



# Al Mustaqbal University

## College of Medicine



## Computer Science

### Lecture 1

# Introduction to Computers

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# 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

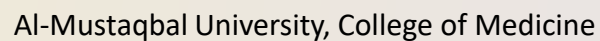
Differentiate among types, sizes, and functions of computers in each category

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

- Computers are everywhere



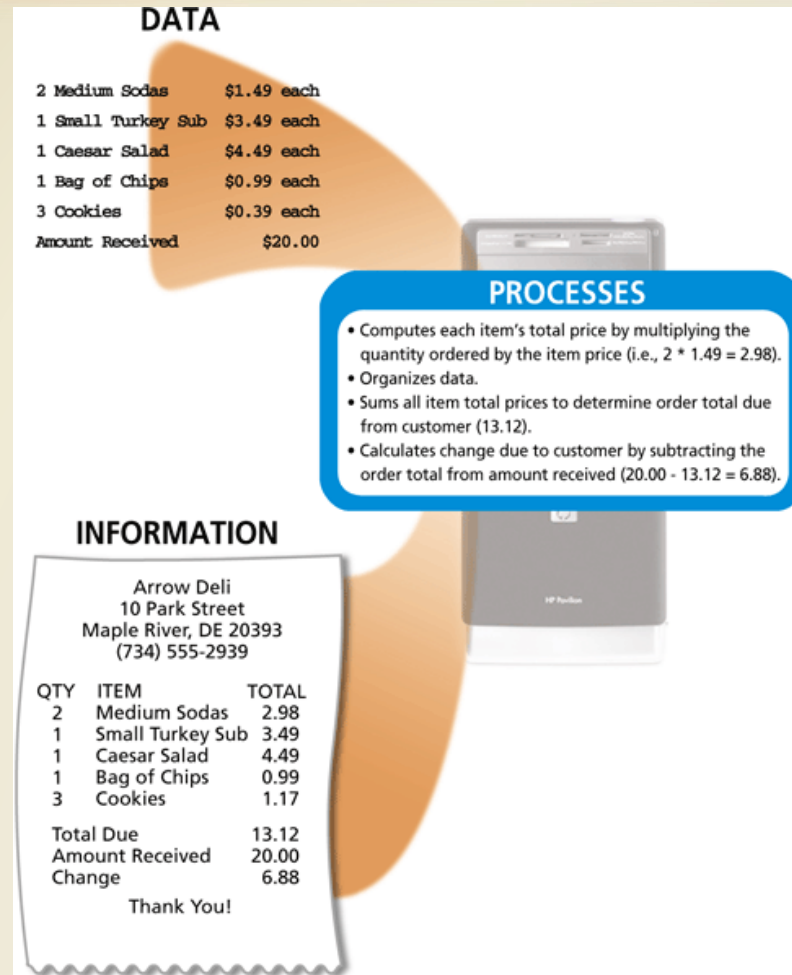
# What Is a Computer?

- A **computer** is an electronic device, operating under the control of instructions stored in its own memory, that can **accept** data, **process** the data according to specified rules, **produce** results, and **store** the results for future use.



**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

- Holds data, instructions, and information for future use

## 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

# Networks and the Internet

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



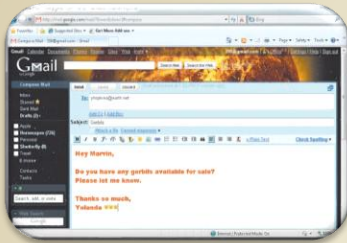
# Networks and the Internet

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

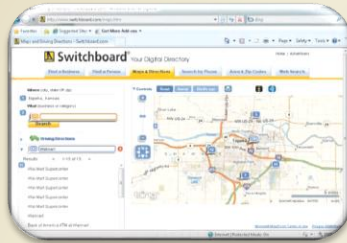


# Networks and the Internet

- People use the Internet for a variety of reasons:



