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
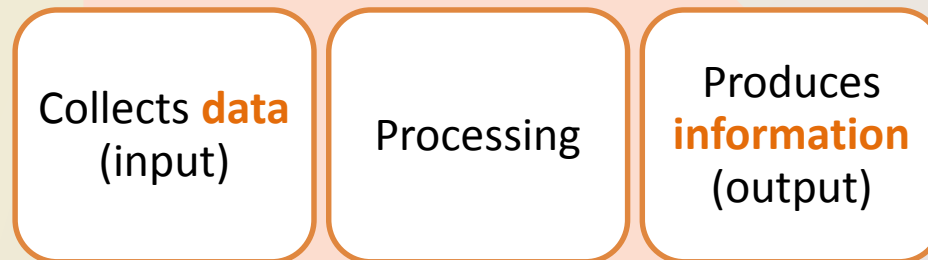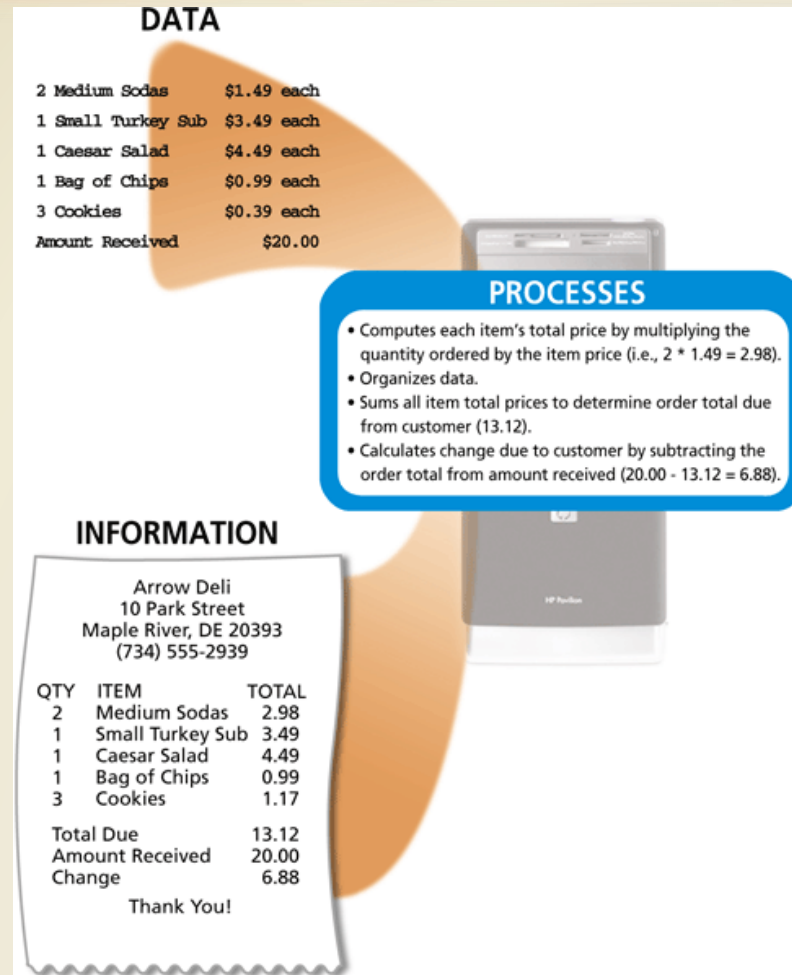
A World of Computers

- Computers are everywhere

What Is a Computer?

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

Collects **data** (input)	Processing	Produces **information** (output)

Information Processing Cycle

What Is a Computer?

The Components of a Computer

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

Input Device	• Allows you to enter data and instructions into a computer
Output Device	• Hardware component that conveys information to one or more people
System Unit	• Case that contains the electronic components of the computer that are used to process data
Storage Device	• Records (writes) and/or retrieves (reads) items to and from storage media
Communications Device	• Enables a computer to send and receive data, instructions, and information to and from one or more computers or mobile devices

The Components of a Computer

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

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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

Networks and the Internet

- A **network** is a collection of computers and devices connected together, often wirelessly, via communications devices and transmission media

Networks and the Internet

- The **Internet** is a worldwide collection of networks that connects millions of businesses, government agencies, educational institutions, and individuals

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Networks and the Internet

- People use the Internet for a variety of reasons:
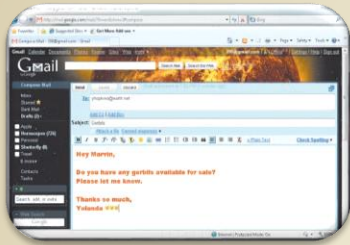
Communicate

