• Chapter 1: Basic Introduction to Computers
• Chapter 2: Fundamentals of the World Wide Web and Internet
• Chapter 3: Software for Systems
• Chapter 4: System Unit Components
• Chapter 5: Understanding Input
• Chapter 6: Understanding Output
• Chapter 7: Types of Storage
• Chapter 8: Types of Utility Programs and Operating Systems
• Chapter 9: Networks and Communications
• Chapter 10: Managing a Database
• Chapter 11: Manage Computing Securely, Safely, and Ethically
• Chapter 12: Exploring Information System Development
• Chapter 13: Computer Programs and Programming Languages
• Chapter 14: Enterprise Computing
• Chapter 15: Careers in Computer and Certification
Chapter 1
Basic Introduction to Computers

Discovering Computers 2012
Your Interactive Guide to the Digital World
Objectives Overview

- Explain why computer literacy is vital to success in today’s world
- Define the term, computer, and describe the relationship between data and information
- Describe the five components of a computer
- Discuss the advantages and disadvantages that users experience when working with computers
- Define the term, network, and identify benefits of sharing resources on a network
- Discuss the uses of the Internet and World Wide Web
Objectives Overview

- Distinguish between system software and application software
- Differentiate among types, sizes, and functions of computers in each category
- Describe the role of each element in an information system
- Explain how home users, small office/home office users, mobile users, power users, and enterprise users each interact with computers
- Discuss how society uses computers in education, finance, government, health care, science, publishing, travel, and manufacturing

See Page 3 for Detailed Objectives
A World of Computers

• Computers are everywhere
What Is a Computer?

- A **computer** is an electronic device, operating under the control of instructions stored in its own memory.

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**Information Processing Cycle**

1. Collects **data** (input)
2. Processing
3. Produces **information** (output)
What Is a Computer?

DATA

- 2 Medium Sodas: $1.49 each
- 1 Small Turkey Sub: $3.49 each
- 1 Caesar Salad: $4.49 each
- 1 Bag of Chips: $0.99 each
- 3 Cookies: $0.39 each
- Amount Received: $20.00

INFORMATION

Arrow Deli
10 Park Street
Maple River, DE 20393
(734) 555-2939

<table>
<thead>
<tr>
<th>QTY</th>
<th>ITEM</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Medium Sodas</td>
<td>2.98</td>
</tr>
<tr>
<td>1</td>
<td>Small Turkey Sub</td>
<td>3.49</td>
</tr>
<tr>
<td>1</td>
<td>Caesar Salad</td>
<td>4.49</td>
</tr>
<tr>
<td>1</td>
<td>Bag of Chips</td>
<td>0.99</td>
</tr>
<tr>
<td>3</td>
<td>Cookies</td>
<td>1.17</td>
</tr>
</tbody>
</table>

Total Due: 13.12
Amount Received: 20.00
Change: 6.88

Thank You!

PROCESS

- Computes each item’s total price by multiplying the quantity ordered by the item price (i.e., 2 * 1.49 = 2.98).
- Organizes data.
- Sums all item total prices to determine order total due from customer (13.12).
- Calculates change due to customer by subtracting the order total from amount received (20.00 - 13.12 = 6.88).
The Components of a Computer

- A computer contains many electric, electronic, and mechanical components known as **hardware**

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input Device</strong></td>
<td>Allows you to enter data and instructions into a computer</td>
</tr>
<tr>
<td><strong>Output Device</strong></td>
<td>Hardware component that conveys information to one or more people</td>
</tr>
<tr>
<td><strong>System Unit</strong></td>
<td>Case that contains the electronic components of the computer that are used to process data</td>
</tr>
<tr>
<td><strong>Storage Device</strong></td>
<td>Records (writes) and/or retrieves (reads) items to and from storage media</td>
</tr>
<tr>
<td><strong>Communications Device</strong></td>
<td>Enables a computer to send and receive data, instructions, and information to and from one or more computers or mobile devices</td>
</tr>
</tbody>
</table>
Advantages and Disadvantages of Using Computers

**Advantages of Using Computers**
- Speed
- Reliability
- Consistency
- Storage
- Communications

**Disadvantages of Using Computers**
- Health Risks
- Violation of Privacy
- Public Safety
- Impact on Labor Force
- Impact on Environment
Advantages and Disadvantages of Using Computers

- **Green computing** involves reducing the electricity consumed and environmental waste generated when using a computer.

- **Strategies include:**
  - Recycling
  - Regulating manufacturing processes
  - Extending the life of computers
  - Immediately donating or properly disposing of replaced computers
A network is a collection of computers and devices connected together, often wirelessly, via communications devices and transmission media.
The Internet is a worldwide collection of networks that connects millions of businesses, government agencies, educational institutions, and individuals.
Networks and the Internet

- People use the Internet for a variety of reasons:

- Communicate
- Research and Access Information
- Shop
- Bank and Invest
- Online Trading
- Entertainment
- Download Videos
- Share Information
- Web Application
Networks and the Internet

• A **social networking Web site** encourages members to share their interests, ideas, stories, photos, music, and videos with other registered users.
Computer Software

- **Software**, also called a **program**, tells the computer what tasks to perform and how to perform them.

