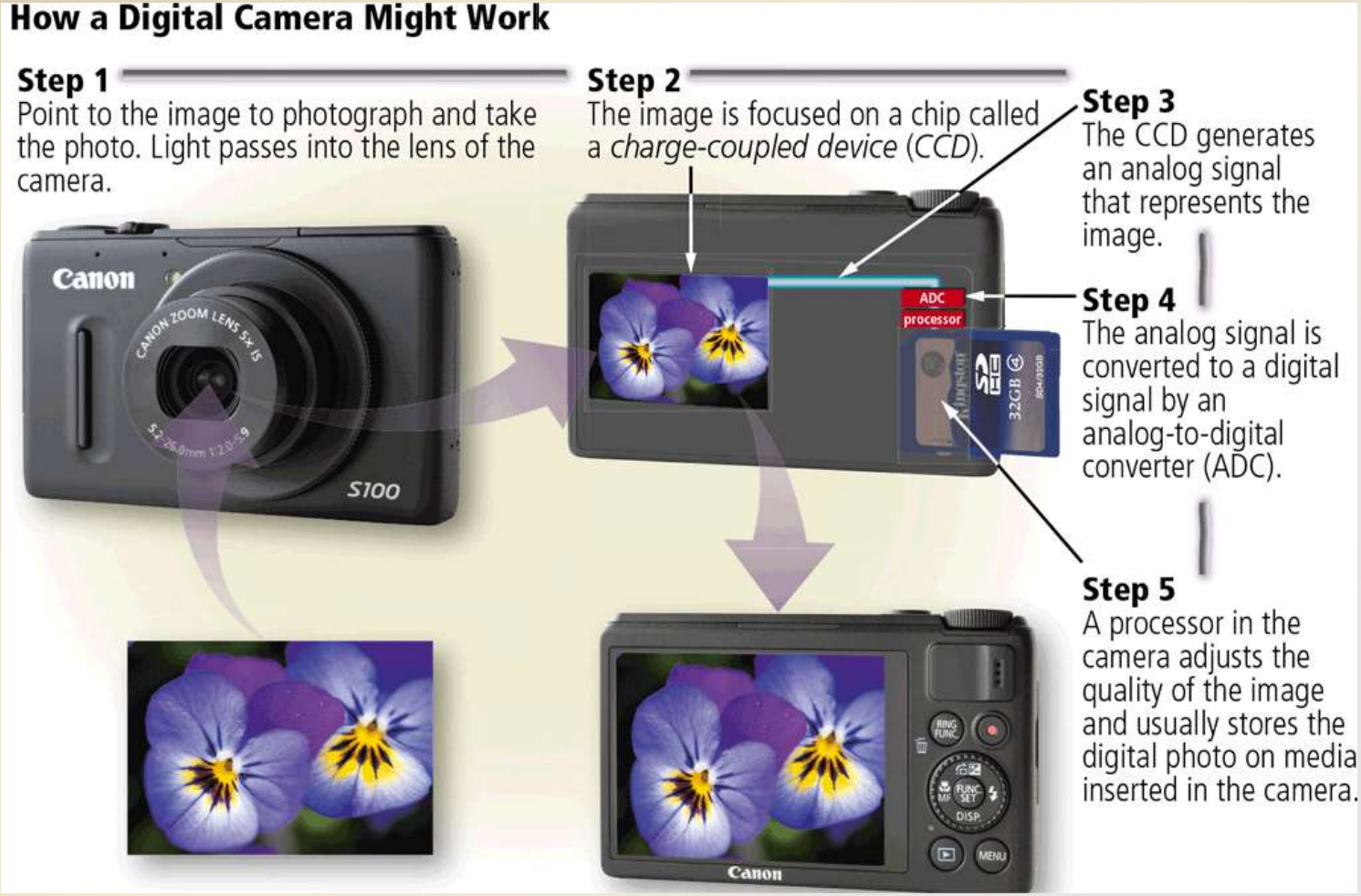
- A **digital camera** is a mobile device that allows users to take photos and store the photographed images digitally
  - Smart digital camera
  - Point-and-shoot camera
  - SLR camera