Research and Access Information

Shop
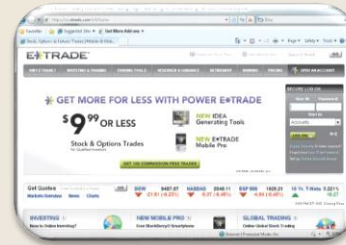
Bank and Invest

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
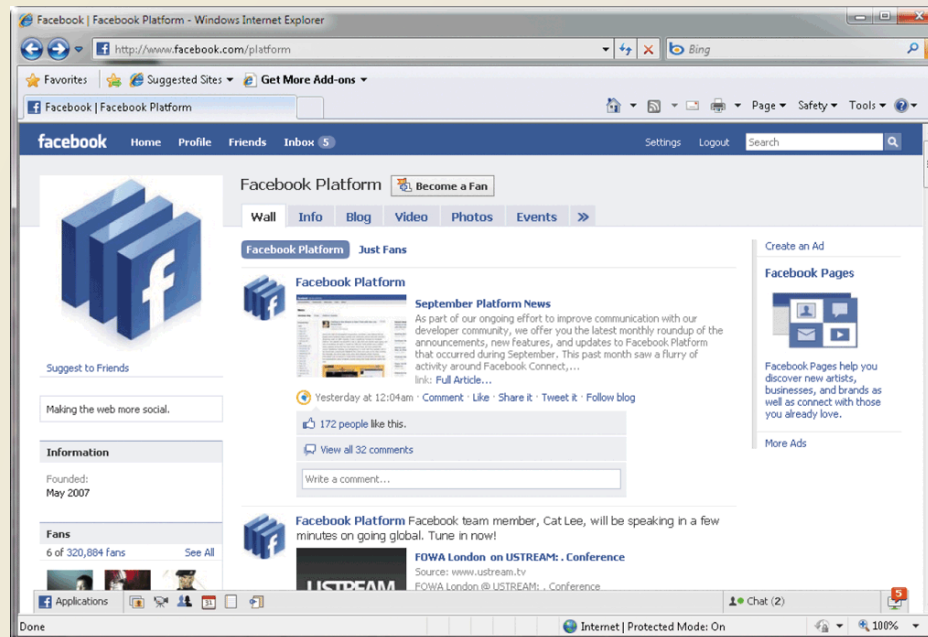
Computer Software

- **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

Installing and Running a Computer Program

Step 1: INSTALL
When you insert a program disc, such as a photo editing program, in the optical disc drive for the first time, the computer begins the procedure of installing the program on the hard disk.

optical disc

Step 2: RUN
Once installed, you can instruct the computer to run the program. The computer transfers instructions from the hard disk to memory.