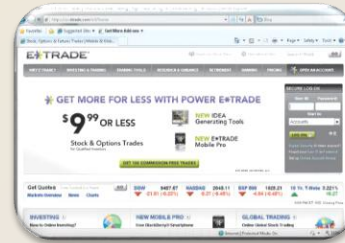
**Communicate**



**Research and  
Access Information**



**Shop**



**Bank and Invest**



**Online Trading**



**Entertainment**



**Download Videos**



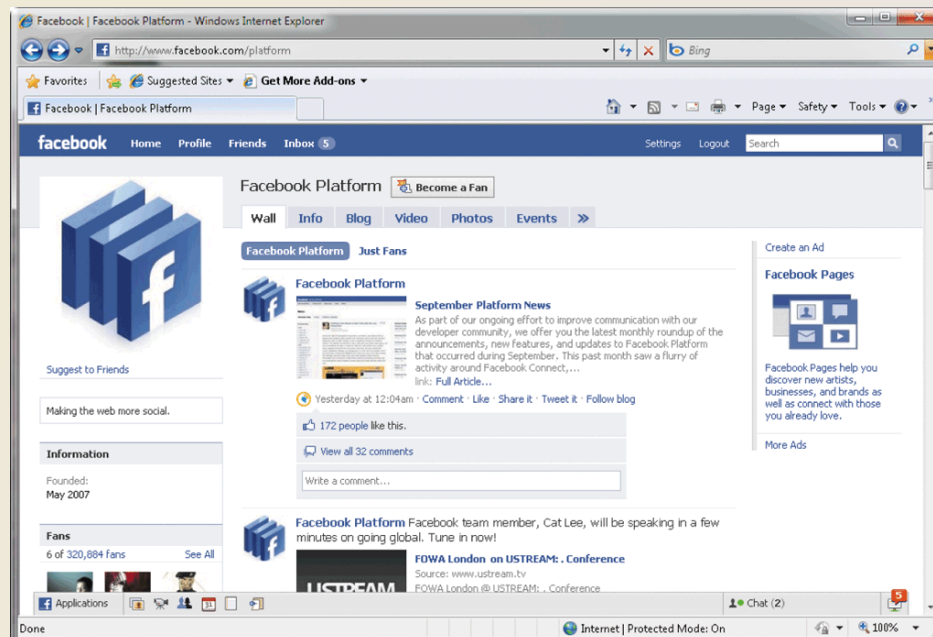
**Share Information**



**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

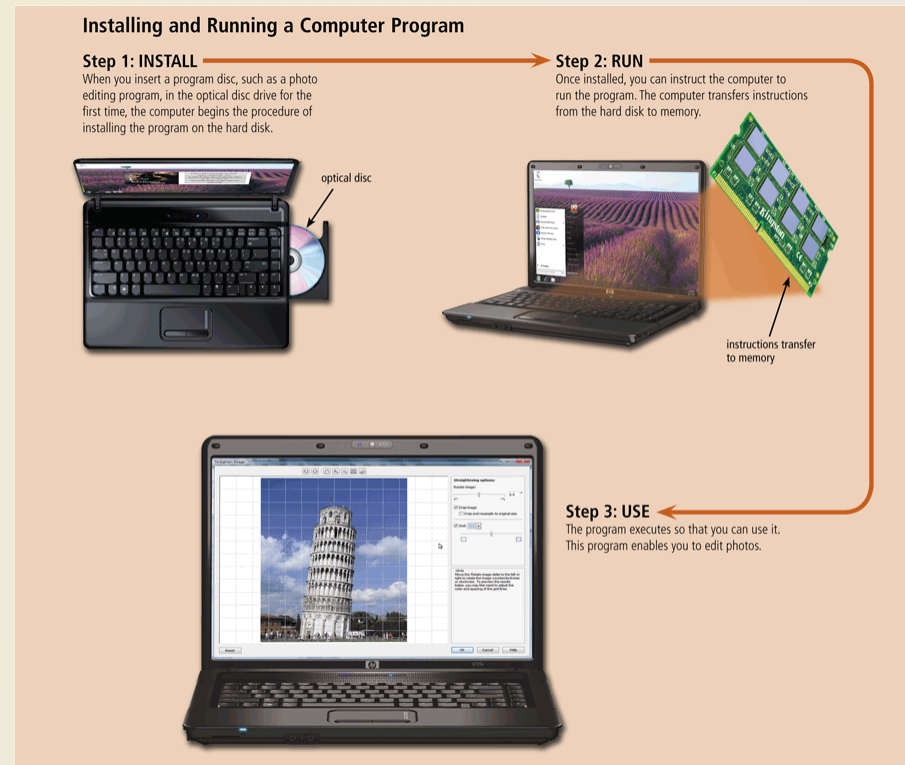
- Operating system
- Utility program



## 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

```
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.

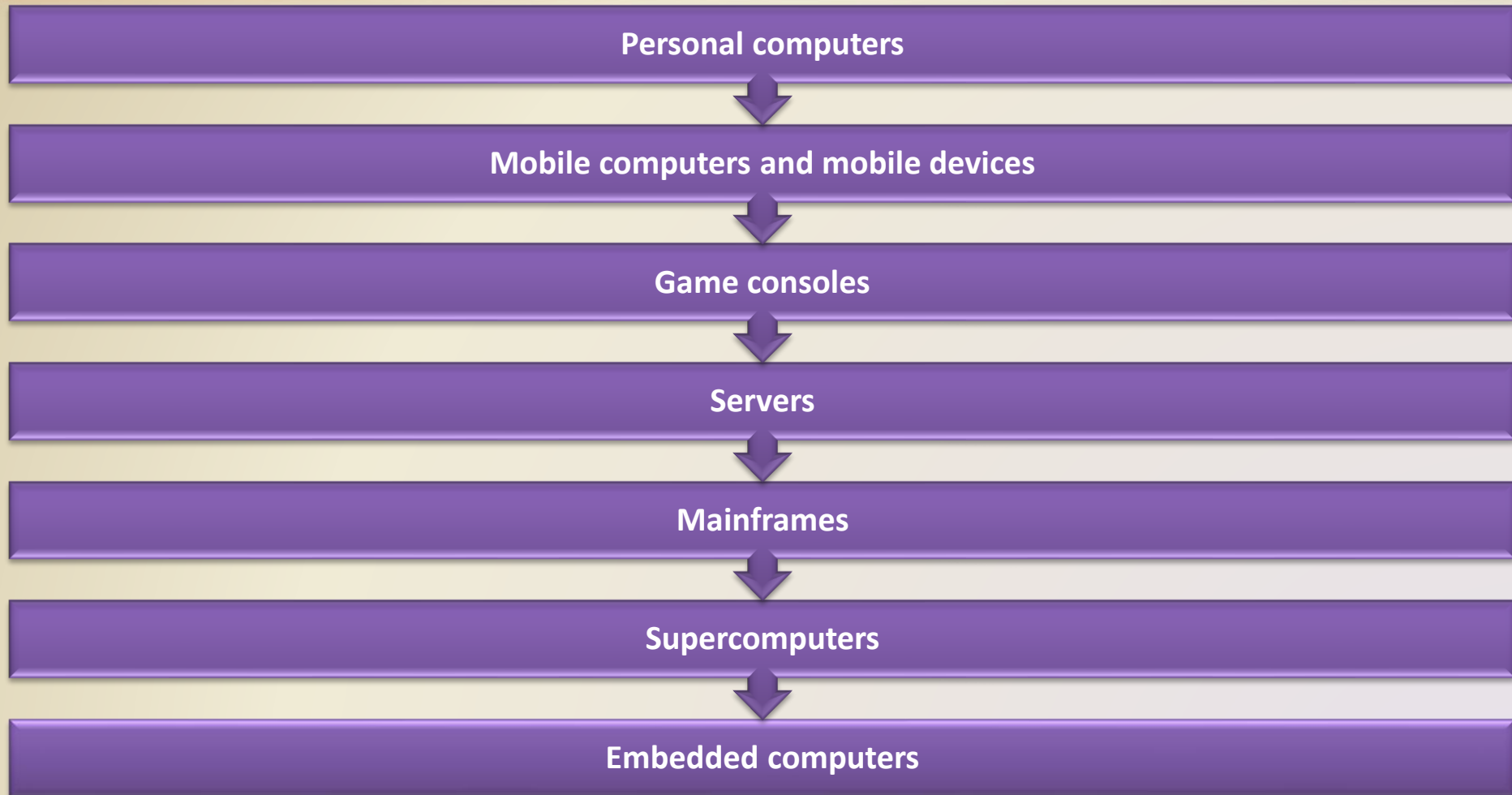
        ' Declare variables
        Dim strHoursWorked As String
        Dim strHourlyRate As String
        Dim decHoursWorked As Decimal