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Figure 3-16

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Mobile Devices

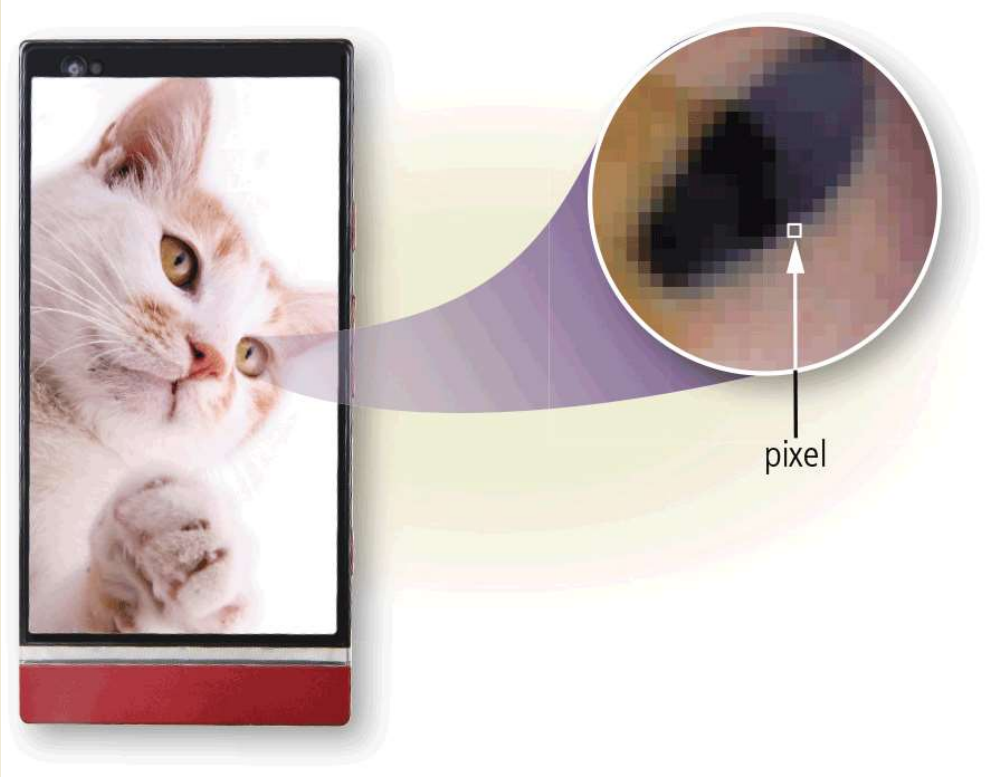


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Figure 3-17

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Mobile Devices

- **Resolution** is the number of horizontal and vertical pixels in a display



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Mobile Devices

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



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Figure 3-19

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Mobile Devices

- A **digital media player** or streaming media player is a device, typically used in a home, that streams digital media from a computer or network to a television, projector, or some other entertainment device



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Figure 3-20

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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



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Figure 3-21

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Mobile Devices

- A **wearable device** or wearable is a small, mobile computing device designed to be worn by a consumer



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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