instructions transfer to memory

Step 3: USE
The program executes so that you can use it. This program enables you to edit photos.
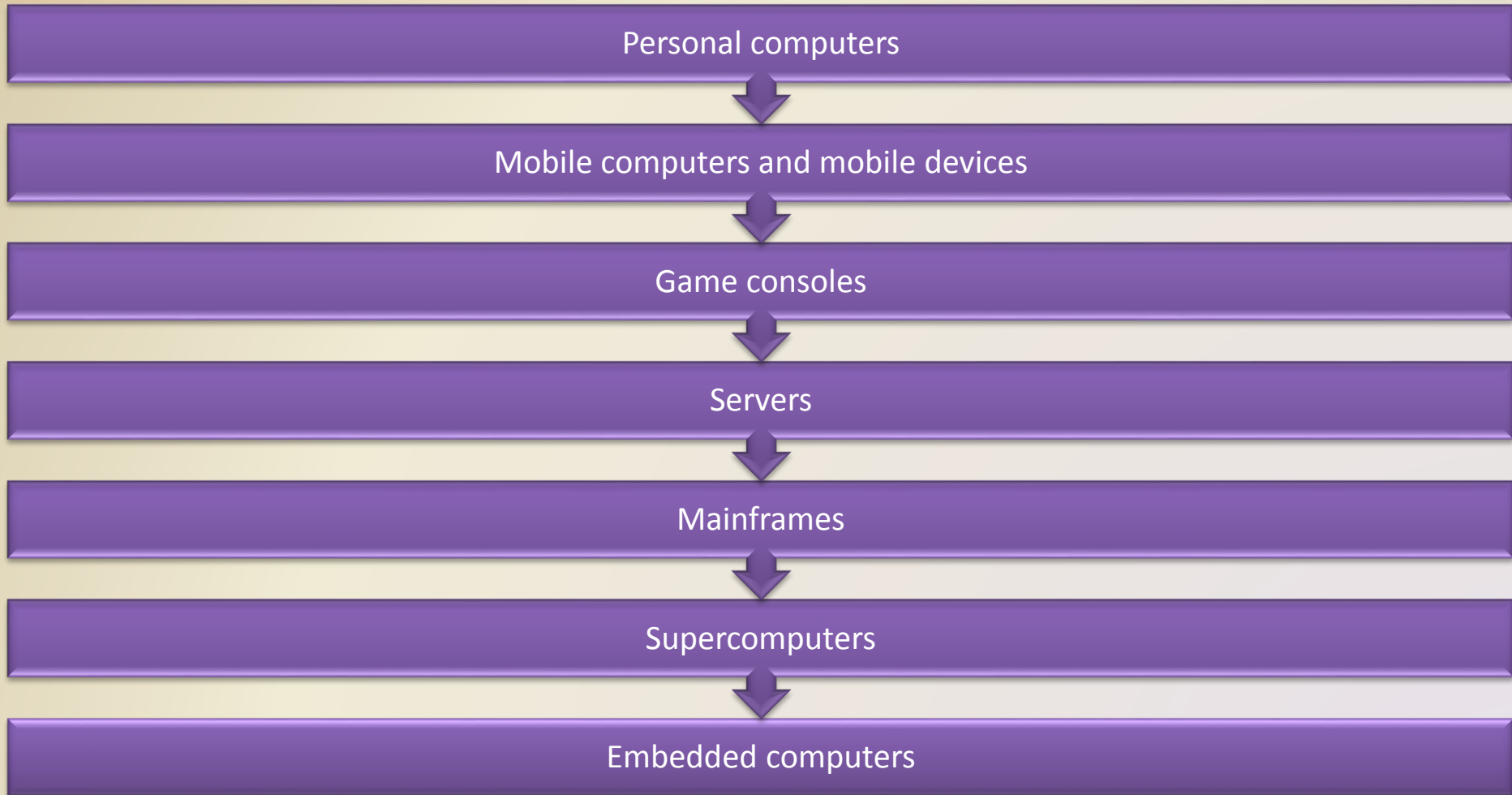
Computer Software

- A programmer develops software or writes the instructions that direct the computer to process data into information


```
Public Class frmPayrollInformation

    Private Sub btnCalculatePay_Click(ByVal sender As System.Object, ByVal e As System.
    EventArgs) Handles btnCalculatePay.Click
        'This procedure executes when the user clicks the
        'Calculate Pay button. It calculates regular
        'and overtime pay and displays it in the window.

        ' Declare variables
        Dim strHoursWorked As String
        Dim strHourlyRate As String
        Dim decHoursWorked As Decimal
        Dim decHourlyRate As Decimal
        Dim decRegularPay As Decimal
        Dim decOvertimeHours As Decimal
        Dim decOvertimePay As Decimal
        Dim decTotalPay As Decimal

        ' Calculate and display payroll information
        strHoursWorked = Me.txtHoursWorked.Text
        strHourlyRate = Me.txtHourlyRate.Text
        decHoursWorked = Convert.ToDecimal(strHoursWorked)
        decHourlyRate = Convert.ToDecimal(strHourlyRate)

        If decHoursWorked > 40 Then
            decRegularPay = 40 * decHourlyRate
            Me.txtRegularPay.Text = decRegularPay.ToString("C")
            decOvertimeHours = decHoursWorked - 40
            decOvertimePay = (1.5 * decOvertimeHours) * decHourlyRate
            Me.txtOvertimePay.Text = decOvertimePay.ToString("C")
            decTotalPay = decRegularPay + decOvertimePay
            Me.txtTotalPay.Text = decTotalPay.ToString("C")
        Else
            decRegularPay = decHoursWorked * decHourlyRate
            Me.txtRegularPay.Text = decRegularPay.ToString("C")
            Me.txtOvertimePay.Text = "$0.00"
            Me.txtTotalPay.Text = decRegularPay.ToString("C")
        End If
    End Sub
End Class
```

Payroll Information

Employee Name	Robert Terrell
Hours Worked	42
Hourly Rate	18.00

Calculate Pay

Regular Pay	$720.00
Overtime Pay	$54.00
Total Pay	$774.00

Categories of Computers

Personal computers

Mobile computers and mobile devices

Game consoles

Servers

Mainframes

Supercomputers

Embedded computers

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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

Mobile Computer

Personal computer you can carry from place to place

Examples include **notebook computers**, **laptop computers**, netbooks, ultra-thins, and **Tablet PCs**

Mobile Device

Computing device small enough to hold in your hand

Examples include **smart phones** and **PDAs**, **e-book readers**, **handheld computers**, **portable media players**, and **digital cameras**