**System Software**
- Operating system
- Utility program

**Application Software**
Computer Software

- **Installing** is the process of setting up software to work with the computer, printer, and other hardware.
Computer Software

• A programmer develops software or writes the instructions that direct the computer to process data into information.
Computers in Society

• More impact than any other invention
  – Changed work and leisure activities
  – Used by all demographic groups

• Computers are important because:
  – Provide information to users
  – Information is critical to our society
  – Managing information is difficult
Computers in Society

• Impact of computers
  – Like the Impact of automobile

industry changed and throngs of people began working on assembly lines.
> Because of road development, suburbs became a feasible way for people to live close to a city without actually living in one.
> Because of car travel, motels, restaurants, and shopping centers sprang up in places where there had previously been nothing.

FIGURE 1A.22
At the beginning of the 20th century, few could envision how the automobile would change the world. Today, the same holds true for computers and other forms of technology.
Computers in Society

- The benefits of using computers
  - As varied as users
Computers in Society

• Computers at home
  – Many homes have multiple computers
  – Most American homes have Internet
  – Computers are used for
    • Communication
Computers in Society

• Computers at home
  – Computers are used for
    • Business
    • Entertainment
    • Schoolwork
    • Finances
Computers in Society

• Computers in education
  – Computer literacy required at all levels
Computers in Society

- Computers in small business
  - Makes businesses more profitable
  - Allows owners to manage
Computers in Society

• Computers in industry
  – Computers are used to design products
  – Assembly lines are automated
Computers in Society

• Computers in government
  – Necessary to track data for population
    • Police officers
  • Tax calculation and collection
    – Governments were the first computer users
Computers in Society

• Computers in health care
  – Revolutionized health care
  – New treatments possible
  – Scheduling of patients has improved
  – Delivery of medicine is safer
Categories of Computers

- Personal computers
- Mobile computers and mobile devices
- Game consoles
- Servers
- Mainframes
- Supercomputers
- Embedded computers
Personal Computers

- A **personal computer** can perform all of its input, processing, output, and storage activities by itself.
- Two popular architectures are the PC and the Apple.
  - Desktop computer
## Mobile Computers and Mobile Devices

<table>
<thead>
<tr>
<th><strong>Mobile Computer</strong></th>
<th><strong>Mobile Device</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal computer you can carry from place to place</td>
<td>Computing device small enough to hold in your hand</td>
</tr>
<tr>
<td>Examples include notebook computers, laptop computers, netbooks, ultra-thins, and <strong>Tablet PCs</strong></td>
<td>Examples include <em>smart phones</em> and PDAs, e-book readers, handheld computers, portable media players, and digital cameras</td>
</tr>
</tbody>
</table>
Mobile Computers and Mobile Devices

- Notebook computer
- Tablet PC
- Smart phones and PDAs
- E-book reader
Mobile Computers and Mobile Devices

- Handheld computer
- Portable media player
- Digital camera
Game Consoles

• A game console is a mobile computing device designed for single-player or multiplayer video games.
Servers

- A **server** controls access to the hardware, software, and other resources on a network
  
  - Provides a centralized storage area for programs, data, and information
Mainframes

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

- A **supercomputer** is the fastest, most powerful computer
  - Fastest supercomputers are capable of processing more than one quadrillion instructions in a single second
Embedded Computers

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

**Consumer Electronics**
- Mobile and digital telephones
- Digital televisions
- Cameras
- Video recorders
- DVD players and recorders
- Answering machines

**Home Automation Devices**
- Thermostats
- Sprinkling systems
- Security monitoring systems
- Appliances
- Lights

**Automobiles**
- Antilock brakes
- Engine control modules
- Airbag controller
- Cruise control

**Process Controllers and Robotics**
- Remote monitoring systems
- Power monitors
- Machine controllers
- Medical devices

**Computer Devices and Office Machines**
- Keyboards
- Printers
- Faxes
- Copiers
Adaptive cruise control systems detect if cars in front of you are too close and, if necessary, adjust the vehicle’s throttle, may apply brakes, and/or sound an alarm.

Advanced airbag systems have crash-severity sensors that determine the appropriate level to inflate the airbag, reducing the chance of airbag injury in low-speed accidents.

Tire pressure monitoring systems send warning signals if tire pressure is insufficient.

Drive-by-wire systems sense pressure on the gas pedal and communicate electronically to the engine how much and how fast to accelerate.

Cars equipped with wireless communications capabilities, called telematics, include such features as navigation systems, remote diagnosis and alerts, and Internet access.
Elements of an Information System

Hardware  Software  Data

People  Procedures
How the Elements of an Information System in an Enterprise Might Interact

**Step 1**
IT staff (people) develop processes (procedures) for recording checks (data) received from customers.

**Step 2**
Employees (people) in the accounts receivable department use a program (software) to enter the checks (data) in the computer.

**Step 3**
The computer (hardware) performs calculations required to process the accounts receivable data and stores the results on storage media such as a hard disk (hardware).

**Step 4**
Customer statements, the information, print on a corporate printer (hardware).
Examples of Computer Usage

**Home User**
- Personal financial management
- Web access
- Communications
- Entertainment

**Small Office/Home Office User**
- Look up information
- Send and receive e-mail messages
- Make telephone calls

**Mobile User**
- Connect to other computers on a network or the Internet
- Transfer information
- Play video games
- Listen to music
- Watch movies
Examples of Computer Usage

Power User
- Work with multimedia
- Use industry-specific software

Enterprise User
- Communicate among employees
- Process high volumes of transactions
- Blog
Computer Applications in Society

- Education
- Finance
- Government
- Health Care
Computer Applications in Society

Science
Publishing
Travel
Manufacturing
Video: Computer History in a Barn

CLICK TO START
Summary

Basic computer concepts

Components of a computer

Networks, the Internet, and computer software

Many different categories of computers, computer users, and computer applications in society