        Dim decHourlyRate As Decimal
        Dim decRegularPay As Decimal
        Dim decOvertimeHours As Decimal
        Dim decOvertimePay As Decimal
        Dim decTotalPay 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
<b>Calculate Pay</b>	
Regular Pay	\$720.00
Overtime Pay	\$54.00
Total Pay	\$774.00

# Categories of 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

## Mobile Computer

Personal computer you can carry from place to place

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

## Mobile Device

Computing device small enough to hold in your hand

Examples include **smart phones**, **PDAs**, **handheld computers**, **portable media players**, and **digital cameras**

# Mobile Computers and Mobile Devices



Notebook computer



Tablet PC



Smart phone



PDA

# 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 at same time.



# 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

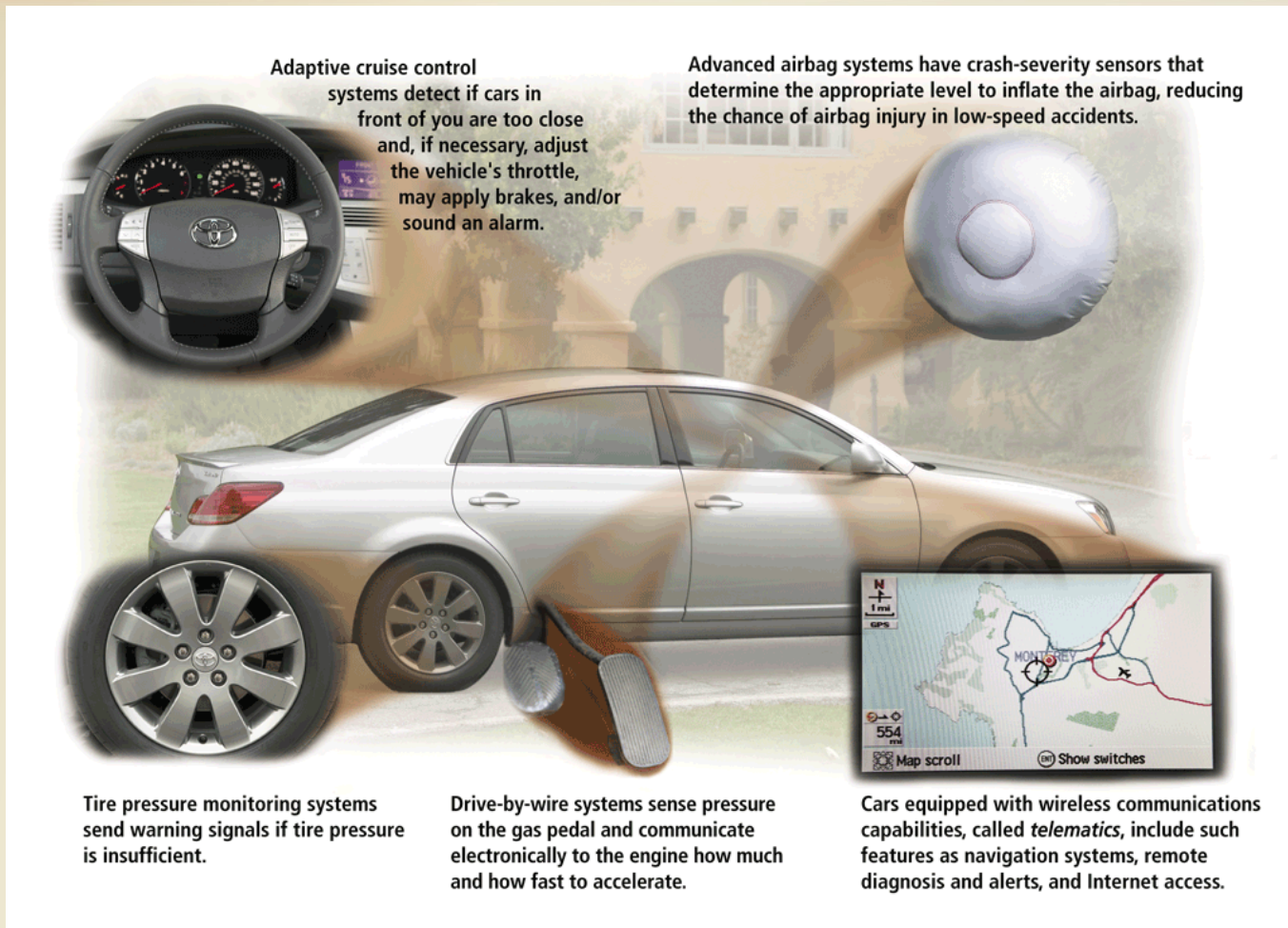
- Remote monitoring systems
- Power monitors
- Machine controllers
- Medical devices

## Computer Devices and Office Machines

- Keyboards
- Printers
- Faxes
- Copiers



# Embedded Computers



# Elements of an Information System

Hardware

Software

Data

People

Procedures

# 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



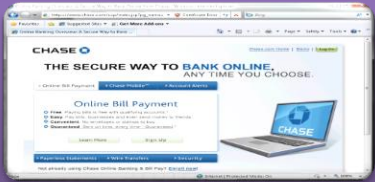
## Enterprise User

- 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

**THANK YOU 😊**