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

handheld game console

game console

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

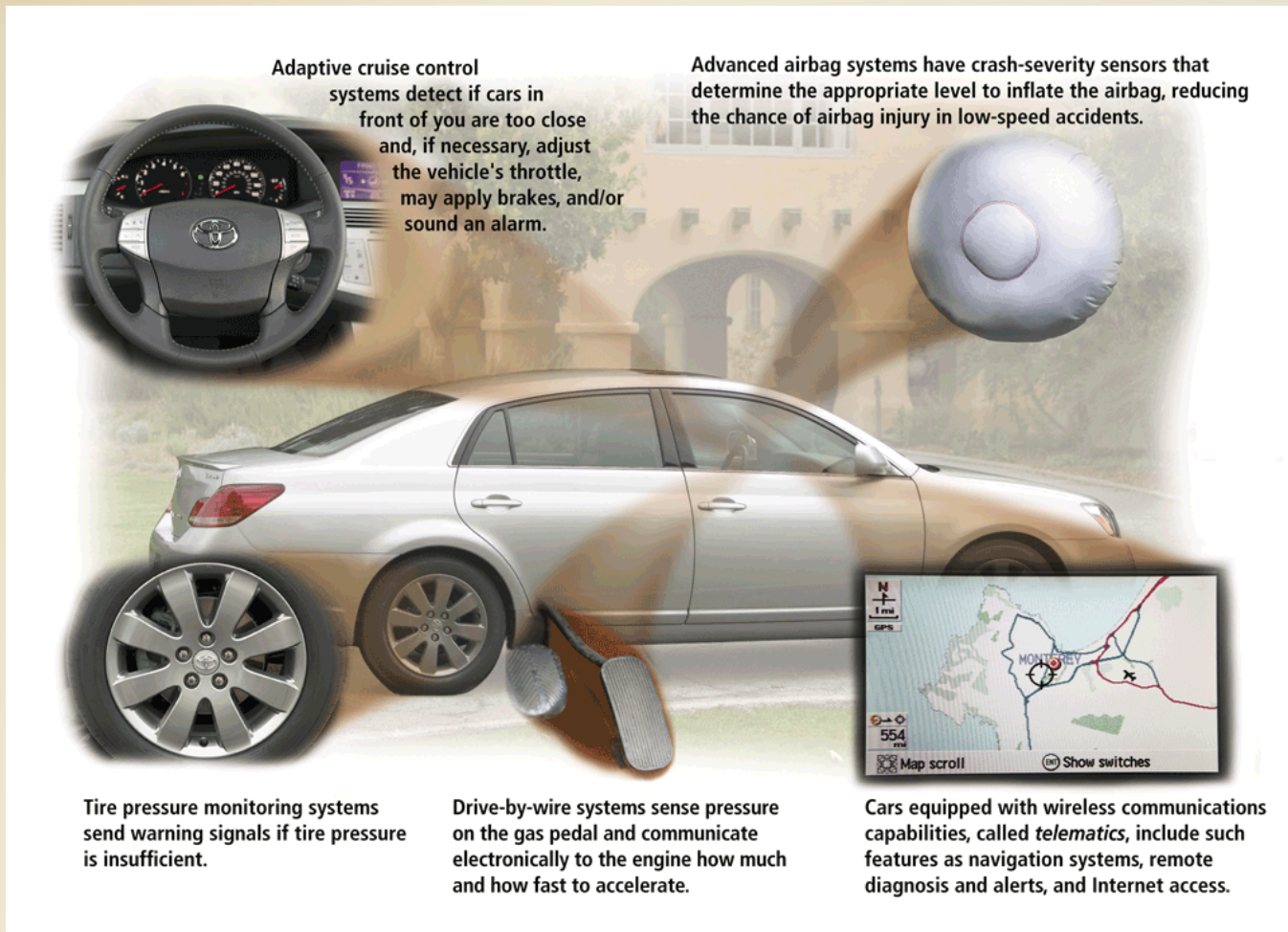| Consumer Electronics	Home Automation Devices	Automobiles	Process Controllers and Robotics	Computer Devices and Office Machines
• Mobile and digital telephones • Digital televisions • Cameras • Video recorders • DVD players and recorders • Answering machines	• Thermostats • Sprinkling systems • Security monitoring systems • Appliances • Lights	• Antilock brakes • Engine control modules • Airbag controller • Cruise control	• Remote monitoring systems • Power monitors • Machine controllers • Medical devices	• Keyboards • Printers • Faxes • Copiers

Embedded Computers

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

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Elements of an Information System

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

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

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Chapter 1 Complete