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Game Devices

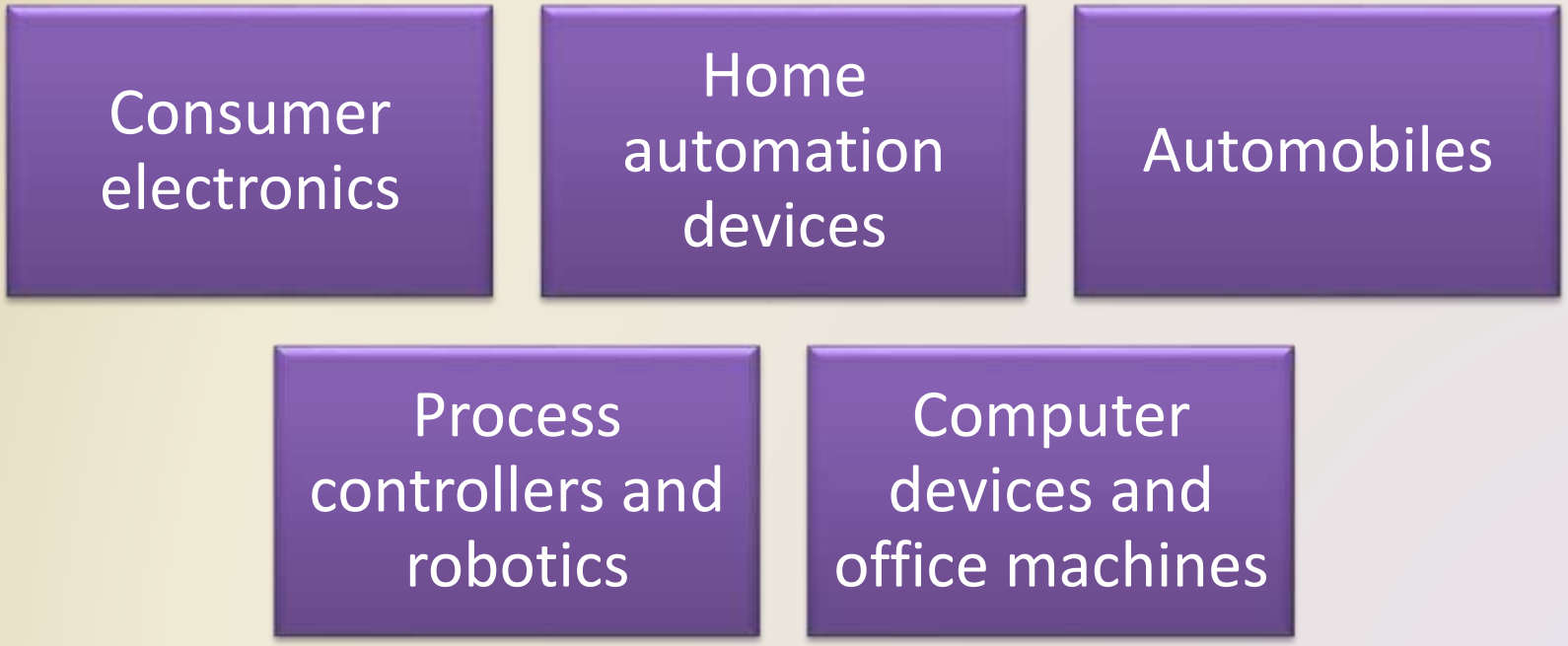


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Figure 3-23

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Embedded Computers

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



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Embedded Computers



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Figure 3-24

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Putting It All Together

Table 3-3 Categories of Computers and Mobile Devices

Category	Physical Size	Number of Simultaneously Connected Users	General Price Range
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

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Table 3-3

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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



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Figure 3-25

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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

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Ports and Connections

Table 3-4 Popular Ports and Connectors

Port Type	Connector Photo	Port Photo
DisplayPort (audio/video)		
DVI (digital video interface)		
HDMI (audio/video)		
Headphones		
Lightning		
Microphone		
Micro USB		
Mini DisplayPort		

Port Type	Connector Photo	Port Photo
Mini USB		
Mini HDMI (audio/video)		
Network (Ethernet)		
Speaker		
Thunderbolt		
USB (Type A)		
USB (Type B)		
VGA		

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Table 3-4

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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

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Ports and Connections



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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

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Protecting Hardware

- To help reduce the chances of theft, companies and schools use a variety of security measures
  - Physical access controls
  - Alarm system
  - Physical security devices
  - Security or device-tracking app
  - Require identification



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Figure 3-27

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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**

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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



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Figure 3-28

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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



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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

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Health Concerns of Using Technology



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Summary

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

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

Ports and connections

Ways to protect hardware

Health concerns of using technology and preventative measures

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Tools, Apps, Devices, and the Impact of Technology

Chapter 3

Computers and Mobile Devices



Chapter 3 Complete